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NEW YORK MEDICAL JOURNAL

INCORPORATING THE

PHILADELPHIA MEDICAL JOURNAL

AND THE

MEDICAL NEWS

A WEEKLY REVIEW OF MEDICINE

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Original Communications

CONSERVATISM IN OBSTETRICS.*

By Edwin B. Cragin, M. D.,
New York.

The last few years have witnessed the development of radical surgical obstetrics and brilliant the results have been. Long lists of Cæsarean sections have been published with little if any mortality, and the indications for the operation have been extended by some to include placenta prævia, eclampsia, accidental hemorrhage, etc. The question before us is: Are we in our enthusiasm over radical obstetric surgery neglecting the fundamentals of obstetrics; the routine precautionary methods which may make the resort to radical obstetric surgery unnecessary? The consultant still sees cases of puerperal infection; of ruptured uteri; of undiagnosed posterior positions of the occiput. He sees cases in which forceps have been applied too early, cases in which version has been attempted too late. We can only conclude that, in spite of brilliant results along certain lines, the fundamentals of every day obstetrics are still neglected. It is freely admitted that pelvimetry does not always tell whether a child can be born through the natural passages or not. The angle of junction of lumbar spine and sacrum may be such as to prevent the entrance of the fetal head into the pelvis in spite of large pelvic measurements. The writer has several times been obliged to perform a Cæsarean section upon a woman whose pelvic measurements were justo major, and whose dystocia came as a surprise, demonstrated only by hours of test labor. On the other hand, careful pelvimetry tells a great deal, and if a careful pelvimetry of the inlet and the outlet of the pelvis is practised during pregnancy and especially if coupled with it there is a careful comparison of the size of the presenting part and the brim of the pelvis, the surprises will be few and the possibility of dystocia can usually be foretold and provided for. The mouldability of the head and the strength of the uterine contractions are always uncertain factors in the problem, but pelvimetry will usually tell us at least one factor in the problem and should never be neglected. Pelvimetry is a part of conservative obstetrics, as it will disclose a large percentage of cases in which delivery through the natural passages is impossible, and these are in the women who should not be allowed to lower their vitality or the vitality of the child by labor. Furthermore, it will disclose a certain percentage of cases in which, if premature labor is induced, delivery may be accomplished without resort to radical obstetric surgery, even if forceps or version is necessary.

The importance of uranalysis in the care of an obstetric case has long been recognized, but the importance of regular and frequent examinations seems to have been neglected by many. It is freely admitted that a fulminating case of eclampsia in which the urine was normal on ordinary examination a week before, will occasionally occur. This is exceptional, however, and the rule is that if the urine is examined every two weeks, danger signals will be disclosed long before the eclamptic seizure.

The value of taking the blood pressure of a pregnant patient has only recently been recognized, yet it is one of the best criteria of the condition of the woman and her avenues of elimination, and the obstetrician who omits it from his routine procedures in the care of his obstetric cases is not doing his duty. With the portable, relatively inexpensive sphygmomanometers on the market, there is little excuse for the neglect of the blood pressure, and the more we study results the more we become impressed with the fact that a pregnant patient with a blood pressure of 140 or over is usually suffering from a serious toxemia. The importance of taking the blood pressure at short intervals during pregnancy and the valuable information to be gained by seeing the patient, noting the presence or absence of edema, makes it necessary that she should visit her obstetrician frequently during pregnancy and that simply sending the urine is not sufficient.

Now let us come to the delivery itself. I am writing for general practitioners. What precautions are you taking against puerperal infection, still the nightmare of the lying-in chamber? Do you provide yourselves with a sterile gown and with sterile rubber gloves? The time has passed when it is safe for a man to deliver a woman without all the precautions which the laity recognize as important in safeguarding a woman against infection. The use of rubber gloves is one of the safeguards known to the laity, and if a physician has not worn sterile rubber gloves and happens to have a case of puerperal infection, his lot is certainly not a happy one,

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*Read before the Eastern Medical Society of the City of New York, Friday evening, May 12, 1916.

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as he has the support of neither the laity nor the profession. On the other hand, it is known to the profession, at least, that in spite of every precaution puerperal infection will occasionally occur, even in the best of hands. This means that if a physician has used every precaution known to science as essential in preventing infection and yet happens to have a case of it, the profession will stand by him, but without such precautions he deserves and receives support from neither the laity nor the profession. Let me say, that it pays to be charitable toward any careful man who is unfortunate enough to have in his practice a case of puerperal infection. To criticise is easy, but alas! the tables may soon be turned and we may be the next unfortunate to spend anxious days and sleepless nights over a case of puerperal infection which came we know not how. There is only one redeeming light on the horizon of darkness. If we have used every precaution known to science, our conscience is clear, even if we are criticised by our fellow practitioners and by the laity. With any important precaution omitted even our conscience upbraids us, and this may be harder to bear than all other criticism.

Conservatism, as the writer uses the word, does not mean opposition to progress. It is used more in the sense of favoring progress which is not too rapid, progress which conserves the well being of both mother and child. We may well ask ourselves the question, Am I doing my obstetric work in the way that will best conserve the life and health of my two patients, the mother and the child? Thus far we have considered chiefly the mother, but the child certainly deserves consideration. Are we watching the fetal heart as we should? or are we taking it for granted that because we heard it once it will still be beating when the child is born? I know of no criterion of the well being of the child which compares to the rapidity and character of the fetal heart sounds, and no obstetrician seems to me to be doing his duty to the incoming member of society who does not keep posted as to the fetal condition by listening frequently to the fetal heart during labor. It may be argued that after the obstetrician has put on his rubber gloves, he cannot listen to the fetal heart without unsterilizing them. This argument does not hold, as for years the writer has been in the habit of lifting with his gloved hands the sterile towel from the patient's abdomen and having the nurse pull down the night dress so that through it he could listen to the fetal heart; the night dress is then drawn up by the nurse, the towel which has been held with sterile hands is then replaced on the abdomen, and this process is repeated as often as may be necessary.

A few months ago the writer was summoned in the afternoon to one of the suburbs of the city to deliver a woman by forceps. One of my first questions was, Is the case ready for forceps delivery? The answer was, Oh, yes. It is time she was delivered. I made a hurried twenty-five mile run to the place in an automobile and on arriving and examining the patient found a cervical dilatation about the size of a silver quarter. I was obliged to tell the attending physician that I thought by next morning the cervix would be sufficiently dilated and the head sufficiently descended to make the forceps justifiable. I then returned to the city.

My object in mentioning this case is to call attention to the fact well known in most maternity hospitals in the city, that many cases are brought to our hospitals with the history that the doctor had applied the forceps and after several attempts had failed to deliver the woman. Many of these cases have shown, even on arriving at the hospital, a cervix without sufficient dilatation to make the use of the forceps justifiable.

There is a Scylla and a Charybdis in the use of the forceps in obstetrics. We might call the Scylla the too early application of the instrument, before the cervix is sufficiently dilated, and the Charybdis the too late application, after the fetal head has rested so long on the pelvic floor as to cause cerebral injury on the one hand and loss of vitality in the maternal soft parts on the other. Conservative obstetrics steers midway between the two, and this middle course is usually charted by a vaginal examination of the cervix and by careful and frequent listening to the fetal heart. The difference in the ease of delivery in an anterior and a posterior position of the occiput is so marked that the conservation of both mother and child depends largely upon the accurate diagnosis of the position of a vertex presentation. The consultant is not infrequently called to a case of persistent occiput posterior which undiagnosed has been left in ineffectual labor for twenty-four hours with perhaps repeated attempts to deliver with forceps, under the supposition that the posterior fontanelle was anterior. A correct diagnosis many hours before, with a manual rotation of the head till the occiput lay in front of the transverse diameter of the pelvis, and then the proper application of the forceps would have saved the mother many hours of exhausting labor and the child many hours of dangerous cerebral compression. The writer's plea is for early diagnosis of occipitoposterior positions, and as elements in this diagnosis he would emphasize:

1. The absence of the smooth broad fetal back from the front of the mother's abdomen.

2. The location of the greatest intensity of the fetal heart sounds outside of the line joining umbilicus and either anterior superior iliac spine.

3. The character of the labor pains.

This characteristic of labor in a persistent occiput posterior should be well known by all. The absence of flexion prevents ready descent of the vertex into the cervical canal with its associated stimulus to uterine contractions. This means that the uterine contractions are often feeble, far apart, and ineffectual. This type of labor—long, tedious, with little advance of the presenting part—is so often found associated with a persistent occiput posterior that this diagnosis should at least be suggested and should be either verified or excluded by careful examination.

There is one danger which is still not sufficiently understood by the general practitioner—version in a tonic uterus. If we have tried a forceps delivery in a given case and have failed, either on account of a disproportion between the presenting part and the parturient canal, or because on account of a poor application of the forceps blades the instrument has slipped, it is only human to be tempted to try a version. The bimastoid diameter is shorter than the biparietal, and by a podalic version the smaller end of the wedge would be made to enter the pelvis first. Under certain conditions this would be good conservative obstetrics, but it all depends upon whether version is, or is not contraindicated by a tonic uterus. Version in a tonic uterus, with uterus contracted on the child and lower uterine segment thinned out, usually means rupture of the uterus and death of the mother in over seventy-five per cent. of cases. Certainly a craniotomy is better than a ruptured uterus.

With the present popularity of Cæsarean section and its low mortality—in the writer's last seventy-three cases there was only one death and that from an embolus in the course of a complicating bronchopneumonia and in the sixty-one cases just preceding this one there had been no death—we naturally ask the question, What is a conservative position to take regarding Cæsarean section?

The writer regards Cæsarean section as a conservative procedure when delivery of a living child through the natural passage is shown to be impossible, either from a contraction of the pelvis which makes the indication positive, or as the result of a test labor, *provided that certain conditions are present.* These conditions are:

1. Labor of short duration or not begun.
2. Unruptured membranes; or membranes only recently ruptured.
3. No recent vaginal examinations, or only one or two under strictest aseptic precautions with sterile gloved hands, etc.

If the woman has been a long time in labor with membranes ruptured many hours, the mortality of from two to three per cent. rises to a mortality of from ten to fifteen per cent., and the operation ceases to be a conservative procedure and becomes one of considerable hazard. This emphasizes the importance of an early diagnosis in all cases with a positive indication for Cæsarean section so that the operation can be performed either just before or in the early stages of labor. Moreover, it demonstrates the importance of the greatest care during the test labor of the border line cases in primigravidæ, that the labor should not be too long and that the vaginal examinations should be as few as possible and made with the strictest asepsis.

In conclusion, the writer would like to state his views of conservatism in the extension of Cæsarean section to conditions other than dystocia from pelvic contraction or tumors; for instance, placenta prævia, eclampsia, accidental hemorrhage, etc.

In the writer's judgment these conditions furnish an indication for a section only as a rare exception. In certain cases of complete placenta prævia with marked loss of blood and cervix not easily dilatable, a section offers the best prospect to mother and child. The same may be said of certain cases of accidental hemorrhage with complete premature separation of the placenta, but it is the writer's custom to deliver most of these women in some other way, usually after preliminary dilatation with the elastic bag.

One thing must always be borne in mind, viz., that no matter how carefully a uterine incision is sutured, we can never be certain that the cicatrized uterine wall will stand a subsequent pregnancy and labor without rupture. This means that the usual rule is, *once a Cæsarean always a Cæsarean.* Many exceptions occur, and recently one of my hospital patients upon whom I performed a section for an ovarian cyst, removing the cyst at the same time, came to me to report that she had since had three children without difficulty. In this case the obstruction had been removed and the labors were easy. The general rule holds, however, that we cannot depend on a sutured uterine wall, whether it is done in a Cæsarean section or a myomectomy, hence I believe that the extension of Cæsarean section to conditions other than dystocia from contracted pelvis or tumors should be exceptional and infrequent.

10 West Fiftieth Street.

BONE SARCOMA TREATED BY RADIUM.*

By Joseph B. Bissell, M. D.,

New York.

These patients are presented as examples of results which sometimes follow the application of radium to sarcomatous tumors of the long bones.

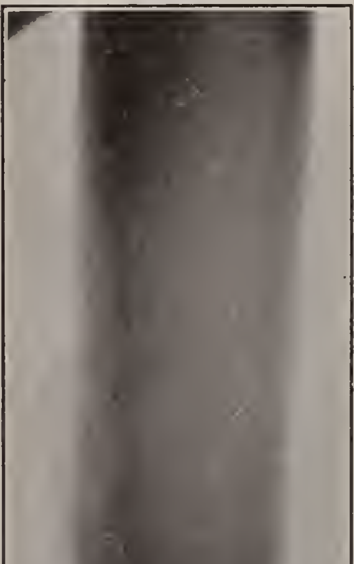

Fig. 1.—Skiagraph of femur, W. T., taken November 1, 1915, before using radium.

Case I. W. T., nineteen years old, had been in several hospitals and clinics and under various treatments before coming under my care. He first noticed this growth nearly two years ago. He had had experience with considerable doses of x ray as well as Coley's serum. Two pathologists had reported upon specimens taken from the tumor. They concurred that it was an osteosarcoma of the spindle cell variety, arising from the periosteum. According to the skiagraph the growth involved the whole circumference of the left femur at its middle third. The early pictures before treatment with radium presented the characteristics of a sarcoma. The last picture, taken since the application of radium, is reported by Doctor Meyer, of Bellevue Hospital's x ray staff, to resemble a chronic periostitis. The patient had in addition a severe radium burn on the limb, extending deeply into the muscle of the inner side. This burn extended almost completely around the leg. It had taken a long time to heal and was still troublesome. Considering, however, that the tumor had practically disappeared under treatment, the patient was not making more than

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*Patients and photographs presented before the Surgical Section, Academy of Medicine, May 5, 1916.

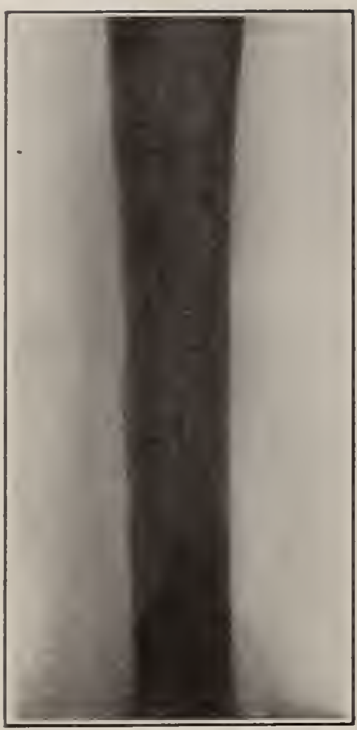

Fig. 2.—Skiagraph of femur, W. T., taken April 10, 1916, after using radium.

the ordinary complaints about the inconvenience of the condition. At the beginning of the radium treatment, the circumference of the leg over its largest point was 53.25 cm., the right leg at the same point being thirty-five cm. for contrast. The affected leg over the site of the original tumor is now 40.25 cm. in circumference, and part of this measurement is probably due to the swelling of the soft parts from the radium burn. This boy had rather large doses of radium, and for a comparatively long time. The average amount used was about 400 mgm., and for the first four or five times the exposure was twenty-four hours in length each time. Various kinds of screens were used and every endeavor was made to protect the skin from burns. There was a space screen of an inch and a half from his skin to the material screens, which consisted of from three to five mm. of rubber, and two mm. of brass or lead, depending upon the special applicator used, beside the original silver container, one mgm. in thickness, and the glass tube containing the radium.

The accompanying photographs show the improvement from the time he came under my care up to the present, when the last photograph. (Fig. 4) was taken. The skiagraph shows the improvement in the condition of the bone between the same dates.

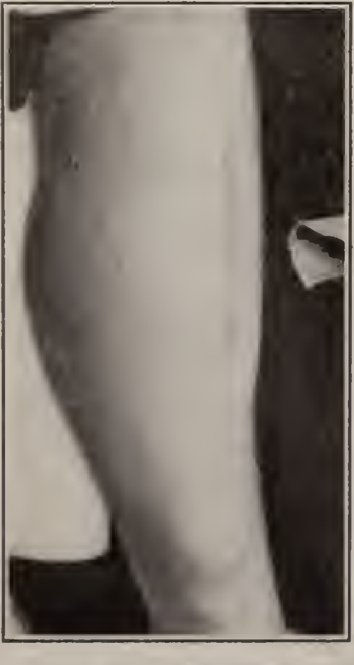

Fig. 3.—W T., aged nineteen years, photograph taken November 1, 1915, before using radium.

The second case is that of a small child, who at present is incarcerated in the isolation ward of the Willard Parker Hospital, suffering from a contagious disease.

Case II. Isador S., five years old, first noticed a tumor in the upper third of the left humerus about a year ago. X ray pictures, soon after, showed evidences of a rarefied swelling of the bone. Later on this was seen to be a sarcomatous infiltration, subperiosteal in origin. The diagnosis was confirmed by the examination of a section by the pathologist. The following measurements were made in May, 1915, before applying the radium treatment: Over the greatest size of the tumor, twenty-two cm.; at its lowest portion, seventeen cm.; one inch above the greatest diameter, eighteen cm. Fifty mgm. of radium were applied around the bone in five containers of ten mgm. each. They were applied at equal distance points and remained on about two hours. They were applied close to the skin with three mm. lead screens covered with 0.5 mm. rubber. In a week's time this application was repeated, also two weeks later. The measurements taken early in July after these three applications were as follows: Over greatest diameter, eighteen cm., below fifteen cm., and above sixteen cm. Nothing more was done until the following September, when two similar applications were made, two weeks apart; the patient in the meantime continuing to improve until at this time there was very little difference between the arms. The child's general health was good. He had no pain or trouble of any kind relating to this tumor. Following the foregoing treatments there were no radium burns and the tumor almost disappeared. Palpation of the arm at the site of the tumor showed that there remained several irregular ridges parallel with the long axis of the bone. Late in November the tumor began to grow again; the patient's general condition became affected; he had slight chills, rise of temperature, loss of appetite, complained of pains in his arms and chest, and seemed otherwise ill. An x ray picture of his chest showed what was thought to be metastatic deposits in the mediastinum. In order that he might get the benefit of further radium applications, he was taken into the Radium Sanitarium and one hundred and fifty mgm.

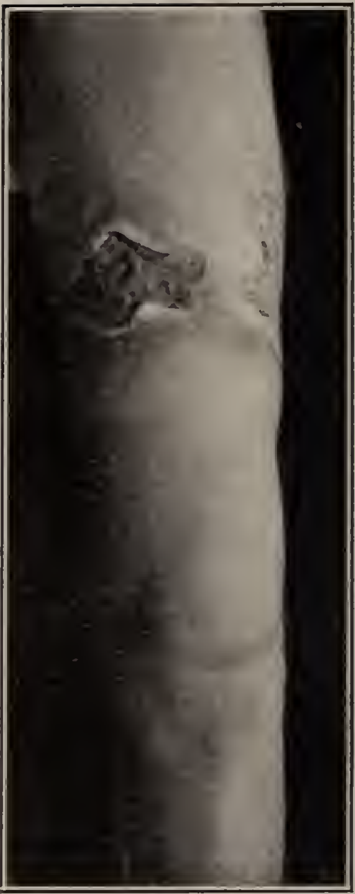

Fig. 4.—W. T.; photograph taken May 5, 1916, after using radium. Ignore the skin burn which has now practically healed.

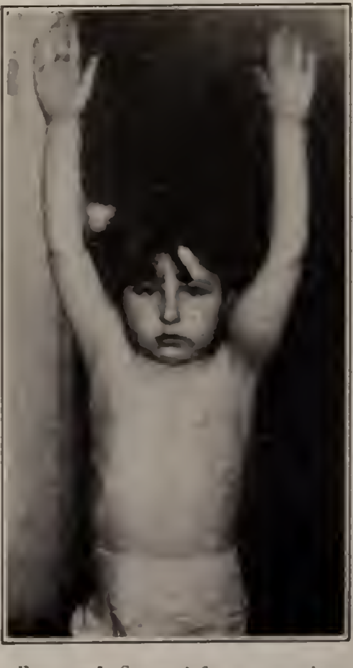

Fig. 5.—I. S., aged five years; photograph taken May 20, 1915, before using radium.

of radium was applied to his arm for twelve hours. Preceding this, a section was taken of the tumor, the pathologist reporting that it was a spindle cell sarcoma. A second x ray interpretation showed it to be subperiosteal. Another skiagraph, several weeks later, showed no such pathological condition in the chest as described above.

The tumor is still rather marked, although somewhat smaller than when the patient first came to the hospital. Several applications of radium of 150 mgm. each, for twelve or fourteen hours at a time, have not decreased it very much. He has a pronounced necrosis about an inch in diameter, of the soft parts of the arm, due to an x ray burn. His general health at present appears to be about normal.

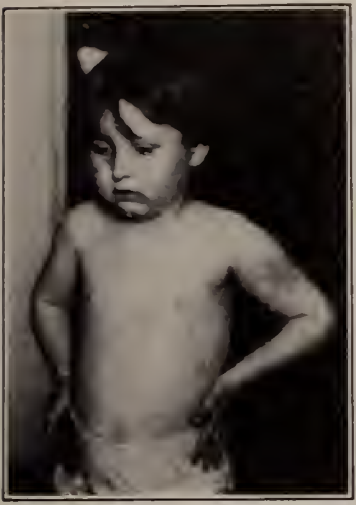

Fig. 6.—I. S., aged five years; photograph taken August 20, 1915, after using radium.

These two patients are taken for contrast. One has apparently entirely recovered from the growth, the other has improved but slightly. The pathological condition, the character and position of the tumors, as well as the treatment carried out, are similar, yet the results are apparently opposite; although it must be said for the little boy five years old, that under a former series of radium applications the tumor had also practically disappeared. . In spite of this seemingly poor result I believe that radium properly applied is the correct treatment. The only alternative is amputation at the shoulder joint, with almost certain early return of the tumor, either in the scar or in some other part of the body.

At the Radium Sanitarium and laboratories we are constantly learning more about the pathological, histological, chemical, and clinical results of the action of radium and other agents upon the various malignant tumors in the human body. In some of its aspects malignant disease seems general or constitutional rather than local. It would not be surprising if in a short time such a theory proved to be a fact, and new growths, now regarded as limited, surgically removable, and curable, were recognized, after all, as only symptoms or indications of a widely disseminated dyscrasia not permanently eradicable by the knife alone.

46 West Fifty-fifth Street.

Congenital Elevation of the Scapula.—Samuel Cohen (*Medical Record*, June 10, 1916) describes a case of a boy of fourteen years whose left scapula was four cm. higher than his right. In addition, there was distinct cranial asymmetry, torticollis, displacement upward of the left nipple, scoliosis in the upper dorsal region away from the deformed scapula and elevation of the ribs on the affected side.

STRICTURE OF THE URETER.*

Excluding Tuberculosis and Calculus; Report of Fifty Cases,

By Guy L. Hunner, M. D.,
Baltimore, Md.
Associate in Clinical Gynecology, Johns Hopkins University.

Stricture of the ureter is a far more common disease than our former experience or a review of the literature would lead us to believe. Excluding tuberculosis stricture and infiltrations immediately surrounding stone in the ureter, I have records up to November 1, 1915, of fifty cases. In the same period I have treated forty-nine cases of tuberculosis of the urinary tract and thirty-nine cases of stone in the ureter.

Etiology. Up to within the past few years most of the literature on this subject has been devoted to the so called congenital stricture of the ureter (1).

Kelly (2) anticipates our more modern literature of the subject by stating that "strictures are caused by an inflammation in the ureteral walls produced by the commoner pyogenic cocci, by the gonococcus, and by the tubercle bacillus. The commonest form of inflammation is that due to the tubercle bacillus, and the rarest in my experience in women is due to the gonococcus."

Garceau (3), on the other hand, says, after reviewing the literature, and in the light of his own experience, "the chief cause of fibrous stricture is gonorrheal infection."

Furniss (4) takes definite issue with the prevailing opinion that most ureter strictures are congenital in origin and from a study of his cases, concluded that infection plays the important part in the production of ureteral stricture. He concludes that the infiltration in the ureter is resultant on acute hematogenous infection of the kidney, which often persists as a pyelitis, ureteritis, or secondary cystitis.

Furniss quotes Sugimura (5) as having studied the lower end of the ureters in the bodies of twenty-five patients, who had had cystitis but died of other causes. He found changes of an inflammatory type in the submucosa and muscularis and was of the opinion that the infection extended through the lymphatics and not along the mucosa.

Necker (6) exhibited before the Deutsche Gesellschaft für Urologie, at the Congress in Vienna in September, 1911, pyelograms of cases of pyelitis, all showing some dilatation of the renal pelvis, and in explanation said that they were cases of ureteral obstruction with secondary infected hydronephrosis.

Kelly and Burnam (7), speaking of traumatic stricture, voice our common experience in stating that "traumatic stricture of the vesical end of the ureter following the injuries of labor and of surgical operations, especially the Wertheim operation for cancer of the cervix uteri, is quite common. As a rule, the trauma has so interfered with the blood supply of the organ that there are lateral necrosis, a continuous leakage of urine, and ureterovaginal fistula. The spontaneous healing of such a fistula, almost invariably, means structure."

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*Condensed by the author from a paper read before the section in Genitourinary Surgery, New York Academy of Medicine, January 19, 1916.

While I have seen during my hospital training cases of traumatic fistulæ of the ureter followed by stricture, I have not had such a case in my own practice and none such are included in this list. One case of slight stricture following a gunshot injury to the ureter and temporary fistula in a sixteen year old girl did not lead to symptoms and as it was an unique case, I dropped it from my report in order to list an even fifty cases, which might be classified, so far as we can judge, as strictures of inflammatory origin. In one of my cases, a stricture of the left ureter with aseptic hydronephrosis of thirty c. c., developed four years after an outlet operation, which was followed during convalescence by an acute cystitis, for which too strong a solution of carbolic acid was given by the nurse, and this was followed within a few days by a vesicourethrovaginal fistula. I consider this stricture of the ureter as of probable traumatic origin owing to the carbolic solution, although the symptoms of hydronephrosis did not develop until after four years, when investigation revealed the stricture within the bladder wall area, and the hydronephrosis symptoms were promptly relieved after dilating the stricture.

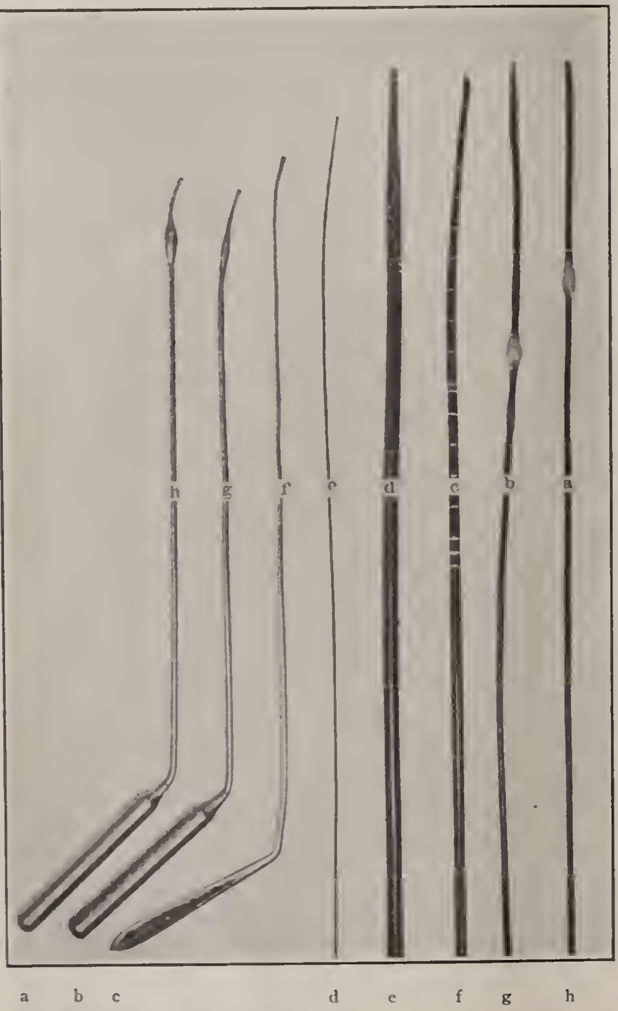

FIG.—Set of ureteral catheters, etc., used by Dr. Guy L. Hunner.
(a) Blunt round tip renal catheter with wax bulb.
(b) Olive tip renal catheter with large wax bulb protected on either side with smaller bulb.
(c) Garceau graduated whistle tip catheter.
(d) Flexible bougie (7 mm. diam.). Sizes vary from 3 to 10 mm., the smaller sizes being useful for dilating through the cystoscope from below, and the larger sizes for retrograde dilatation from above.
(e) Whalebone filiform—Varying sizes are used through the cystoscope.
(f) Metal searcher with olive tip.
(g) Metal bulb dilator 3 mm. with curved olive tip.
(h) Metal bulb dilator 5 mm. with curved olive tip.

While we must admit the possibility and probability of all the foregoing factors playing a role in the etiology of certain ureter strictures, I am firmly convinced that the majority of ureter strictures, excluding those of tuberculous and stone origin, should be classified as simple, chronic stricture, and that they have their origin in an infection carried to the ureter walls from some distant focus such as diseased tonsils, sinuses, or teeth (Hunner, 8). This conception of stricture postulates that in the majority of cases ureter infiltration is primary and that the other urinary tract lesions so often associated with stricture, such as hydronephrosis, pyelitis, and pyelonephrosis, are secondary. An analysis of my fifty cases seems to support this view.

In only two of my cases have I classified the stricture as due to gonorrheal infection. In both there was every evidence of a former gonorrheal infection such as stricture of the urethra, trigonitis, and contracted ureter orifices, the urine being clear in both cases.

In one case there was stricture of the right ureter, and the kidney colics of six months' duration disappeared after dilatation of the stricture.

The other patient, with stricture in both ureters, had a gonorrheal infection one year previously. She refused treatment after the first two examinations. and has been having kidney colics for the past eleven years since her examination.

Only three of my patients had cystitis in spite of the fact that of the twenty-seven cases with notes on culture taking, eighteen showed infection. In ten others there are notes of pus in the urine and presumably they were infected, making a probable twenty-eight cases with infected urine, but only three with cystitis. In one of these the cystitis was localized in the base of the bladder, and I considered it due to the presence of a stone in the bladder. In another there was ulcerative cystitis and stricture of both ureters with dilated infected kidney pelves, the symptoms coming on three years previously without apparent etiology, her only child being three years old when the bladder symptoms began. She had had tonsil trouble from the time she was ten until she was nineteen years of age, and I think it probable that the stricture and hydronephrosis antedated her infection and cystitis.

The third case was of ulcerative cystitis, strictures of both ureters, and colon bacillus pyelitis without dilatation of the kidney pelves. This patient dated her bladder symptoms from the birth of her last child. eleven years previously. She had not complained of kidney symptoms, although her general health was bad. All forms of bladder treatment had been without avail. After local applications for several months, the bladder ulcers were much improved, but refused to heal, and the urine showed a persistence of more pus than we should expect from the bladder condition. Investigation showed the upper tract lesions, and after dilatation of the ureter strictures, the pyelitis promptly yielded to treatment and the bladder lesions healed completely. This is the one case in my list (with the exception of the two gonorrheal cases) that I should be inclined to classify as strictures due to cystitis.

It might be argued that many of these patients had a cystitis in the past, and after absorption up the ureter lymphatics and implanting of a local ureter inflammation, the cystitis cleared up, but the histories and cystoscopy do not bear out this theory.

In only one of my cases was there an evident sequence of ureter stricture following a pyelonephritis, and in this case I am inclined to believe the foundation for the ureter strictures was laid by systemic rather than by local infection extending along the mucous membrane. This patient had an acute staphylococcus pyelonephritis following two weeks after an acute tonsillitis, and I followed the development of ureter stricture in the right ureter within four months after drainage of the right kidney, and found strictures of the left ureter a year later when the patient first began to complain of pain on this side.

While we must recognize from the writings of Schwalbe (9), Seitz (10), Englisch (11), and others, that in the developing ureter of the fetus there are well marked valves and folds along the mucous membrane, and that in the adult ureter there are certain areas of definite narrowing under normal conditions, we are forced by a careful study of the subject to get away from the former view that congenital abnormalities play an important role in any large proportion of cases of ureter stricture. In none of my cases have I seen reason to ascribe a congenital origin.

If stricture as we see it clinically were of congenital origin, we should expect the symptoms to arise in early life, although there would be exceptions. The average age of the fifty patients was 35.5 years and the average duration of symptoms was 4.5 years, making the average age at onset of symptoms thirty-one years. Of seven patients, whose history of trouble due to ureter stricture began before the age of twenty years, five had distinct tonsillitis history, one of the patients having had her tonsils removed before, and two having them removed after my treatment, and the two still retaining their tonsils having had acute attacks while under my care. Of the entire series a tonsilitis history or the presence of diseased tonsils was found in twenty-four.

In one case the double pyelitis which led to the finding of double ureter stricture occurred a few months after operation for sinus infection, the patient first coming for treatment because of rheumatism.

In one case the ureter stricture and its consequent hydronephrosis persisted and increased in spite of ureter dilatation until four abscessed teeth were discovered and removed.

Ten cases had stone in the urinary tract unassociated in time or region with the ureter stricture. Six of these stone cases belong in the group of twenty-four cases having had tonsillitis.

Nine cases had history of rheumatism, all but one of these coming under the groups with tonsillitis or sinusitis.

Three cases had a heart lesion, two of these being in the tonsil group.

These facts are at least suggestive in connection with the older theories concerning the so called "rheumatic diathesis."

The occurrence of bilateral stricture is somewhat suggestive of a systemic infection. Bilateral stricture was discovered in twelve of these cases. This condition may have been present in some others, as it has not been my custom to investigate both sides when the symptoms are confined to one side. This has been particularly true of the cases that ended in prompt recovery after treatment of the one side bearing symptoms. The bilateral character has been discovered accidentally in some cases in the course of making a functional test. In other cases one side has been successfully treated and at a later time the patient returned with symptoms in the other kidney, which were found to be due to a stricture of the corresponding ureter.

Another feature in the argument for a systemic infection is the preponderance of cases in which the stricture occurred in the broad ligament region where the ureter has its chief blood and lymphatic connections. Of the sixty-two ureters with stricture (twelve of them being bilateral) the stricture was located within the broad ligament or within six cm. of the bladder in fifty-three ureters, near the pelvic brim in eight ureters, and near the kidney in one ureter.

SYMPTOMS, ANATOMICAL RESULTS, AND DIAGNOSIS.

It is comparatively rare to have our attention directed to localized symptoms due to the stricture. The patient usually complains of a pain in the kidney region or of bladder symptoms or of both, and the stricture is found in the attempt to fathom the cause of the symptoms.

In some instances there is a local point of pain in line with the ureter, which on investigation is found to be the site of the stricture. In such cases the pain may begin in the stricture area and gradually grow more intense in the kidney region, and if we find in the urine of such a case blood, or blood and pus, we are inclined to diagnose stone in the ureter until the examination by x ray and wax tipped bougie shows the absence of stone, and the passage of the bougie reveals the presence of an obstruction. In such a case the ureter stricture may not be of sufficient density to cause an appreciable obstruction to the passage of the bougie on the first examination, and the diagnosis of stricture is suspected because of a hydronephrosis; or if hydronephrosis is not present, the first strong suspicion of stricture may occur a few hours after the catheterization by having the patient experience an unusually severe attack of pain, or if infection is present, a severe pyelitis attack. This attack follows the swelling shut of the mucosa at the stricture site due to the trauma of catheterization. By using a larger wax bulb at a later investigation, we can definitely appreciate a point of obstruction marking the stricture area.

Such cases of incipient stricture and cases of stone in the ureter which give only intermittent attacks are particularly likely to have these attacks brought on by the added congestion of the menstrual period or by the congestion following getting the feet wet, getting chilled, or "catching cold." For this reason they are often diagnosed as "ovarian attacks."

We can often palpate the area of thickening through the vaginal vault, particularly in thin women, and it is quite impossible in some cases to differentiate between stone and stricture. Cystoscopy, particularly in cases that have a palpable thickening near the bladder, often shows an edematous reddened mons ureteris region, thus again making us quite certain we are dealing with a stone in the ureter.

It is interesting to note that a patient may have had intermittent renal colic even for years without the development of a permanent hydronephrosis. In such a case we may have great difficulty in getting by the stricture from below, and it is always surprising when we succeed in getting by a dense stricture and fail to demonstrate hydronephrosis above. When we fail to get by any obstruction by working from below, it is well to anticipate serious renal colic within a few hours because of the traumatism, and provision should be made for the patient to have hypodermic injections of morphine if necessary.

We should be on the alert for the presence of stricture of the ureter in a case of pyelitis that seems to be particularly resistant to lavage treatment. Particularly is this true if these lavage treatments are followed by acute pyelitis attacks with high temperture, chills, pain, nausea, vomiting, etc. By passing larger bulbs in such a case we can appreciate the stricture if such is present, and the pyelitis attacks after lavage will cease because of the free opening of the ureter channel at the point of stricture.

In a comparison of my infected and my noninfected cases it is seen that as a rule the noninfected cases have a history of shorter duration and renal pelves holding less than the cases with infection.

In the sixteen noninfected cases the average age was thirty-eight years, the average duration of symptoms two and a half years, and the average size of the kidney pelvis in ten of the cases was nineteen c. c., three of these holding eight, eleven, and twelve c. c. respectively, and the others holding from fifteen to thirty c. c. In one exceptional case the pelvis had reached a capacity of 360 c. c. without becoming infected. In five cases there was no note on the pelvis capacity.

In the eighteen infected cases the average age was thirty-five years, the average duration of symptoms was four years, and the average size of the kidney pelvis in fifteen cases in which a record was made was ninety-eight c. c. In four of these fifteen cases the pelvis was of normal capacity, seven to eight c. c., showing for the eleven dilated cases an average capacity of 130 c. c. In the cases with both pelves dilated, the capacity is figured on the larger pelvis only.

TREATMENT.

The ideal treatment for stricture of the ureter is by dilatation from the vesical approach. Naturally those whose work is confined to women and to the use of the Kelly speculum, have a great advantage in treating this disease. Various forms of operative cystoscopes and ureter instruments have been devised by Bransford Lewis and others which makes it quite possible to do considerable effective work from the vesical end in the male.

My work being confined to women, I shall speak only of the methods which I have used in treating stricture, these having been largely developed or suggested by Dr. Howard A. Kelly.

A glance at the figure will show the simple instruments which I use, entirely with the tubular speculum of Kelly. As a rule we use the olive tip catheter of sizes 7, 8, and 9, carrying a wax bulb eight to ten cm. back of the wax tipped end (b). Not infrequently the olive tip catheter refuses to pass when a round tip (a) or a whistle tip (c) will engage the lumen and go by the stricture. We may use the ordinary whistle tip catheter with the wax bulb or the whistle tip catheter with a gradually increasing diameter which Garceau devised for the special purpose of making functional tests (c). This Garceau catheter in sizes 11 or 13 gives a fairly good dilatation without adding the wax bulb.

At times these catheters engage the lumen better with the wire stylet left in for stiffening, and again a slight withdrawal of the stylet will result in success when the catheter has seemed permanently obstructed.

In case of failure to get by with any of these forms of flexible catheter, it is sometimes possible to make the first entrance with the metal searcher (f). By slightly curving the last cm. of the metal searcher, we can gently rotate the angled handle, thus giving the tip a variety of axes, one of which will engage and pass the stricture where the more flexible instruments will meet a pocket or shelf of mucosa and permanently obstruct. Usually after getting through the stricture area with the olive pointed metal searcher, we can withdraw the searcher and immediately get by with one of the flexible catheters which has previously obstructed; or we can follow the metal searcher with the metal bulb dilator (g), which has a slightly curved olive tip followed by a metal bulb of three mm. diameter which gives such thorough dilatation that the flexible catheter is quite certain to pass. At later treatments where a still greater dilatation is wished, the metal bulb dilator of five mm. diameter (h) may be used. It is seldom necessary to use this large metal bulb, for we can easily use the flexible catheters with a wax bulb as large as six mm. diameter. In using these very large bulbs it is well to see that the bulb is of perfect spindle shape, having no abrupt shoulder to catch on the stricture, and also to place smaller bulbs immediately in front and behind the larger bulb to give partial dilatation before the large bulb engages (b). Recently in using a large bulb with rather an abrupt shoulder on the distal side, the bulb was obstinately hung at the stricture area on its withdrawal, and it brought with it a perfect collar of mucous membrane which had been torn from the mucosa because of the abrupt shoulder. This of course creates most objectionable trauma in the site of the stricture.

In our earlier work in testing for stone in the ureter we always used beeswax (the cera flava or the cera alba of the pharmacopœia) mixed with one third or one half sweet oil, but I found that this softens the wax to such a degree that it partially crushes on meeting a narrow ureter orifice, or later on meeting the stricture; or sometimes on withdrawing the catheter a part or all of the wax is left on the proximal side of the stricture. For this reason I have given up the mixed wax and oil and use only the pure beeswax. This is soft enough to get a good impression from stone, yet is firm enough to hang to the catheter and not crush under any ordinary conditions of obstruction.

At times, on failing to get any of the instruments to engage a stricture, I have succeeded in making the first dilatation by using the whalebone filiform searchers (e). Usually the first two or three searchers catch in the muscosa just as the other instruments have done, but after introducing three, four, or five filiforms, we can, by careful manipulation, get one of them through the stricture lumen, when by further manipulation the others will follow.

After dilatation with from two to four filiforms we can withdraw these and pass the renal catheter with the bulb, but it is generally safer to leave one or two of the filiforms as a guide and pass the metal searcher or the flexible catheter alongside the filiforms to engage the stricture lumen before the guides are withdrawn.

Before beginning work with the whalebone filiforms, we should have sterile hands or put on a sterile glove, for these have to be grasped close to the speculum at a portion of the filiform that later enters the bladder or the ureter.

RESULTS OF TREATMENT BY VESICAL APPROACH.

What can we hope for in the simpler nonoperative forms of treatment? In the cases without infection and without much renal disturbance we can look for cure. Such was the result in eight of my cases. The case numbers the duration of symptoms, and the pelvic contents before and after treatment are shown in the following table:

TABLE I.

Case No.	Duration of symptoms.	Pelvis before treatment	Pelvis after treatment.
XV	A few weeks,	30 c. c.	3 yrs. later—15 c. c.
XVII	5 years.	22 c. c.	2 yrs. later— 9 c. c.
XXI	2 months.	15 c. c.	5 mos. later—7.5 c. c.
XXII	5 years before passed ure. stone.	28 c. c.	5 mos. later— 10 c. c.
XXVII	2 years.	30 c. c.	Not seen after three treatments and complete relief of symptoms.
XXVIII	9 years.	15 c. c.	3 yrs. later—Reports no further renal attack—Is pregnant for the third time since treatment.
XXXV	18 months.	22 c. c.	4 mos. later—10 c. c.
XL	3 months.	40 c. c.	Not seen after two treatments.

In certain other cases, even with infection, if the kidney pelvis is not too dilated, we get brilliant results in permanently clearing up the symptoms and the infection through dilatation and lavage. This occurred in five of my cases, two with bilateral stricture and pyelitis.

TABLE II.

Case No.	Duration of symptoms.	Pelvis before treatment.	Pelvis after treatment.
XXIV	11 years.	Bilateral, colon, no dilatation.	Free of pus and bacteria.
XLI	One year or less.	30 c. c. staphylococcus.	Free of pus and cocci. Pelvis contents 8 c.c. six months later.
XLIII	4 months.	Bilateral, colon, no dilatation.	Free of pus and bacteria.
XLVII	Pyelitis one week.	15 c. c.—colon.	Free of pus and bacteria.
XLIX	10 months.	40 c. c.—colon.	Free of pus and bacteria. Pelvis contents 30 c. c. two months later.

In other cases with infection and large pelves we may be unable by lavage to rid the patient of infection probably because of the permanently sacculated pelves, but we may place them in apparent perfect health by doing away with the ureter obstruction, thereby relieving their pain and their toxic symptoms. Case xvi was admitted to the Johns Hopkins Hospital in July, 1912, with repeated chills and a hectic fever ranging as high as 104° F. The right kidney had a capacity of 100 c. c. and yielded a turbid purulent urine. The left kidney held 120 c. c. and was secreting a thick, turbid urine as of a pyonephrosis. Both ureters had two or three infiltrated areas near the bladder, and cultures revealed colon bacillus from either side. After dilating the strictures and washing the kidneys with silver nitrate solution, the patient promptly improved and left the hospital, feeling well and with urine from each kidney showing only microscopic pus and bacteria. This patient has remained in good health, and for the past two years I have seen her only two or three times a year. On November 15, 1915, the patient came at my request and had dilatation of both ureters. The urine was macroscopically clear, but contained microscopic pus and bacteria. The right pelvis took forty c. c. to the point of discomfort and the left took fifty c. c., each side returning forty-five c. c. in a steady stream.

In three of my cases with infection, the patients' symptoms were relieved by treatment, but I have been unable to follow them to learn of the final kidney condition by cystoscopy.

Case xiv with attacks of pain in the kidney for two years, enlarged, inflamed tonsils, and arthritis, had a stricture about three cm. from the bladder, and a kidney pelvis of twelve c. c. capacity, with a staphylococcus infection. After a few dispensary treatments we lost track of her.

Case xxiv had a stone in the bladder with symptoms referable only to this. The x ray picture revealed another small shadow in the left ureter region. On investigation this shadow was found to be outside the ureter, but the ureter had a stricture in the bladder portion and another about four cm. from the bladder. The kidney pelvis held twenty-one c. c. and was infected with colon bacillus. After a few treatments the strictures were well dilated and the pelvis reduced to fourteen c. c. The patient went to her home in North Carolina before the infection was cleared, and a recent letter, almost four years after her treatment, states that she is perfectly well.

Case xlv I saw in August, 1915, when the woman was three months pregnant. She had had the symptoms of a pyelitis for four days. Palpation in the left ureterovesical region revealed a small mass, taken to be a calculus. The left mons ureteris was swollen and red and measured one cm. in diameter, being elevated above the surrounding mucosa 0.5 cm. The metal searcher discovered a grating as of stone or stricture just within the ureter orifice. The metal telephone catheter failed to sound stone. The stricture was dilated first with the three mm. and then with the five mm. metal bulb dilator, the latter splitting the mucosa somewhat and causing bleeding. The kidney pelvis held eighteen c. c. and the urine from the kidney was smoky and turbid, containing pus, blood, and bacteria. Unfortunately a culture was not taken. This patient was a physician's wife, and as her symptoms cleared within two or three days, I have not seen her since. Her labor is due about the last of February and her husband reports that the urine is perfectly normal.

In another group of three cases, each with bilateral infected pyelitis, the end results have been unsatisfactory because of a failure of the patients to persist with treatments after securing enough dilatation to free them from the severe attacks of pyelitis.

TREATMENT BY OPERATION.

If all the methods of vesical approach fail, we must consider operative relief. No form of operation will be undertaken until as complete investigation as possible has been made of both sides. Stricture of the ureter is so often bilateral that we cannot afford to take anything for granted in dealing with these cases.

If investigation shows stricture of but one ureter, and this side associated with a kidney of little or no functional value, conservatism usually calls for extirpation of the injured or dead kidney. This was done in six of my cases with entirely satisfactory results.

If the stricture is high at the junction of the kidney pelvis with the ureter, we may follow Fenger in doing some form of pyeloureteroplasty. Actual stricture at this point is extremely rare and the valvelike obstruction formed by floating kidney can usually be overcome by mere high fixation of the kidney, as I have done in a number of cases with excellent results.

If careful examination at the time of operation leads us to suspect an organic narrowing at the pyeloureteric junction, a pyelotomy and careful dilatation may be done in addition to the kidney fixation, or if the pelvis is very large, a partial pyelectomy may be done, being careful to dilate if the orifice into the ureter is at all narrowed.

If the stricture is lower and about the lumbar or pelvic brim region, it has been recommended to sever above the stricture and implant into the colon or in the loin region.

If the stricture is low and near the bladder, as a vast majority of these strictures are, it has been the custom to implant the severed healthy end into the colon or bladder. I have never made a colon transplantation, as I have but little faith in our ability to make the transplant in a manner to prevent future infection of the kidney.

I am familiar with Coffey's brilliant results on the dog, and with the apparent satisfactory results of his and Mayo's colon transplants in the human subject, but I fear time will not bear out the perfection of these results.

I have done bladder implantation in two of these fifty stricture cases with indifferent or questionable results in both. I say questionable results, because in neither case could I later enter the ureter with a catheter from below. Both patients have been in good health since the implantation, but I suspect there may have formed strictures at the site of the implantation with gradual destruction of the kidney.

I wish to emphasize a method for handling these cases by operation, which I have not seen mentioned in the literature, but which I am sure must have been done by many surgeons and which has probably been described before, viz., the treatment by retrograde dilatation. Certainly every surgeon must follow his ureter stone extractions by dilatation of the usual area of infiltration about the stone.

The ureter is exposed by an extraperitoneal incision, incision is made into its dilated portion above the site of stricture, and increasing sizes of the French gum elastic bougies (see fig. d), or metal sounds are passed until the stricture is dilated to a diameter of from 0.5 to one cm. The ureter incision is then closed with catgut, reinforced, if thought necessary, with silk or linen. A wick drain is usually left in the extraperitoneal incision for forty-eight hours to take care of possible contamination by the escaped urine at the time of operation or of postoperative leakage and the excessive serum secretion following the extraperitoneal operation.

If the dilatation has not been entirely satisfactory, or if there has been much trauma to the ureter, I leave it open, or close it carelessly with catgut to favor urine drainage in case temporary swelling shuts off the traumatized stricture area. In such cases two or three small wicks are dropped to the area of ureter incision and left some days or until there is certainly no urine leakage.

A McBurney incision is suitable in most of these cases, but a semilunar line incision is more useful, for it can be enlarged up or down to suit the exigencies of the case, and through a moderately long semilunar line incision we can easily palpate from kidney pelvis to bladder.

With care we can preserve the intercostal vessels and nerves crossing this incision to the rectus muscle, simply by deflecting and working between them.

I have treated eight cases by this retrograde dilatation, five in which it was impossible to dilate from below, two in which stricture of the ureter was found when stone was being looked for, and one in which ureter stricture had been successfully treated from the vesical approach one year previously, but in which the stricture again swelled shut sufficiently to cause kidney symptoms in the course of an attack of acute gonorrheal salpingitis.

The results in these eight cases treated by retrograde dilatation have been perfect in six, so far as measured by relief of symptoms and ability easily to catheterize later from below. In one case, my first one, in which I was looking for stone and failed to find it, but found the ureter dilated to one cm. diameter from the bladder to the dilated kidney pelvis, I found a dense stricture in the bladder area and dilated it with the uterine sound only, which probably made a diameter of only three mm. I heard, one or two years later, that this patient had acquired symptoms again and had a stone removed from the kidney. I have questioned the accuracy of this report, especially as the patient had the kidney removed at a third operation. It is possible that I overlooked a floating stone temporarily lodged in a kidney calyx, but I think it more likely that the symptoms returned and persisted because the stricture was not sufficiently opened. My x ray had shown a questionable shadow in the kidney region.

The cases least suited for retrograde dilatation are those in which previous testing of the capacity of the kidney pelvis and ureter and pyelography have shown an absence of enlargement of the lumen above the site of stricture. In these cases the ureter is found too small above the stricture to admit large dilators, and if it is at all possible to get by from the vesical approach, we should be satisfied to do as well as possible by this route, although it may require a long and tedious course of treatment.

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CONGENITAL SYPHILIS.

Report of a Remarkable Case,

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Syphilis has been known to the profession as a morbid entity since the time of the siege of Naples by Charles VIII (1494-1495), but it has been only during the past few years that remarkable strides have been made in its diagnosis and treatment, both of which have become comparatively easy in the primary and secondary stages, and in most cases of the tertiary. But the long neglected undiagnosed and untreated congenital syphilitics who present hideous deformities of almost every tissue and organ of the body, are subjects whom many of us are not anxious to treat, and whom we had much rather see go to some one else. But they offer a field for patient work that is usually rewarded with splendid results. Badly damaged organs cannot be made normal, but such organs often can be made to function in a manner consistent with comfort and health, greatly to the patient's relief and the physician's satisfaction.

I report the following case not because there is anything especially unusual about it except its severe nature, but chiefly to impress the fact that patient treatment can do untold good to many of these most miserable of all people.

Case. Lillian W., aged eighteen years, was admitted to Doctor Ashhurst's orthopedic service in the Episcopal Hospital, Philadelphia, August 19, 1913.

Family history: Father died sixteen years ago of heart disease, which was most probably syphilitic, for as Stoll says sudden cardiac death occurring in middle life is almost always syphilitic. (H. F. Stoll, Role of Syphilis in Hypertensive Cardiovascular Disease, *Albany Med. Jour.*, August, 1915). Mother died four years ago of cancer of the stomach (?). The first child lived for two years. This patient was the second child. Five other children followed, but none of them lived more than two days.

Personal history: There was nothing of moment in the patient's personal history, until the age of seven years. Prior to this her health had been good, except for some of the acute exanthemata common to childhood. She was probably a little large for her age. At the age of seven years she accidentally ran a piece of glass into her nose just below the left eye; the glass was removed by a physician. About nine months after this accident her mother noticed that the child's nose was beginning to sink in slightly at the bridge. About three months later, the entire septum had disappeared, thus permitting her nose to lie flat.

At the age of ten years she was four feet nine inches in height. She began menstruating at the age of thirteen years, and this function was regular, occurring every twenty-eight days and lasting two days. During her thirteenth year she became bedridden, owing to the following occurrences: Her right leg in one night became flexed at the knee, and remained in this condition. However, previous to this time, she had had pain in the knee joint, and at times there was a grating in the joint on flexion and extension. About nine months later, she fell and sustained a greenstick fracture of the right leg. Three years later (two years before admission), the left knee became flexed in a manner similar to the right; this occurred during one night also. She stated she had not previously had any pain in the left knee, as she had had in the right. About the same time the right forearm became slightly flexed at the elbow, and she was unable to extend it completely. One year ago, the patient attempted to straighten out the left lower extremity and as a result fractured the femur about its middle. This fracture united with an anterolateral convex deformity (Fig. 1), and one week before admission she refractured it, coming into the hospital with no union. About one year ago the middle of the right forearm became markedly bent, with the convexity on the flexor surface (Fig. 2), the bones forming an angle of about 120°.

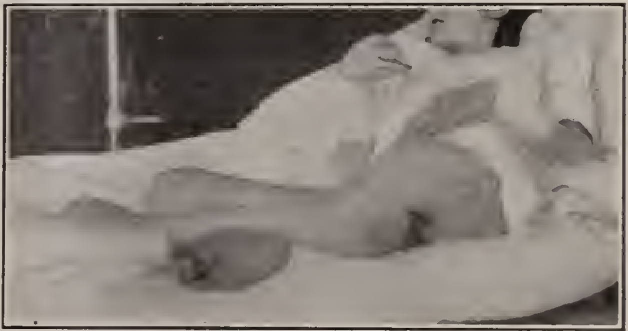

Fig. 1.—Pathological fracture of left femur; note deformity of legs and feet.

For the past five years this girl had not once been removed from a wheel chair. In this she spent her days and slept at night, used the bedpan when necessary, and had the pillows and coverings changed as occasion demanded, but with great difficulty and suffering. She lived with her aunt, all the members of her immediate family having perished from the disease which was the only legacy she had received from them. She spent her life in a little room back of a grocery shop kept by her aunt, and seldom or never saw any outsiders.

On admission the patient was seen to be anemic, had a very pasty appearance, and was exceedingly hypersensitive, emitting the most frightful screams at the slightest attempt to turn her in bed or bathe her. She was entirely unable to move either of her lower extremities, and she had only limited motion in her upper extremities. She had to be fed, and was in every way absolutely helpless. She was an excessively miserable looking creature. She was at this time so repulsive to look at, that one of the resident physicians who went to look at her, as a pathological curiosity, became nauseated at the sight, and that one of the nurses in training actually vomited after getting one good look at her!

Her hair was light in color, and there was no evidence of alopecia. The eyebrows were thin, and there was an entire absence of pubic and axillary hair. The pupils were equal and reacted normally to light and accommodation. Over the left lacrymal duct there was a swelling that apparently contained pus. The bridge of the nose was absent, and the upper part of the alae and the tip of the nose

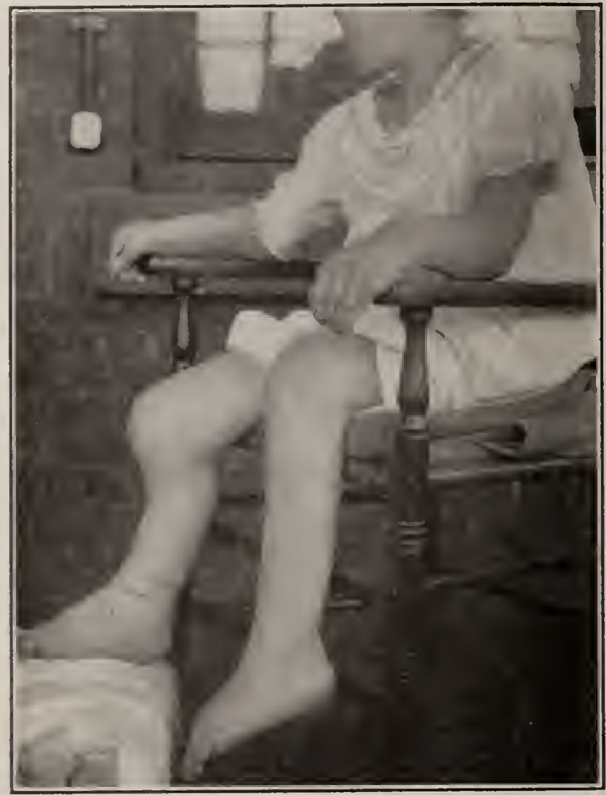

Fig. 2.—Showing deformity of arms and right leg.

had ulcerated away (Fig. 3). A great part of the septum was missing, and the under part of the nasal bone was eroded, together with the soft parts underlying them. There was a continuous mucopurulent discharge from the nose. (Examination of this by Dr. C. Y. White showed no evidence of Treponema pallidum).

The tongue was normal. The teeth were not typically Hutchinson in type; they were normal in size, but the two upper incisors were very loose and movable. The roof of the mouth was normal. The chest was flattened laterally, projecting in front (pigeon breast). Expansion was fair, but the tactile and vocal fremitus were increased over the right chest posteriorly. The heart was apparently normal. The abdomen was slightly protruding, and the liver extended to within about one inch of the umbilicus. The spleen was slightly enlarged.

The muscles about the right shoulder joint were more or less atrophied, but the joint was freely movable. The right forearm was held in acute flexion with elastic resistance to extension. The bones of the forearm were very elastic and weak, scarcely being able to support the weight of the hand. There was marked anterior angularity of the mid forearm, the forearm was very tender, the patient screaming at the least manipulation. The proximal phalanx of each finger presented a marked spindle shaped hypertrophy (typical syphilitic dactylitis; Fig. 4).

The left upper extremity was practically the same as the right, except that there was not so great angularity in the forearm; the deformity suggested an old Colles's fracture. The left lower extremity presented a fracture of the femur about the middle third; the fragments could easily be felt, and their movements seen beneath the skin on the anterior surface of the thigh. The leg, with the lower femoral fragment, was in marked internal rotation on the upper fragment. There was no union. The left knee was in a position of fixed flexion of about 90°. The left leg was very flexible at its lower third, with very little of the tibia present. The dorsal surface of the foot was swollen, and the foot was in a position of marked valgus. The toenails were loose, and pus poured from beneath them.

The right lower extremity presented a flexion at the knee of about 90°. The knee was not ankylosed, but very little movement was possible. The lower third of the leg was very flexible indeed, and the tibia could not be felt at all at this level, and skiagraphs showed its continuity to be lost (Fig. 5). When the calf of the leg was lifted from the bed, the lower third of the leg dropped to a position at right angles with the upper portion. The foot was large and pudgy, and was in considerable equinovarus deformity. The patient sat or reclined in bed (she could not lie down) with the right leg drawn under her and the left knee supported on the right one.

Immediately after her admission a Wassermann reaction was made on the blood serum, and was found to be plus four. She was put on protiodide of mercury and potassium iodide, but these had to be discontinued in about two weeks, owing to soreness of her gums. Scrupulous cleanliness was observed, and she was given a special diet of the most appetizing food. She was regularly given general massage, and was kept on the porch day and night in all weathers.

On August 13, 1913, the patient was given 0.4 gram of neosalvarsan, which caused nausea for four or five hours. Her thighs were gradually separated by interposition of pillows. On September 20, 1913, she received another injection of 0.4 gram of neosalvarsan; this was followed by no reaction. The abscess of the lacrymal duct was incised and dressed.

Injections of neosalvarsan were continued about every two weeks, and by October 10th the patient seemed to be improved in many ways. Her color was much better. Her teeth were not so loose. Both forearms had a much wider range of motion. The bones of the forearms and legs seemed to be thickening; they were certainly much stronger, and she could be moved about in bed without exciting such great pain. The sinus in the lacrymal duct did not improve very much under repeated dressings, and the purulent exudate from beneath the toe nails did not improve. By October 20, 1914, the discharge about the toes had ceased and the patient could lift

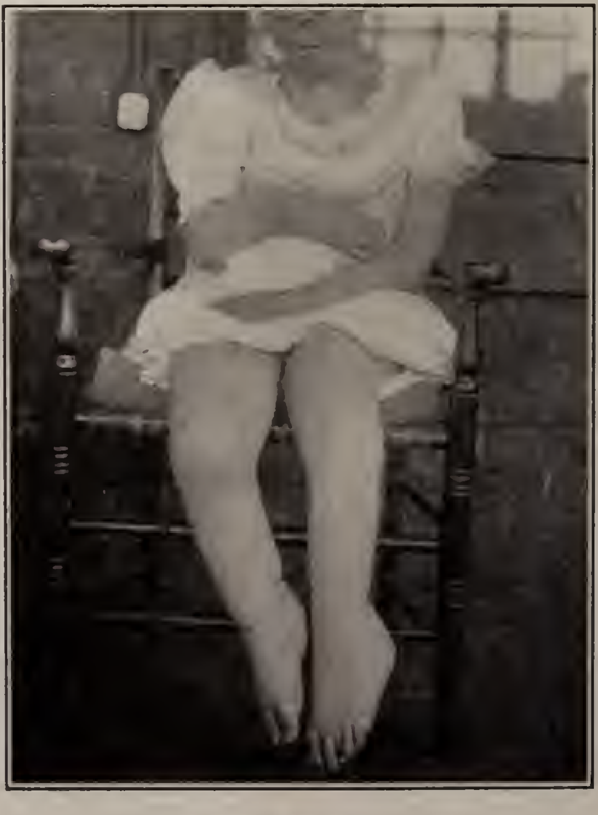

Fig. 3.—Erosion of alæ and lip of nose.

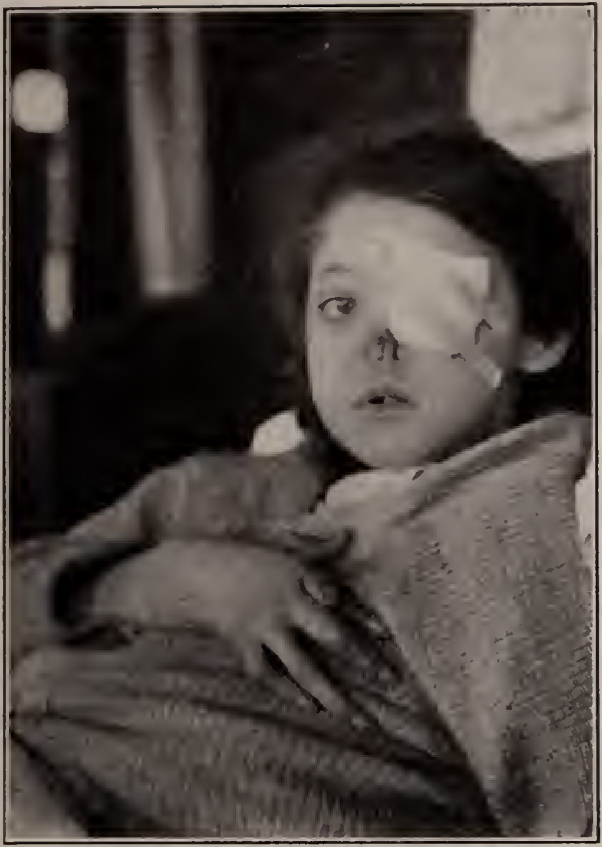

Fig. 4.—Typical syphilitic dactylitis.

up her entire right lower extremity without pain.

By November 13, 1913, the ulceration of the left eye had almost healed. An adhesive plaster extension apparatus was attached to the left knee, and weights were hung to it over the side of the bed, in an effort to produce abduction of the left thigh. The girl was now able to feed herself. On November 17, 1913, we saw that the extension on the left knee had produced marked lessening in the adduction. The patient was now given one grain of salicylate of mercury in oil, intramuscularly every two weeks. She could flex and extend the right leg on the thigh, but could not extend it beyond a right angle. She was evidently gaining in weight. Her appetite was fair, and she did not complain of pain while she was being bathed and moved about in bed. She continued to give a plus four serum Wassermann.

November 20, 1913, the right lower extremity is put on a right angle splint, like a double inclined plane, and this is held perpendicular to the bed; but attempts to extend the leg on the thigh beyond a right angle produced a marked bend of the leg a few inches below the knee instead of extending the knee joint (Fig. 2). November 23, 1913, the splint to the right lower extremity holds the leg in very good position, correcting the bend below the knee. The left thigh has now been abducted until it lies in the long axis of the body. November 30, 1913, there is some soreness of the gums and some abdominal pain, so the mercury injections have to be discontinued for the time being.

January 1, 1914, the mercury salicylate has been given again for some time without ill effects. The patient's general appearance has been greatly improved. The ulcerating area at the inner angle of the left eye has healed. The right knee can now be extended to 105° (15° more than a right angle). January 20, 1914, the patient was placed in a chair with her feet in another chair today. She sat up for several hours in perfect comfort.

March 17, 1914, the luetin test was done two days ago by Dr. J. V. Klauder. Today it shows an area of erythema about two cm. in diameter, a markedly inflamed papule at its centre, with slight induration surrounding it. She is now given one grain of mercury salicylate intramuscularly every two or three weeks. At times the intervals have to be lengthened owing to soreness of the gums. The Wassermann blood serum reaction continues to be plus four. June 5, 1914, the patient sits in a chair all day now and seems to be feeling perfectly well. Braces were applied to her forearms today in the hope that they might be somewhat straightened. July 8, 1914, the general condition is greatly improved. The patient is discharged and referred to the orthopedic dispensary for further treatment. She is instructed to continue her mixed treatment as in the hospital, returning at suitable intervals for the mercury injections.

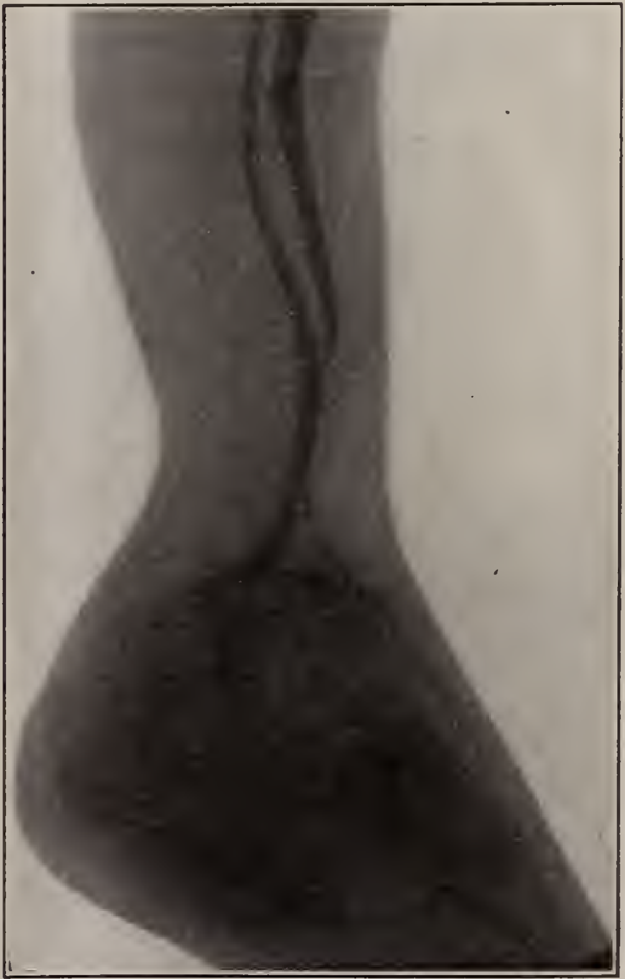

Fig. 5.—Right leg; extreme bone atrophy, occurring in hereditary syphilis; the continuity of the tibia is lost, that of the fibula preserved.

January 7, 1915, the patient is readmitted to the hospital. The sinus below the inner canthus of her left eye has opened again. She is now able to get in and out of her wheel chair and into and out of bed alone, but she cannot stand, even with support. She has no pain in any of her joints. While at home she tried to stand and fell, breaking her right leg above the ankle; she kept it on a splint for three weeks, when it had apparently united firmly. (This is the leg in which the tibia had become so atrophied that at one portion it did not cast any shadow in the x ray Fig 5, made August 20, 1913). She can use her hands almost as well as a normal person; she sews, embroiders, and writes a legible hand. She can extend her right elbow to 125° and flex it to 35°. The right forearm at the middle shows an anterior angularity of 130°. Wrist motion is nearly normal. The left elbow can be extended to 135° and flexed to 35°. There is subluxation forward of the left wrist, with some thickening of the lower end of the radius and deviation of the hand to the ulnar side. Rotation in each forearm is about half normal. The fingers are nearly normal.

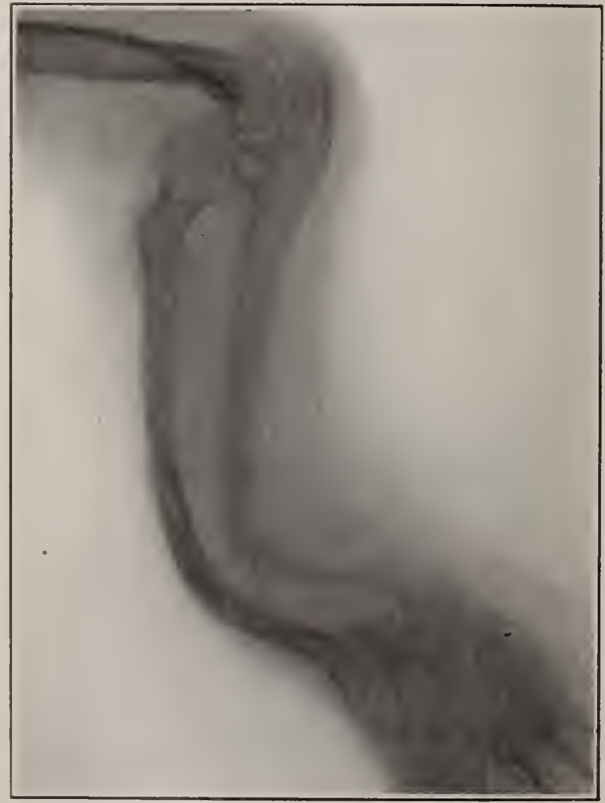

FIG. 6.—Atrophy and deformity of right radius and ulna.

The patient can extend her right knee to 135° and flex it to 35°. The bones of the right leg are bent backward in the upper third to an angle of 140°, with the apex on the calf surface. The tibia and fibula are tender above the ankle (site of the recent fracture). The right foot is in a position of equinovarus. The ankle can be flexed to 120° and extended to 130°. The foot is large and pudgy. The toes are nearly normal. The left knee can be extended to 120° and flexed to 85°. The left leg is straight. The foot is in considerable valgus deformity. The flexion in the ankle joint is 90° and extension to 105°. The liver and spleen seem smaller than when she first came under treatment sixteen months ago.

On readmission to the hospital she continued her old treatment of one grain of mercury salicylate intramuscularly every two weeks, with potassium iodide in increasing doses until iodism, then discontinuing for two or three weeks. January 30, 1915, the Wassermann serum reaction was plus 2; on March 10, 1915, plus 2.

On April 28, 1915, Doctor Ashhurst performed manual osteoclasis of the right radius and ulna, under gas-oxygen anesthesia. Union was fair and position good by the middle of June, when she was discharged for another vacation.

On October 20, 1915, the patient was readmitted to the hospital, for the purpose of osteoclasis of the left forearm, which was done by Doctor Ashhurst. Union and position were good.

January 23, 1916, the patient, who has been home since the last operation, writes, asking to be readmitted, and inquiring about operations on her lower extremities, and for the formation of a nose.

While we have not obtained either an anatomical or laboratory cure in this case, still our results have been gratifying and have well repaid us for our efforts. In less than two years this breathing piece of pathology has been changed, by rather simple treatment, from a miserable, loathsome, deformed, ulcerating, hypersensitive screaming wretch to a much less deformed, happy, fairly healthy person, who can use her mind and her hands in various methods of interesting and profitable work. The most interesting part of the surgical work required could not be done until this stage was reached. It now remains to overcome the deformities of the lower limbs by a series of more or less complicated operations, to teach her to walk, and to form a new nose. Her own changed attitude to life is evidenced by the fact that when she came under treatment first, she said the absence of her nose was "the least of her troubles." Now she regards it as almost the greatest.

INTRADURAL NERVE ANASTOMOSIS IN SELECTED CASES OF POLIOMYELITIC PARALYSIS.

A Preliminary Report.

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Acute anterior poliomyelitis, a disease of childhood, attacks the motor cells in the anterior horns of the cord, more frequently those supplying the leg. Many of the cells so attacked later return to normal, while others are destroyed, with consequent atrophy of their nerve roots and permanent paralysis of the muscles they control. The object of this operation is to secure restoration of function to the paralyzed muscles by intradural anastomosis of a nerve root whose motor cells are active, to a paralyzed nerve root. Naturally the live roots selected must be those whose normal function can be dispensed with, such as the twelfth dorsal, or first and second lumbar roots which supply muscles of the trunk having other nerve supply.

This operation is somewhat similar to nerve suturing in brachial plexus palsy resulting from injury during birth, where operation often results in a useful arm; it possesses this advantage, however, that in intradural root anastomosis there is not the preëxisting scar tissue that is found in brachial plexus palsy, which tends to hinder nerve regeneration, with later formation of adhesions and scar tissue. There are many cases in which the paralysis in one or both legs following acute anterior poliomyelitis is so complete that little, if any improvement can be obtained by orthopedic methods. When the extremity is almost, or completely paralyzed, tendon transplantation cannot be used, and only braces are of value. Though they enable the child to stand and in some cases to get about with the aid of crutches, braces do not correct the lack of growth in the limb due to the nerve paralysis, and as the child grows older the difficulty in walking is increased. Naturally, the ideal procedure in these cases would have for its object the restoration of nerve continuity with consequent normal function of the paralyzed muscles. This has frequently been attempted in cases of anterior poliomyelitis by anastomosis of the peripheral nerves in the affected extremity, though with but little, if any success. The chief cause of failure is that the "live" peripheral nerves available for anastomosis are only near normal, for they carry many diseased fibres, owing to the complex anastomosis of the roots in the lumbarsacral plexus.

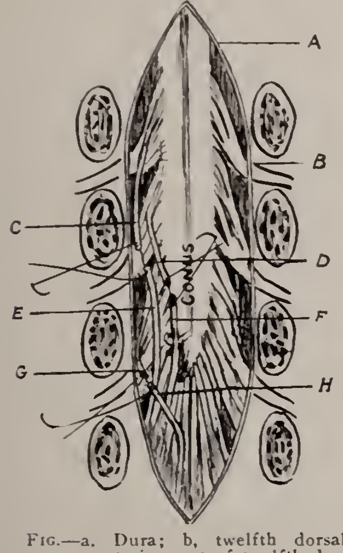

Fig.—a. Dura; b, twelfth dorsal nerve; c, anterior root of twelfth dorsal; d, anterior root of first lumbar; e, anterior root of fourth lumbar; f, anterior root of second sacral; g, anterior root of second lumbar; h, anterior root of fourth sacral.

In 1907, Basil Kilvington conducted upon animals a series of experiments in nerve anastomosis in the spinal canal. He joined the central end of the seventh lumbar nerve in the dog to the distal portions of the second and third sacral nerves, which control the bladder, and several months later stimulation of the seventh lumbar nerve caused expulsion of the bladder contents, demonstrating the efficiency of nerve anastomosis and the renewal of nerve function. The nerve suturing was done in the spinal canal, but extradurally. Kilvington's experiments had for their object the relief of bladder paralysis in traumatic cases.

In 1912, Frazier and Mills reported suturing the first lumbar root to the third sacral of one side intradurally in a case of traumatic bladder paralysis, with fair results. Had the nerve crossing been done upon the other side also, the result would doubtless have been better.

For the past two years the writer has carried out a series of experiments upon animals in nerve anastomosis in the spinal canal, with the object of caudal root anastomosis in marked cases of paralysis of a lower extremity, following poliomyelitis. The results of these experiments will be given when a later report of the following three cases is made. Of course, no results of nerve regeneration are to be expected until a period of at least six months has elapsed since operation.

These three cases, which were operated in, in conjunction with Dr. William Sharpe, are reported at this early date for two reasons: 1. The results of previous experiments, and of the writer's own experiments on animals are such as to promise well for restoration, at least partial, of function; 2, as the individual surgeon sees but a few patients with the extensive paralysis of the legs suitable for this operation, this report may arouse the interest of other neurological surgeons in these otherwise hopeless cases. The operation of intradural nerve anastomosis of the cauda equina roots is not more formidable than the frequently performed operation of laminectomy with opening of the dura. Beyond rigid asepsis and a carefully worked out technic the greatest requirement is patience and knowledge of the anatomy of the cauda equina and the arrangement of the nerve roots.

Case I. F. S., male child, aged five years, normal and healthy until eighteen months old, when he had poliomyelitis, causing paralysis of both legs. Was taken to Rockefeller Institute and at the end of six weeks could use the left leg normally, but there was no improvement in the right leg, and complete paralysis of that leg has persisted to the present time.

Status: Complete paralysis of right leg below groin. Reflexes absent. Atrophy of thigh and calf, more marked in calf. No contractures. Sensation normal. Reflexes, motion, and strength normal in left leg. Child was well nourished and well developed, except for atrophy of right leg. Electrical reactions: a. c. c. greater than c. c. c.

Operation: First stage, February 16, 1916, laminectomy—a four inch median incision was made and the spinous processes and laminæ of twelfth dorsal and first, second, and third lumbar vertebræ were removed, exposing the dura. Wound closed with catgut and silk.

Second stage, March 3, 1916, wound reopened and dura and arachnoid incised. The right twelfth dorsal anterior root was isolated, cut near its passage through dura, and united by a single fine silk suture to the fourth lumbar right anterior root, which was severed near the conus. In a similar manner the first and second lumbar right anterior roots were united to the first and second sacral anterior roots, respectively. Dura was closed with silk, muscles with catgut, and skin with silk. No drain.

Convalescence uneventful, and child left hospital, March 31st, in good condition.

Case II. J. V. H., male, aged sixteen years; child was healthy until fourteen months old, when he was attacked by poliomyelitis, and was ill two weeks. After a few weeks, he was normal again, except for a complete flaccid paralysis of left leg. After a year's lapse, he could feebly and slightly flex knee and ankle and move toes slightly. No further improvement occurred.

Status: Well nourished and well developed boy. Flaccid paralysis of left leg with absent knee and ankle jerks. Sensation unimpaired. Though there was feeble motion at knee and ankle, leg was practically completely paralyzed as far as use was concerned. Electrical reactions in paralyzed muscles: a. c. c. greater than c. c. c.

Operation, first stage, March 10, 1916, laminectomy—median incision and removal of spinous processes and laminæ of the twelfth dorsal, first and second lumbar vertebræ, a matter of some difficulty in this case, because of the thick and highly arched laminæ. Because of free bleeding from retrodural vessels, it was necessary to divide the operation into two stages. Wound closed with catgut and silk. Second stage, suture of roots, March 20, 1916; wound reopened and dura incised. The left twelfth dorsal anterior root, which was accompanied by a large vein was isolated, severed, as in Case 1, and united to the left fourth lumbar anterior root. The left first lumbar anterior root was likewise sutured to the left second sacral anterior root. Wound closed in usual manner.

Convalescence uninterrupted, and boy left hospital April 6, 1916, in good condition.

Case III. G. R., female, aged six years; normal child, until two years old, when she had an attack of vomiting with fever and next day both legs were paralyzed completely, and the trunk muscles also involved, but to a less extent. In the following months the paralysis of the trunk disappeared entirely, the right leg slightly recovered, but the left leg remained completely paralyzed.

Status: Well nourished and developed child. Marked flaccid paralysis of right leg, being able to move knee and ankle feebly and to extend toes weakly. Complete flaccid paralysis of left leg. Reflexes absent in both legs. Sensation normal. Had had the usual treatment by massage and electricity. Had worn braces for some time, and with a crutch was able to get about a little, but with difficulty. Electrical reactions: a. c. c. greater than c. c. c.

Operation, first stage, March 13, 1916, laminectomy—median incision and removal of spinous processes and laminæ of twelfth dorsal, first and second lumbar vertebræ and dura widely exposed. Closure of wound by catgut and silk.

Second stage, March 24, 1916, suture of roots. Wound reopened and dura incised. The twelfth dorsal anterior root of left side was isolated, severed, and sutured to left fourth lumbar anterior root, and likewise the first and second lumbar anterior roots of left side were united to the first and second sacral left anterior roots, respectively. Dura closed with silk, some extradural bleeding requiring packing, which was removed when skin sutures were inserted. Convalescence was uneventful and child left hospital April 11, 1916, in good general condition.

Though those three cases were operated in in two stages, the writer believes that the one stage operation is perfectly feasible and that improvement in technic and team work will make it possible to complete the operation at one session.

315 West Ninety-seventh Street.

THE CONTENTS OF OVARIAN CYSTS.*

A Preliminary Report upon Their Toxicity,

By J. T. Leary, M. S.,
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Philadelphia,
and Philip B. Hawk, Ph. D.,
Philadelphia.

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Several investigators have made interesting chemical studies of the contents of ovarian cysts, chiefly of the multiple cyst adenoma, or the proliferating variety. These cysts have a content of variable composition. They contain a mucous secretion, clear and transparent, or turbid from cell debris and blood. A large amount of blood admixture may give the fluid a chocolate color. The flocculent particles frequently seen in the cyst contents are made up of cell debris, cholesterol, blood corpuscles, and fat droplets. The pseudomucinous are by far the most common of the large ovarian cysts; several are on record weighing over 200 pounds. The contents of these proliferating cysts have a variable composition, but are generally characterized by the slimy or ropy consistence, the grayish yellow, or chocolate color, and the relatively high specific gravity, 1.015 to 1.025.

Scherer (1) discovered protein substances in ovarian cysts and named them metalbumin and paralbumin. He considered the former an albuminous body; but later investigations by Hammarsten (2) proved these substances to be pseudomucin. Hammarsten considers colloid and pseudomucin (metalbumin and paralbumin) to be characteristic constituents of these cysts. Pfannenstiel (3) designates the colloid as β-pseudomucin. This colloid is a gelatinous substance, insoluble in water and acetic acid and soluble in alkalies. It is not precipitated by acetic acid and potassium ferrocyanide. Colloid is very closely related to mucin and is considered by some as a modified mucin.

Pseudomucin gives the typical ropy appearance to contents of ovarian cysts. Hammarsten gives the following composition for pseudomucin: Carbon 49.75, hydrogen 6.98, nitrogen 10.28, sulphur 1.25, oxygen 31.74 per cent. This body like mucin gives a reducing substance (glucosamine) when boiled with acids. With water pseudomucin gives a slimy, ropy solution; it does not coagulate on boiling, but only becomes milky or opalescent. Unlike mucin, pseudomucin solutions are not precipitated by acetic acid.

Mitjukoff (4) isolated from the colloid contents of an ovarian cyst a substance called paramucin which differs from pseudomucin in that it reduces Fehling's solution before boiling with acid.

Other chemical studies on contents of ovarian cysts have been made by Fr. Müller (5) and Neuberg and Heymann (6), who have shown that glucosamine is the only carbohydrate regularly found in these structures. The presence of chondroitin sulphuric acid has also been reported.

Otori (7) has made extensive studies on the hydrolytic cleavage products of pseudomucins obtained from ovarian cysts. Beside the carbohydrate derivative of levulinic acid and humous substances, he names the following: Leucin, tyrosin, glycocoll, aspartic acid, glutamic acid, valerianic acid, arginin, lysin, and guanidin. Pregl (8) failed to find glycocoll, but reports alanin, prolin, phenylalanin, and tryptophan among the hydrolysis products.

Other protein bodies found in cystic fluids are mentioned by Hammarsten as seroglobulin and seralbumin, and peptone, mucin, and mucin peptone. Fibrin occurs only in exceptional cases. The quantity of mineral bodies on an average amounts to about one per cent. The amount of extractive bodies (cholesterol and urea) and fat is ordinarily 0.2-0.4 per cent. The remaining solids, which constitute the chief mass, are protein bodies and pseudomucin.

Auché and Chavannas (9) have contributed further notes on the experimental study of intraperitoneal injections of contents of ovarian cysts and their effects on the organs of the rabbit so injected. They made exhaustive study of this phase of the subject.

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* Read before the Philadelphia Pathological Society, March 23, 1916.

The object of this work was to ascertain whether any of the several varieties of ovarian cysts contained toxic substances, and if so the isolation and identification of these substances. Accompanying this study an analysis of the chemical constituents of the cysts was also made whenever the contained fluid seemed of sufficient interest. Bacteriological studies were made upon the contents of each cyst. Several varieties of cysts were studied, namely: Three multiple proliferating cyst adenomata, one papillary proliferating cyst, one multiple follicular cyst, one simple cyst of ovary.[1]

The study of the toxicity of the cyst contents was made by the intraperitoneal injection of ten c. c. of the contents into guineapigs, the effect upon the experimental animals being judged by the subsequent weight and temperature. Glycerol bouillon, gelatin and glucose, glycerol agar, were used in the bacteriological studies. The chemical examination consisted, as a rule, in the identification of the protein contents of the cystic fluid.

Cyst I (laboratory No. 7799) was removed from a patient, M. B., fifty years of age; nativity, American, white. Widow, telephone operator. She gave the following history: Did not recall having been sick until the present illness. Married at sixteen years of age, had four normal labors and two abortions. For eight years had prolapsus of uterus, necessitating the use of a pessary. Operation performed in Jefferson Hospital by Dr. P. B. Bland for cystocele and rectocele. Abdomen was opened in midline and a large ovarian cyst of left side and smaller ovarian cyst of right side were removed. Patient made good recovery. The laboratory report was as follows: Specimen consisted of two parts, the larger weighed 3 kilos and measured 23 by 15 by 14 cm., was an unilocular cyst with thin translucent walls with a gray and glistening surface. The tube was elongated and showed no other gross change. The second part of specimen was an ovarian cyst, 5 cm. in diameter, portion of ovary forming cyst wall. The tube showed no gross change. One section of second cyst wall was fixed in formalin. The microscope showed the section to be a thick and dense fibrous tissue cyst wall without epithelial covering. The diagnosis of the specimen that was also studied chemically was multiple cyst adenoma of ovary. The chemical examination of the smaller cyst showed contents about 50 c. c. of a clear serous fluid. Two animals were injected and plates poured.

	I	II		I	II		I	II
Agar colonies,	0	0	Gel.,	0	0	Boullion,	0	0

Both animals were down to original weight on following day and showed no rise in temperature.

Cyst II (laboratory No. 7724). Removed from a patient, K. K., forty years of age, white, married, nativity Greek, housewife. The patient was admitted to the hospital with the following history: For past year noticed an enlarging mass in lower abdomen, which she thought might be due to pregnancy, but during this entire time she had irregular uterine bleeding. Examination revealed a large mass in lower abdomen, extending above umbilicus, more marked on left side. Operation in Jefferson Hospital, February 14, 1914, by Dr. J. M. Fisher. The abdomen was opened and a large ovarian cyst was removed by ligating and cutting through narrow pedicle. Patient made a good recovery. The following report was rendered by the laboratory: Specimen weighed 2.5 kilos, measured 23 by 18 by 12 cm. Surface was pearly gray, capsule was thin, contents thick fluid. The mass was irregularly globular, had several smaller lobulations separated by shallow grooves. The tube was spread out over cyst and measured 15 cm. in length. Three sections were fixed in formalin. The microscope revealed multiple cysts with thin septa separating them. Some of the spaces were bordered by cuboidal epithelial cells, others had a fibrous wall. The contents of the cyst was a granular or mucoid material and some desquamated cells. Diagnosis: Multilocular ovarian cyst. The chemical examination showed the cyst to be formed of four cavities. The largest cavity contained a thick opaque, slimy fluid of specific gravity 0.014. Smaller cavities contained a similar fluid of greater concentration. Specific gravity 1.045. A guineapig was injected with ten c. c. of the fluid of the larger and smaller cavities. Bacteriological studies were run on the contents of the largest nd on one of the smaller.

	I	II		I	II		I	II
Agar colonies,	0	0	Gelatin,	0	0	Bouillon,	0	0
			Smaller.					
	—	—		—	—		—	—

The pigs showed no ill effect subsequent to the injection, being down to the original weight upon the following day. No rise of temperature was noted in either case. The weight of the pigs increased steadily daily.

The cystic contents were of a sticky, ropy, mucilaginous nature. It gave no precipitate with acetic acid. Upon dilution with water and the subsequent addition of a little acetic acid, a slight precipitate was obtained, which was readily soluble upon the addition of a few drops of ten per cent. sodium chloride, as well as in a slight excess of the dilute acid and in dilute alkali.

When the original fluid was boiled, diluted, and acetic acid added, it turned milky, but no flocking out occurred. Upon coagulation after the addition of two volumes of five per cent. sodium chloride, flocking out occurred and the filtrate obtained from this was slightly turbid, analogous to a weak solution of glycogen. Tests for glycogen were negative. This filtrate was concentrated greatly, precipitated with large excess of alcohol. The resulting precipitate, which gave the protein color reactions, was hydrolyzed, giving a substance which reduced Fehling's solution.

Salting out experiments. The original cystic contents gave no precipitate on saturating with sodium chloride in substance. The acidification of this solution with acetic acid called forth a copious precipitate, which was soluble in water. The fluid treated with an equal volume of saturated ammonium sulphate solution gave a very slimy, mucilaginous, gummy precipitate. The filtrate from this precipitation was watery, the fluid being deprived entirely of its viscidity by the removal of the globulin precipitated by half saturation with ammonium sulphate. Complete saturation of this filtrate gave but a slight precipitate, as did the addition of a large volume of alcohol. The protein obtained by half saturation with ammonium sulphate and by coagulation gave no reducing substance upon hydrolysis. A reducing substance was obtained only from the hydrolysis of the substance, not precipitated by half saturation with ammonium sulphate, but precipitated by alcohol. This gave a characteristic dextrosazone.

ANALYSIS (PARTS PER 1,000).

	Contents of large cavity.	Contents of smaller cavity.
H_2O	955	852
Total solids	45	148
Ash	9.4	16

The substance, not coagulated by heat but precipitated by alcohol, and which represented but a trace of the entire protein content, gave all the protein color tests, was insoluble in water, soluble in dilute alkalies, from which it was not precipitated upon the addition of acid.

Cyst III (laboratory No. 7733) occurred in patient, H. C. twenty-three years of age, white, married, housewife, born in United States. The patient was admitted to Jefferson Hospital with a history of delayed menstruation of one week's duration and with bleeding from vagina for eighteen days. There was tenderness over right lower quadrant of abdomen. The operation, performed by Professor E. E. Montgomery, revealed a right sided ruptured ectopic gestation sac and a left ovarian cyst. The patient made an uneventful recovery.

The specimen, as described by the laboratory report, consisted of three parts. One was a tube which measured 12 cm. in length and at its widest portion 3 cm. in diameter.

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[1] The authors are under obligations to Dr. P. B. Bland, for suggestions.

At junction of outer and middle thirds there was a rupture in tubal wall one cm. in diameter. Second part of specimen was a mass of clotted blood. Third part was a cyst measuring 10 by 8 by 8 cm. The capsule was thin and contents a thin watery fluid. Part of ovary was spread out over the capsule. Diagnosis: Simple ovarian cyst, chronic catarrhal salpingitis, ruptured tubal gestation sac.

The chemical analysis showed the cyst to contain 125 c. c. of serous fluid. Injection into animals showed no symptoms after injection.

BACTERIOLOGICAL STUDIES.

	I	II		I	II		I	II
Agar colonies,	—	—	Gel.,	—	—	Bouillon,	—	—
	0	0		0	0		0	0

Cyst IV (laboratory No. 7748) was removed from patient, A. H., twenty-five years of age, married, white, American. The patient complained of pain in right inguinal region for several months prior to admission to St. Agnes Hospital. Operation performed by Dr. H. J. Hartz. Through a median abdominal incision, cyst of right ovary with associated tube was removed. Patient made good recovery. The laboratory report described the specimen to weigh 200 grams. The ovary was taken up by a cyst which measured 6 cm. in diameter, with the capsule of moderate thickness. The tubal walls were thin and spread out over cyst. Incision showed cyst to be formed of several compartments, some containing blood intermixed with cyst contents. Microscopical sections revealed small follicular cysts and forming part of the smooth wall of a larger cyst. Diagnosis: Multilocular ovarian cyst. The chemical analysis showed contents of fifteen c. c. of a bloody fluid. Three c. c. of the contents were injected into each of two guineapigs, which showed no reaction.

	I	II		I	II		I	II
Agar colonies,	—	—	Gel.,	—	—	Bouillon,	—	—
	0	0		0	0		0	0

Cyst V (laboratory No. 7765). The patient, A. F., thirty-seven years of age, married, housewife, white, born in England, was admitted to Jefferson Hospital, complaining of irregular pains in lower abdomen of seven years' duration; the pain more pronounced during menstruation. Operation by Dr. P. B. Bland for relaxed pelvic floor and repair of cervix. Abdomen was opened and small cyst and appendix removed. The pathological report described specimen as a globular cyst, 6 cm. in diameter. The surface was of a glistening gray color; thin walls with mottling with dark areas beneath surface contained numerous small cysts. The microscope showed sections of ovary with a moderate increase of connective tissue and numerous small smooth walled cysts, some of them lined by flattened epithelium. Diagnosis: Multiple follicular cyst of ovary. The chemical analysis showed the small unilocular cyst containing about 75 c. c. of serous fluid. Guineapigs showed no rise in temperature and no loss of weight.

BACTERIOLOGICAL STUDIES.

	I	II		I	II		I	II
Agar colonies,	—	—	Gel.,	—	—	Bouillon,	—	—
	0	0		0	0		0	0

Cyst VI (laboratory No. 7774) occurred in patient, C. A., thirty years of age, who was admitted to Jefferson Hospital, complaining of increasing pain of one month's duration in lower left abdomen. For past week the pain was quite severe. The operation, performed by Dr. P. B. Bland, consisted in removal of a large ovarian cyst; patient making a good recovery. The laboratory described the specimen as weighing 4 kilos, 800 grams; measures 30 by 22 by 20 cm. The surface was embossed by numerous variously sized elevations. Beneath capsule were numerous small cysts. Incision into mass showed one large sac containing an opaque thick fluid; the lining was roughened in places and showed a few nodulations which were spongy and contained a thick whitish gray gelatinlike fluid. Several smaller cysts of same character as above described sac comprised the mass. Microscopical sections showed a succession of cysts lined by columnar epithelium. Some were separated by thin bands of connective tissue, others by broad masses containing gland structures. In many of the cysts were papillary projections, mainly small. The cysts contained pale staining, slight granular material, and desquamated cells of ovary. Diagnosis: Papillary cystadenoma of ovary.

The chemical analysis showed the large multilocular cyst containing 3,400 c. c. of a very opaque viscid fluid, specific gravity 1.018. The injected guineapigs showed no subsequent effects of the infection. No rise of temperature was noted, and the original weight was reestablished upon ensuing day.

BACTERIOLOGICAL STUDIES.

	I	II		I	II		I	II
Agar colonies,	—	—	Gel.,	—	—	Bouillon,	—	—
	0	0		0	0		0	0

Staphylococcus albus colonies were present upon one plate—undoubtedly a contamination.

Chemical examination. Coagulated protein, filtered, evaporated filtrate, precipitated a small amount of protein substance with large excess of alcohol. The contained protein substance gave a very faint opalescence to the filtrate. The substance precipitated by alcohol gave a reducing substance upon hydrolysis.

CONCLUSIONS.

The contents of the different cysts were found to be sterile in each case.

The cysts examined showed no toxicity, regardless of the nature of their contents. No rise of temperature nor loss in weight was noted in any guineapig after injection. The animals were killed about twelve weeks after injection, and no lesions could be determined macroscopically.

In two cases the physical nature of the contents was mucilaginous in the extreme, having the physical appearance of a mucin substance. That this property was due to the globulin content and not to a mucin substance was shown by the precipitation properties and coagulability of the substance in question accompanied by the lack of viscosity in the resulting filtrates. A slight amount of pseudomucin was obtained in each case, but the trace present could in no way account for the physical characteristics of the contents.

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DEMENTIA PRÆCOX.*

The Condition in the Light of Modern Conception,

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Of all chronic mental diseases, dementia præcox forms one of the most important types, and indeed it embraces a high constituent of the entire insane population. Because of its relative frequency and poor prognostication dementia præcox has become an object of careful study and inquiry, and neither time nor effort has been spared in attempting to establish the underlying pathogenesis of this affection. Various scientific activities have been undertaken by different investigators from many departments of medical sciences to solve this intricate and difficult problem. For instance, biochemical studies have so far given no satisfactory explanation for this peculiar abnormal mental condition. Likewise observation along the lines of internal secretion have proved unsuccessful. In this connection it is interesting to call attention to the fact that Abderhalden's researches have shed no light upon the true nature and genesis of dementia præcox. Persistent psychological investigations and anatomical studies have been carried on with great vigor, but with only partial success. It would be important to discuss briefly two important views.

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*Read before the Eastern Medical Society, March 10, 1916.

According to Kraepelin, dementia præcox is of an organic nature. Moreover, he goes so far as to maintain that the psychotic manifestations can be correlated with disturbance of the functional areas in the brain. In the last edition of his book, *Psychiatrie,* he attempts to outline the anatomicopathological picture. He finds that the lesion is invariably in the second and third layers of the cerebral cortex. Furthermore, the usual site of predilection is in the region of the frontal lobes, central convolution, and temporal lobes. He describes cases in which sclerosis of the nerve cells, formation of lipoid substances in the reticular connective tissue, and increase of glia tissue were found. In fact, he differentiates two anatomical groups. The first is characterized by cell alteration, formation of disintegrating substances, and hyperplasia of glia, especially with the appearance of ameboid glia cells. In the second type we find destruction of cells and fibres, necrosis and retrogressive manifestations of nervous tissue and glia with formation of fat and pigment.

On the strength of these pathological findings in a few isolated cases, Kraepelin attempts to give anatomical localization for various symptoms in dementia præcox. For instance, the motor and volitional disturbances he places in the region of the anterior central convolution. Incoherence of speech with formation of new words and auditory hallucinations he ascribes to the temporal lobes. In dementia præcox judgment and critical judgment, creative energy, especially the ability for higher appreciation of knowledge and understanding are impaired, and for these symptoms the small celled layers of the frontal lobes are said to be responsible.

Another invaluable conception of the genesis and nature of dementia præcox is advanced by Bleuler, which is worthy of our careful and thoughtful consideration. This observer emphasizes both the constitutional and psychogenic factors. The former expresses itself in primary symptoms which are association disturbances in the trend of thought, stuporous states, acute episodes of depression and elation, and some somatic abnormalities, such as inequality of pupils, tremors, and vasomotor disturbances. Bleuler admits, however, that the pathological foundation of the constitutional disorder is not well defined, but he vaguely hints at the idea of faulty metabolism and the possibility of an organic condition. One point must be borne in mind—that he admits a certain diathesis in dementia præcox which in this country has been fully accentuated and defined by such careful observers as Meyer and Hoch. According to these investigators, dementia præcox develops in a peculiar type of personality which is termed "shut in." Such a mental makeup can be demonstrated in a large majority of cases, particularly where the anamnestic data are reliable.

The active psychotic manifestations which Bleuler calls secondary symptoms are as a rule controlled by definite psychological factors. For instance, a patient reacts to auditory hallucinations telling her that her illegitimate son is a Messiah, or another imagines herself to be the queen of the world because she was born of a family from which usually kings originate and that King Edward is her great-grandfather, or again another is imbued with the idea that she is the object of incessant persecutions and annoyances because a certain prominent politician whose actual acquaintance she has never made, is desirous of marrying her. Such cases illustrate pretty conclusively that somatic factors alone are not sufficient to bring forth such psychological phenomena, but are indeed traceable to a certain mental undercurrent in the unconscious.

In this country, Professor Adolf Meyer laid considerable stress on the psychic factors in dementia præcox and maintained that "habit disorganization" is an important feature in the production of this mental disorder.

From the objective standpoint, dementia præcox is a chronic dementing disease in which there is affection of emotions and volition. The emotional disturbance usually manifests itself in indifference and apathy with considerable incoordination between thought content and affect. The volitional abnormalities express themselves in impulsive acts and automatic states. In addition the personality becomes distorted to such an extent as to cause maladaptation. In a normal personality the various individual mental forces are harmoniously adjusted, but in dementia præcox they are disorganized and dissociated. In other words, the instincts, emotions, volition, and intelligence are not in harmony or mutual association and union to coordinate constructive mental energy. The incoordination of this type of personality is analogous to that exhibited in the fable of the crane, the crab, and the pike. It will be recalled that these three animals undertook to move a loaded wagon to a certain destination; the crane tried to fly with it to the sky, the crab drew it to the side, and the pike attempted to swim with it to the ocean. Such is the state of the personality in dementia præcox—*in brief, a dissociation of psychic activities, particularly affecting the emotional and instinctive phases of mental life.*

Upon this pathological mental soil psychotic symptoms of varied kinds may develop, and the clinical picture may assume various forms. In some instances, a dementing process without psychotic manifestations is in the foreground; in other cases a hebephrenic symptom complex may dominate the disease picture; in other conditions simple depressive and stuporous dementing states may be noted; still others may exhibit a depressive dementia with delusional ideas; circular, agitated, and periodical forms may also occur; paranoid and catatonic coloring in dementia præcox is relatively frequent; in the progressive and later dementing stages, speech disturbances in the sense of marked incoherence, etc. (schizophasic), characterize the clinical display.

Considerable stress must be laid on the fact that the mental deterioration in dementia præcox is purely of an emotional type associated with volitional disturbances. Intellectual symptoms, in the sense of memory defect and loss of school knowledge and grasp, are not of primary origin. As the disease progresses and emotional sluggishness becomes more and more pronounced, intellectual symptoms may make their appearance. It is worthy of emphasis that the diagnosis of dementia præcox is not made on one symptom alone, but the entire mental reaction must be taken into consideration.

The underlying etiological factors are not known, but as Meyer truly remarks: "The constitutional make-up counts for a great deal, but not in the vague sense of heredity and degeneracy merely. There is more to be had in the study of deterioration of the habits and undermining of instincts and their somatic components."

The actual therapeutic outlook is rather grave. While psychanalysis has done a great deal toward helping us to understand various abnormal mental phenomena, as a therapeutic method in dementia præcox it has actually failed in the well developed cases. This is due to the fact that the infantile fixations and the psychosexual life in dementia præcox are not of such plasticity as in psychoneuroses, and, moreover, the peculiar type of mental deterioration is antagonistic to analytic procedure. It must be also borne in mind that the delusions, hallucinations, and other psychotic symptoms are the patient's means of adjusting his morbid situation, and, in removing them, the patient's condition becomes worse because he was deprived of methods he employed at adaptation.

Reeducational methods can be applied in some cases with apparent advantage, not, however, with the hope of bringing about complete mental restoration, but rather to arrest the process of disease to such an extent as to enable the patient to adjust himself to a certain environmental level. Work along this line has been done in Manhattan State Hospital under the wise management of Dr. William V. Mabon, to whom I am greatly indebted for permission to quote from his unpublished paper[1]:

> In certain cases which are sent to hospitals reeducational methods are of value in arresting somewhat the progress of the psychosis, and enabling a better adjustment by the patient to his surroundings.
>
> At the Manhattan State Hospital twelve classes in the female department have been established in arts and crafts which are attended by about 200 patients. These classes are not only for the dementia præcox, but for some of the recoverable forms of the psychoses. We find that in some cases of dementia præcox this treatment has a tendency to improve somewhat the conduct and habits. We established, in 1913, a special class for the reeducation and habit training of the dementia præcox male patients. Three groups were arranged, one almost kindergarten in character, for the very deteriorated and untidy cases, one in clay modelling for less deteriorated cases, and a class in art work in some of the simpler forms of manual occupation. If improvement was shown in the lowest grade, promotion to a higher grade followed. In a number of cases considerable improvement has been obtained in habits and behavior.

The great hope of actual therapy lies in prophylaxis. Since it is well known that in dementia præcox there is a peculiar type of personality which exists prior to the development of the active disease, definite steps may be taken to prevent the final mental upset. These individuals are really *mental clams;* they live in their own shell; the real world is a source of little interest or inspiration to them; all difficult problems are solved, not in reality but in their fantasy; they are self absorbed; extremely selfish, and seclusive. In other words, their mental adjustment is purely autoerotic. When they are forced to come in contact with actual reality, a definite break in adaptation may frequently occur which determines the mental upset. If such constitutional traits are detected in the early stage of mental plasticity, considerable good may be done for these unfortunate patients. Here psychanalysis is invaluable in aiding them to form healthy mental habits and encouraging them to look upon the actual world, not in a fantastic way, but from the point of view of reality. In conclusion, the wise words of Adolf Meyer may be aptly quoted:

> We stand here at the beginning of a change which will make psychiatry interesting to the family physician and practitioner. As long as consumption was the leading concept of the dreaded condition of tuberculosis, its recognition very often came too late to make therapeutics tell. If dementia is the leading concept of a disorder, its recognition is the declaration of bankruptcy. Today the physician thinks in terms of tuberculous infection, in terms of what favors its development or suppression; and long before "consumption" comes to one's mind, the right principle of action is at hand—the change of habits of breathing poor air, of physical and mental ventilation, etc. In the same way a knowledge of the working factors of dementia præcox will put us into a position of action, of habit training, and of regulation of mental and physical hygiene, as long as the possible "mental consumption" is merely a perspective and not an accomplished fact. To be sure, the conditions are not as simple as with an infectious process. The balancing of mental metabolism and its influence on the vegetative mechanisms can miscarry in many ways. The general principle is that many individuals cannot afford to count on unlimited elasticity in the habitual use of certain habits of adjustment, that instincts will be undermined by persistent misapplication, and the delicate balance of mental adjustment and of its material substratum must largely depend on a maintainance of sound instinct and reaction type.

24 EAST FORTY-EIGHTH STREET.

AUTOSEROTHERAPY.

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In the management of serous pleurisy, particularly in hospital practice, it is not an infrequent experience to find a patient make a rapid recovery after an exploratory puncture and the withdrawal of a small amount of fluid, not exceeding three to ten c. c. This has been observed, even, in cases in which the effusion was sufficient to obliterate the Skoda resonance on the affected side. It is a well recognized fact that the removal of large quantities, eight ounces and more, by relieving the pressure on the lymph vessels, favors subsequent absorption. An interesting question now arises: How are we to explain the cures in the cases referred to? The removal of a few c. c. cannot materially relieve or influence the pressure on the absorbents.

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[1] This is in part Doctor Mabon's discussion of the author's paper at the Eastern Medical Society, March 10, 1916.

In the abstract of an article by Marcon, Autoseropathy (NEW YORK MEDICAL JOURNAL, November 6, 1909), the results of autoserotherapy resorted to by him and Tchigoeff are briefly presented. An exploratory puncture is made in every case of pleural effusion, about two c. c. being taken off. If the fluid is pale yellow, transparent, or even somewhat hemorrhagic, the Gilbert treatment, advocated in 1894, is applied, that is, the fluid is reinjected without entirely withdrawing the needle direct into the subcutaneous tissue, so that it is not necessary to make two punctures. The puncture is then covered with sterilized gauze and the patient is told to rest. A second injection, if necessary, is given after the lapse of a week. The method has absolutely no antituberculous action. It is surmised that the injection produces a pleuritic antibody, which causes the rapid cure. Carried out under the usual aseptic precautions, no local or general ill effects follow. Occasionally we meet with a case in which the fluid is turbid and has a decided odor; under such conditions the method is not to be resorted to. In the three instances which have come under my observation, the fetid penetrating odor was noticed at the time of aspiration, when the piston was drawn up to obtain some fluid. The odor was evident before the needle was removed. In this type, severe infection of the superficial and deeper structures has followed a simple exploratory puncture in spite of all precautions. The treatment is of necessity surgical and does not concern us here.

Such fetid effusion is probably due to a local gangrene of a superficial portion of the lung, and as the process has not involved a bronchus, fetid expectoration and odor are absent. The constitutional symptoms may not be suggestive, the true state may escape us until revealed by the exploratory puncture or a communication is established with a bronchus. In either case the characteristic odor clears up the diagnosis.

Rudisch, speaking of autoserotherapy in chronic pleurisy with effusion, cites three cases treated by him. He believes that the results warrant a more extended use of this form of treatment. Doctor Rudisch also reports a case with x ray plates of lymphosarcoma of the mediastinum, in which striking results were shown, not only in the improvement of the general condition, but also in the marked diminution in the size of the tumor (*Med. Rec.*, April 8, 1911, p. 650). Others have presented equally favorable reports.

Now as to a possible and plausible explanation of the problem presented in the cases, in which a cure follows a simple exploratory puncture and the withdrawal of a few c. c. of fluid—may we not unintentionally have resorted to autoserotherapy? A small amount of fluid which is subsequently absorbed, escaping into the tissues, through the small wound made by the exploring needle, accomplishes the same purpose as though it had been injected. In thin patients, particularly in children, fluid frequently escapes externally, being forced out by intrathoracic pressure through the track left by the needle after exploratory puncture or aspiration. In empyema operations performed one or two days after an exploratory puncture, a small amount of pus is not infrequently found external to the intercostals or may be seen oozing through the minute puncture, when the deeper structures are incised, preparatory to opening the pleura.

About six years ago, while employing the Murphy method in empyema, a two per cent. formaldehyde solution in glycerin was injected into the pleural cavity after aspirating as much of the pus as possible, the needle not being disturbed. Later on, when a radical operation was done, the deeper tissues were found infiltrated, brawny and hard, a condition unquestionably due to the action of the solution escaping from the pleural cavity through the puncture. A similar leakage is often observed in serous pleurisy when only a part of the fluid is taken away.

Those who have done a number of lumbar punctures have frequently observed that an escape of cerebrospinal fluid follows the withdrawal of the needle. Slight pressure and a simple dressing prevent any further flow.

To cite an analogous condition in which the fluid escapes into the subcutaneous tissues through a needle puncture, I might refer to what is seen in superficial tissues. Many of the older practitioners may recall a plan of treatment formerly employed to cure hydrocele. The scrotal tissues having been made tense, a surgical needle was thrust into the sac, the needle was withdrawn, pressure removed, and the fluid allowed to escape into the subcutaneous connective tissues. It was quickly absorbed and in a number of cases, particularly in children, a cure followed.

If the small amount injected in the Gilbert method is so effective, may we not logically infer that a similar favorable action may take place after exploratory puncture, in which, as has been shown above, more or less serous fluid escapes into the tissues through the puncture in the costal pleura, and is subsequently absorbed? The more slowly the needle is withdrawn, the greater the tendency to oozing of the serous fluid through the puncture in the costal pleura. No doubt, some additional fluid does escape into the deeper tissues in the Gilbert method. If the view is correct, more antibodies are formed to favor a cure.

Unconsciously we may have practised autoserotherapy—providing the system with antibodies or some ferment substance, thereby tending to facilitate the absorption of the serous contents of the pleural cavity.

209 EAST SEVENTEENTH STREET.

THE CLINICAL SIGNIFICANCE OF A GASTRIC ANALYSIS.*

Second Communication;

By LOUIS WINFIELD KOHN, M. D.
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A time there was, "when we travelled through a region of smooth and idle dreams," but now we seem to be "arriving on the confines where daylight and truth meet us with a clear dawn, representing to our view, though at a far distance, true colors, and shapes." How adequately these lines apply to our knowledge of a gastric analysis! Owing to an increase in the mind's understanding, we are already come to that stage where the true significance of the gastric findings is being better appreciated, where we are less prone to entertain false ideas and less apt to jump to incorrect conclusions.

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*Read before the Pittsburgh Academy of Medicine, February 29, 1916.

In a paper preceding this has been discussed the significance of the fasting stomach findings, while in this paper the findings in examination of the test breakfast contents will be reflected upon.

Leube (1) first studied the supposedly empty stomach at a time when he normally expected to find it empty. His object was to determine the time of digestion and the strength of the gastric secretion at certain definite periods after digestion was supposed to have taken place, but the reasons which he advanced for so conducting the analysis have since been declared illogical, and now the contents are studied at a time when secretory activity is expected to be greatest, viz., at the height of digestion, about fifty minutes to one hour after a test breakfast. There was a time when an examination of the test breakfast contents was altogether depended upon for information relating to the time of digestion, the effect upon the foods, and the motor powers, but now we gain more accurate knowledge of these properties through the additional employment of other methods such as the fasting stomach test, fluoroscopy, and Röntgenography. These other innovations are of inestimable value in enabling the diagnostician to arrive at a more correct interpretation of the significance of the acidity findings in cases where these figures seem puzzling.

In our quest for information regarding the powers of the stomach, it is unfortunate that only comparative results can be obtained, namely, results to be compared with those average results acquired in a normal stomach. For this reason, we make use of a test meal consisting of ordinary food, to which the stomach is accustomed. There is a great divergence of opinion as to which test meal should be employed. Many have been advocated for this purpose, but the one most commonly used is the Ewald-Boas test breakfast, which as often administered consists of 200 to 250 c. c. (about a glassful) of water or tea and forty grams (about one rather large slice) of bread. This meal is usually administered in the morning soon after the fasting stomach has been relieved of its contents. The patient should slowly and gently masticate the bread and imbibe the water; the entire operation should not comprise more than five minutes or thereabouts. About fifty minutes to one hour later, the stomach contents are removed by aspiration, for it is only by aspiration that an approximately correct idea of the quantity of the contents is attained.

The methods by which a very accurate conception of the amount of the gastric contents is attainable are those of either Mathieu-Remond (2) or Strauss (3), but since for practical purposes we can through ordinary aspiration, properly performed, acquire an approximate idea of the quantity of residue which is of importance in the determination of the significance of the acidity degree, we do not make use of these methods to any great extent. The "quantity" of test breakfast residue may give information of value relating to gastric motility and to the extent of dilution to which the contents are subjected. Often the information regarding motor power is corroborative in nature, substantiating the more or less grave disturbance not seldom found by the fasting stomach test, but there are times when an increased quantity may suggest minor forms of motoric insufficiency, while a diminution or absence would portend a more or less hypermotile state. A large quantity of contents may also be found in cases of hypersecretion, whether purely digestive or continuous in type, but it is the physical character of the contents and their chemical nature as well that must be considered before making such a decision. From twenty to seventy-five c. c. is regarded a normal quantity for test breakfast contents, and when amounts of greater or lesser degree occur, a probability of disturbance in some form or other suggests itself. A smaller quantity or absence impels us to think of a possible associated hypermotility, which may have some one or more definite underlying causes and may be present in achylia, cancer of the stomach body, perigastric adhesions which keep the pylorus patent, and in conditions the result of reflex irritation from other sources. A larger amount may appear in such cases as hypersecretion, atony, and obstructions of organic or spastic type.

Authorities differ regarding the most appropriate time for removing the test breakfast contents, but nearly all select that point at which digestion is supposed to be at its acme. Some allege for this point the thirty minute limit; others the forty-five minute limit; still others the sixty and seventy-five minute limits. Some again, since fractional methods are in vogue, hold that no definitely fixed period can be designated. However, judging from what limited experience the author has had, as well as from the views held by others of vast experience, he suggests that if a time limit is desired, it should be from fifty to sixty minutes.

A further study of the appearance and consistence of the residue conveys additional information of value. For instance, where we have excessive fluid constituents, a hypersecretion may be present unless this fluid material consists mainly of mucus, in which case it may mean a mucoid gastritis, but the chances are also, that the quantity of fluid in the former instance will be much greater than in the latter. Excessive solid constituents may denote an atony of mild or grave form, dilatation, ptosis, or an obstruction of some form or other. When a sufficient or excessive amount of acid secretion exists, we usually find the bread in a fine, well divided, and mushy state, while in cases of subacidity or hyposecretion the bread particles appear to be poorly divided, coarse, and clumplike. In cases of sufficient acid concentration, salivary digestion in the stomach without a doubt is interrupted early in many instances, while in the subacid cases salivary digestion probably continues for a longer period. The physical subdivision, however, to which the bread is subjected, excluding the process of mechanics or mastication and the mechanical effect of gastric muscular contraction, is unquestionably due to the chemical process or dissolution of the bread framework or gluten by the gastric secretion. After the bread has been soaked in this gastric juice for some time, a disintegration of the bread particles occurs owing to the chemical dissolution of the gluten or bread framework, as a result of which the starch granules are liberated. Thus we have the finely divided and mushy appearing residue. In subacid or achylia cases, this chemical activity is deficient or at times probably lacking, owing to the inactivity or absence of the pepsin, as a result of which the gluten or albuminous substance of which the bread framework consists, is not properly disposed of, and for which reason also coarse particles or bread clumps appear. In these cases, however, salivary digestion may be more lengthy and more complete because of the inadequate or absent acid medium, which fact favors salivary activity. Thus the salivary secretion, which has gained access to the interior of the many starch cells through the avenues created for it by the break in continuity of the starch capsules, as a result of mechanical crushing by the teeth or following the bursting of the starch cells after swelling due to their taking up water, or by the saliva permeating the intact capsular wall itself, may continue its diastatic activity for a longer period. Where the test breakfast contents are entirely absent, or where only a small quantity of mucus or residue is present, we should expect a hypermotility associated with either an achylia of primary or secondary form, or with a tumor of the body of the stomach either benign or malignant in nature. Further investigation, however, is necessary to verify such an opinion. Where definite obstruction exists at the outlet of the stomach, the contents, upon standing, usually present three characteristic layers, a lowermost solid layer consisting of the solid elements (bread particles), a middle cloudy layer of fluid, and an upper foamy or gaseous layer the result of fermentative processes. In those cases where the fasting stomach contents, or if not sought, the test breakfast contents, should exhibit a liquid butter appearance, or if upon standing its upper layer looks like a soft crust of fat, an intolerance of fat is very suggestive and usually points to a chronic duodenitis with which a pancreatitis is associated, and often syphilitic in origin.

The color of the test breakfast contents is usually pale yellow or muddy gray, as is naturally expected of a bread pap mixture. When the precipitate has settled to the bottom, the fluid will appear to be more or less colorless and either transparent or cloudy. At times, just as in the fasting stomach contents, the color may be green or yellow because of the bile pigments, red or brown because of blood, etc., depending upon the condition present.

The odor is most often paplike, but may at times be distinctly sour or even odorless. When yeast fermentation occurs, there is a musty odor. When albuminous fermentation or putrefaction occurs, a hydrogen sulphide odor is very manifest. Where butyric acid appears, the rancid butter odor is evident. Where carcinoma exists, a very fetid odor is apparent. In intestinal occlusion or obstruction low down, a fecal or offensive odor will usually be present. The odor depends greatly upon the condition present, being very offensive in obstructive conditions.

The test breakfast contents are not subjected to a microscopical examination as frequently as formerly was the custom, because almost all the information anticipated by this means is acquired by an examination of the fasting stomach contents. This is done, however, for routine sake and will give some information relating to the degree of carbohydrate digestion. In cases where starch digestion has been poor, the starch cells appear mainly large, confluent, stain deeply blue with iodine, and are present as a rule in great quantity or concentration. In cases where starch digestion has occurred to a high degree, the starch cells or granules seem to be finer, not confluent but rather isolate, not in such great concentration, and stain a paler blue or light brown or do not stain at all. Ordinarily, also, isolated yeast cells in small proportion are present, and where active fermentation occurs, the sprouting variety are seen in large amounts. When mucus, bacteria, and epithelial cells are noted, they have practically the same significance as in the fasting contents. Rarely will such material evidence present itself in the test breakfast contents as is usually found in the fasting contents of a case of pyloric obstruction unless the contents had not been entirely removed from the fasting stomach. Ordinarily, the test breakfast contents will show nothing beyond the presence of numerous starch granules, a varying quantity of yeast cells, more or less mucus, and some bacteria of unimportance or unknown significance. When food remains such as fat, muscle fibres, vegetable cells, and organisms like the Opler-Boas bacilli and sarcinæ are found, they undoubtedly result because of their incomplete removal from the fasting stomach and have a significance similar to that when found in the fasting stomach. Microscopic examination is a means for studying what cannot be seen otherwise as well as for studying in detail what cannot be so determined macroscopically, and as a rule only slightly enhances the already acquired information. From the viewpoint of scientific principle, it is good practice to incorporate this method in our routine examination.

The chemical examination of the test breakfast contents is the most important test to which this material can be subjected. By this means we acquire valuable information pertaining to the digestive powers of the stomach. The degree of acidity, as ordinarily expressed, means very little unless the total amount of fluid contents is approximately if not entirely known. The varying amount of fluid contents unquestionably influences inversely the degree of acidity or concentration, viz., the greater the quantity of fluid content, the less the degree of acidity and *vice versa*. If this fact is borne in mind, we shall no doubt better appreciate the significance of gastric chemistry.

Since it is held that the different gastric ferments act only in the presence of free hydrochloric acid, the digestive power may naturally be appreciated by a knowledge of the acidity status. The total acidity is the chief index, therefore, to the acquisition of information relative to the digestive power, because even though it actually consists of the free and combined acid, it virtually communicates to us the degree of available free acid that had been thrown out into the stomach, of which a certain portion has combined chemically with the protein substances of the food. Ordinarily, the free acid of the contents is represented by the free uncombined hydrochloric acid, but there are times when organic acids, such as lactic, acetic, and butyric, are present in moderate amount. These organic acids are almost always associated with fermentative processes such as occur in pyloric obstruction, atony, and dilatation, but the symptoms of the case with the odor and macroscopic appearance of the gastric contents will usually foretell the presence of these abnormal acids, especially if in large quantity. The acid which has bound itself chemically to the protein substances is known as the combined acid. A small amount of the combined acid in the gastric contents also consists of acid salts, such as the dihydrogen phosphate. So, therefore, from what has above been enumerated, it can be readily seen that the total acidity comprises the free hydrochloric acid, what little organic acids are present, combined hydrochloric acid and acid salts, of which for our information regarding digestive power the total quantity of hydrochloric acid, free and combined, is sufficient.

As has already been stated, however, an approximate idea of the amount of gastric contents is essential before we formulate a definite opinion regarding digestive power. There can be no fixed data regarding the acidity limits in normal cases, since it is known that, just as the acidity varies in different supposedly normal beings, so also the quantitative evacuation of gastric contents probably varies, and it matters not how slight the variation may be, it nevertheless has its direct bearing. We cannot safely assume a steady, uniform, equal in quantity evacuation, in jerklike manner, of gastric contents, because we are dealing with a nervous mechanism which is a complex factor, not well understood, and known to act often in an erratic manner. Since we have no assurance of a uniform evacuation or of a uniform gastric secretion, and even if one or the other was uniform, it can readily be perceived how difficult or how erroneous it is to ascribe certain definite acidity degrees to a supposed normal gastric fluid for future use as an arbitrary standard. We can do only one thing, therefore, in this respect to be fair with ourselves, and that is to give wide limits wherein most often the acidity of the normal contents will fall. The author, from his experience, feels constrained to conclude that the total acidity of the gastric contents in most normal cases (no complaint to offer) will at the fifty to sixty minute limit vary anywhere from forty-five to seventy-five degrees, while the free acid may vary from twenty to fifty degrees, although even here exceptions beyond either extreme may be noted. The principle of dilution, which is controlled by gastric motility and by the degree of gastric secretory stimulation, is a foremost factor in the creation of the different gastric acidities.

The acidities that obtain, as in the relation existing between cause and effect, correspond to the latter, and at once seem to inform the mind of the possible causes of their production. For instance, where a fluid showing a high degree of acidity presents itself, we can think of one or more causative factors. First of all, a disturbance involving gastric secretion and gastric motility, either separately or jointly, suggests itself. Of course, gastric sensibility may contribute forcibly toward the production of a derangement of either of these functions. If upon further investigation, we should find a small quantity of gastric fluid associated with this increased degree of acidity, we are very apt to explain this by a rapid evacuation (hypermotility) of contents from the stomach and the comparatively small concentrated portion left. On the other hand, cases that present a large quantity of gastric fluid associated with increased acidity can often be explained by a prolonged and increased glandular action with a resulting pylorospasm, which two factors contribute to the accumulation of highly acid fluids. A highly acid fluid in large quantity may also possibly arise from an increased secretory activity with a concomitant atony of the gastric musculature, in which case the accumulation of fluid would be due to a lack of propulsive power on the part of the stomach musculature, while the true acidity would follow from the increased glandular outflow. Where we have a fluid of high acidity and of an approximately normal quantity, a hyperchlorhydria or either of the preceding causes may be associated therewith, but a detailed study of the quantity and quality of the constituents of the acquired contents must in all cases be resorted to before coming to approximately reliable conclusions. Only by so doing can we attain a true idea of the degree of dilution or concentration to which the gastric contents have been subjected, and so it is with gastric contents at any time, irrespective of acidity degree. We must inquire into the immediate causes of the production of this acidity as just explained, before we dare seek the original or true underlying causes, such as ulcer, appendicitis, new growths, myasthenia gastrica, etc. It is only natural, we might say second nature, to suggest a diagnosis from inference after the immediate causes are available. "Suggest a diagnosis" is very befitting here, for it is only after every other available means is exhausted that we can with a degree of certitude make a diagnosis.

Let us now consider the subject of low acidity degree. Here, again, the principle of dilution which, as already stated, is governed by the degree of secretion and motility, comes to the foreground for consideration. When a large quantity of gastric contents has a low acidity degree, it occurs to our minds that an insufficient musculature has interfered with the onward propulsion of our test meal, thus diluting the contents and producing a subacid state. When a low acidity concomitant with a smaller quantity of material presents itself, we are prone to suspect a deficiency of the gastric secretion. When a quantity approximating the normal exists with a subacidity, we are in somewhat of a quandary, but we may suspect a deficiency, of variable degree, involving gastric secretion and motility, either separately or jointly, probably more depressing upon the former. In these cases of subacidity, however, we must not forget the role played by the duodenal fluid where regurgitation has occurred, for we know that this regurgitant material, aside from its diluting tendency, will tend to neutralize or lower the acidity of the contents. Here, again, with this knowledge at hand, we are in a better position to suggest a diagnosis to ourselves, as chronic gastritis, myasthenia gastrica, ptosis with atony, duodenal occlusion, etc., and then after corroboration from other sources, clinch the diagnosis.

To cases where the acidity is of exceptionally low degree, in which the total acidity amounts at the highest to 10° or thereabout, and where no free acid exists, the name "achylia" is applied because of the usual absence in these cases of the gastric ferments. The amount of fluid acquired in these cases is almost invariably very small and often consists mainly of mucus. There is as a rule an atrophic mucous lining devoid of secretory elements in these cases, whether primary or secondary, and the absence of these structures naturally means an absence of true secretion. There is also usually an associated hypermotility in which the contents seemingly shoot out of the stomach, so rapidly does evacuation proceed.

Just as with the other acidities, we must also study the so called "normal" acidity, that is, the degree which has so often by the multitude been considered anywhere from 40° to 60° for total acid and 20° to 30° for free acid. This degree of acidity, despite the fact that it coincides in degree with the acidity found in the gastric contents of normal persons (noncomplaining), is of little value unless it is considered in conjunction with the quantity of contents, which again brings us back to the degree of secretion and motility. Thus, again, we easily conceive how "dilution," depending upon its degree, correspondingly diminishes the degree of acidity, and how irrational it is to lay stress upon acidity degree solely as such—but even today that mistake is still being made owing to former teachings and misconceptions, and because of the insignificant importance, in the opinion of many, attached to anything else connected with the analysis. Every gastric affection is concerned to a greater or less extent with such disturbances as demand more than an "acidity degree" investigation, and it is for that reason that so much space has been allotted to its consideration in this paper. In the fasting stomach test, we truly have a test for the more grave motor disturbances, but a close study of the test breakfast contents may give us some information relating to the minor degrees of motoric disturbance.

Before we quit the subject of gastric acidity, it is incumbent upon us to pay some attention to the organic acids, since they at times appear in large quantity and by some authorities have been given undue prominence. These acids will be found nearly always in the fasting contents, as might be expected, and should more properly have been discussed in the preceding paper, but as the author had desired to consider the main chemical findings in this paper, so has he proceeded. Ordinarily, these acids are either absent or present in such small quantity as to be of unimportance, in most instances having been introduced with the food. When these acids are present to an appreciable extent, however, we shall almost always find an associated coexisting deficiency of free acid, as well as a defective gastric motility. In the past it had been held that where free hydrochloric acid existed, the formation of organic acids was either retarded or entirely interfered with and vice versa, or in other words, that an incompatibility existed; but of late even these opinions have been scattered. This corrupt relationship may exist to a certain extent, but the formation of these acids may now probably be attributed to a defective or insufficient motility, as a result of which stagnation of food contents occurs in the stomach for periods long enough to cause the production of these acids by fermentation. If this view was not rational, how could we account for the absence of organic acids in that prominent condition known as achylia gastrica? In a simple achylia gastrica we usually have a coexistent hypermotility and rarely a motor insufficiency, yet an entire absence of free acid exists, despite which no organic acids are produced.

We must therefore look for organic acids in cases associated with a certain degree of stasis. In these cases we shall usually find either an absence or a low degree of free hydrochloric acid, while a relatively high degree of total acid exists. The organic acids that may be present are lactic, acetic, butyric, sarcolactic, and the volatile fatty acids, but the one that occurs in greatest amount, when these acids are present, is lactic acid, and for that reason it is chiefly sought in these cases. It may in most instances be taken for granted that when it occurs, some of the other organic acids are also present, though in smaller quantity. The significance attached to lactic acid also practically applies to the other organic acids when present, viz., fermentation as a result of retention of contents for a lengthy period, such as is apt to occur in obstruction of the pyloric outlet, be it benign or malignant. This lactic acid formation is most apt to occur where a subacid state exists. This subacid state probably results from the fact that any acid, if present, has been decidedly diluted by the retained contents, or because a true secretory disturbance (deficiency or absence of acid secretion) exists. In either instance the formation of lactic acid is favored. The depressed secretion of hydrochloric acid or its weakening through dilution will lower its bactericidal action, while stasis, by a prolongation of the fermentation period, gives the lactic acid bacilli, which Miller (4) says always exist in the saliva a better chance to act upon the carbohydrates. Only a few years ago, nearly every case of gastric cancer diagnosed as such before death gave evidence of more or less stagnation of gastric contents, and in these cases lactic acid was nearly always found. For that reason, the presence of lactic acid was considered significant of gastric cancer. This point, although not absolutely reliable, is well worth remembering.

We consider next the significance of the positiveness or negativeness attached to the tests for the ferments, such as the Hammerschlag (5) or Metts (6) methods for the determination of pepsin, and the Boas (7) test for rennin. These tests furnish us with information relating to the degree of digestive power that the ferments are capable of exhibiting, from which we may infer the extent to which these ferments are present. These tests are usually performed in cases where a low total acidity or absence of free acid exists, because it is in these cases that we often expect to find a diminution of the ferments. The absence of ferment activity points to a very decided reduction or entire failure of the secretion of the ferments and suggests more or less glandular atrophy. It is held by some that a reduction of the one ferment is associated with a corresponding reduction of the other. Others, again, aver that rennet is nearly always reduced to a less degree than pepsin. Boas lays particular stress upon the determination of rennin activity, which is accomplished by a study of the result of the action of different dilutions of gastric contents upon milk. In this test, the rennin of the contents and the calcium salts, which are added separately, by their combined action form an insoluble casein from the caseinogen of the milk. Boas believes that the gastric contents of a healthy stomach, when diluted one to 150, will complete this process of coagulation. A diminution may indicate some pathological state, such as more or less glandular atrophy or some neurotic secretory involvement. A diminished secretion of the ferments, the direct result of a depression of the secretory apparatus, must always be thought of and may occur in such conditions as hysteria, tabes, neurasthenia, and other neurotic affections. When a marked deficiency of rennin activity becomes manifest, however, there is as a rule an indication of either a severe intractable form of gastritis with its resulting atrophy, achylia, or malignancy. When coagulation occurs only up to tubes of one in ten or one in twenty dilution, the cause may be either acid salts or the free acids of the contents, if present, and it does not necessarily mean that rennin must be present. Coagulation in tubes beyond one in twenty and up to one in 160 or over, speaks for the presence of rennin. The contents that show rennin activity at a high degree of dilution contain a correspondingly high quantity of ferments. In states where a marked deficiency or absence of ferments is manifest, we may think of a chronic gastritis of more or less aggravated type, either simple or complicated by cancer or other diseases or consequent to some former constitutional disease; an atrophy of the mucosa the result of some former local disturbance; a neurotic secretory disturbance of local or systemic origin; and a true achylia, probably congenital. This test for rennet is as a rule sufficient for information relative to ferment activity, for when the ferment rennin is markedly deficient in activity, we deduce an even more marked peptic deficiency. By some, a lipolytic action is attributed to a ferment of the stomach (gastric lipase), but its action is considered so slight normally as to not warrant consideration in this paper.

Another test very much performed of late is the so called Wolff-Junghann's (8) test or soluble albumin test for cancer, in which the principle involves the precipitation of the soluble albuminous products of the gastric contents found in increased quantity in gastric cancer. It is stated that the test breakfast contents in gastric cancer contain a very high degree of these albuminous products, much higher than is found normally, and for this reason a great deal of significance is attached thereto. When a dilution of the contents at one in 200 or beyond shows evidence of immediate albuminous precipitation after the Wolff reagent has been added, it is regarded as significant of gastric cancer. Of course, it is understood that the contents in these cases should contain no free acid, in order that the test may be given some reliance. Only recently this test has been declared somewhat irrational, however, so far as its significance is concerned, since it is held that any soluble albuminous material found in the contents may possibly come from numerous sources other than that for which the test is significant. This material may have its origin in the test breakfast, swallowed secretions, blood, secretions from the stomach wall proper, whether involved by disease or not, etc., and for that reason it is believed by some that a high albumin content does not of necessity speak for any gastric malignant lesion. This reasoning is, indeed, very rational and would place in abeyance any tendency we might have offhand to diagnose a cancerous state. Should we be able to rule out the possibility of large quantities of swallowed bronchial or salivary secretions, however, material from sinuses or carious teeth, excessive bleeding, and should we have been certain that the stomach was empty at least six hours before the test breakfast was taken, then this test might have rather definite significance, for it is possible that the stomach in malignancy may secrete a fluid of high albuminous content, either from the growth itself or from some portion of its wall.

Special tests concerned with the products of carbohydrate and protein digestion are made use of when especial demands arise, and may give valuable information, but for ordinary clinical work are seldom thought of.

Occult blood, if found, would have a significance similar to that of bleeding described in the author's preceding paper on the fasting stomach contents.

The gaseous products of digestion, although indicative of fermentative processes involving carbohydrate or albuminous food, even if in abnormal quantity, are not of exceptional importance, since we can through a study of other phases of the case acquire information of similar value.

In this paper the author endeavors to give a generalized view of the significance of gastric findings in as practical a manner as possible, laying particular stress on what he considers most important, but again wishes to state that each case must be studied from every angle before a diagnosis dare be made.

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Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXI.—How do you treat a sprained ankle? *(Closed.)*

CLXXII.—What are your methods of resuscitation and aftercare of persons apparently drowned? (Answers due not later than July 15th.)

CLXXIII.—How do you perform circumcision? (Answers due not later than August 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXX has been awarded to Dr. Henry J. Noerling, of Valatie, N. Y., whose paper appears below.

PRIZE QUESTION CLXX.

THE PREVENTION OF PERINEAL LACERATION.

By HENRY J. NOERLING, M. D.,
Valatie, N. Y.

Prevention of perineal laceration at childbirth should be in the mind of every obstetrician owing to the large number of women who are obliged to submit to repair of the perineum at some time during their lives, and because of the remarkable sense of support given a woman after thorough repair.

Cases where laceration cannot be prevented. Women with naturally small outlets; those with a hard, fibrous perineum, either normally so or as a result of a previous repair; where forceps must be used, particularly at the outlet; where the fetal head is too large; and where there is an abnormal fetus to contend with.

The more common causes are: 1. Indifference on the patient's or the physician's part. The physician is not called in time to assist at the birth, or, if called, is often hurried and leaves the case, returning to find labor over and a perineum torn; other physicians prefer to let nature do all and offer no help at the perineal stage, particularly in bringing the shoulders through. 2. Often the physician is too eager to see a case over quickly and resorts to forceps, perineal stitches being of no moment to him. 3. Leaving forceps on the child too long after their work is accomplished in high forceps operations. 4. Not being familiar with the operation of symphysiotomy.

Prevention. Give obstetrical cases first attention always, remembering that more than one life must be given due regard. Lysol will be found the best antiseptic owing to its lubricating property. See that the rectum is thoroughly emptied and that a full bladder is not going to impede labor. Teach the patient how to use her pains properly, keeping the spine well arched backward into the bed when straining, the knees well flexed and spread apart, thus putting tension upon the symphysis.

Head presentations. When the fetal head is beginning to distend the perineum, give chloroform in small amounts only to relieve the intensity and force of the pains. The index and large finger of the operator are brought into use. The fingers are kept between the oncoming head and the perineum, thus offering a greater dilating force to the vulva. Between pains a side to side massage and stretching of the vulva and vaginal wall of the perineum helps to soften it markedly. The head should be held back until we are satisfied that the vulva, and particularly the perineum, can be gently worked back over the head, with either the fingers or, better, a small ball of cotton dipped in lysol; this is better than to allow the head to force its own way through. Carefully release the posterior shoulder and arm, first, before the next pain jams this shoulder against the perineum and thus causes a tear; bring the anterior shoulder and arm through, and finally, the hips and pelvis slowly.

Breech presentations. The same care should be observed in releasing, first, the posterior and then the anterior leg and hip before the breech presents entirely through the vulva. Give the same attention to the arms and shoulders. Finally massage carefully the perineum over the presenting aftercoming head, holding the fetus as in the usual breech delivery.

Forceps delivery. Never use forceps unless they are indicated. In high forceps operations, remove the blades before the head is brought too forcibly against the perineal body, then proceed as explained above under head presentations. In low forceps deliveries, work only with each pain and with patient only partially anesthetized, at the same time holding the head back till the perineum softens. This will secure a minimum of laceration.

Episiotomy. This is a procedure rarely indicated, although every practitioner should be familiar with it.

The writer submits this article as a result of the study of one hundred private cases in which he tried to minimize the need of perineal stitches. These cases represent eleven primiparæ and eighty-nine multiparæ.

Occiput anterior	77 cases
Occiput posterior	1 case
Breech	5 cases
Breech with forceps	1 case
Forceps (occiput)	10 cases
Craniotomy	1 case
Hydrocephalus	1 case
Eclampsia	1 case
Version	3 cases

The perineum was stitched in only six cases, three primiparæ, two of which were forceps cases, and three multiparæ, each with a repaired perineum from a previous birth. The five last primiparæ presented nothing but a torn fourchette in each case.

Dr. James Harold Howard, of York, Pa., writes:

The practitioner should endeavor to aid the head in passing out of the vagina in the most favorable position, well flexed and with occiput forward, except in the case of face presentation when the chin should be anterior and the head fully extended. The lower bowel should be emptied with a soapsuds enema prior to delivery.

Delivery in the lateral position with the thighs partially flexed affords some advantage over the dorsal position in protecting the perineum, and this is especially so in primiparæ. The perineum is readily observed, weight of the fetal head is relieved, and the uterine and abdominal muscular contractions are counteracted by gravity, as the fundus uteri sinks down on the bed, thus giving the perineum a little longer to dilate.

Strong pressure made against the perineum in my mind predisposes to a tear; however, when the perineum is becoming distended hot compresses of bichloride of mercury gently applied afford great relief and aid in relaxing the tense perineal muscles.

When the head appears at the vulva its descent should be guarded by direct pressure against the presenting part, allowing it to advance a little with each pain, provided that there are no complications demanding a rapid delivery. It should recede in the intervals between pains; if it does not, it is well to push it back so that the next contraction may be partly spent in recovering lost ground. In exceptional cases where the membranes have long been ruptured and the vagina is dry, a vaginal douche of creolin or lysol will facilitate the advance and retreat of the head.

Partial anesthesia is of great value in protecting the perineum, in that we have more control over our patient, the sensitiveness to pain is diminished, and the resulting relaxation of the perineum enables us to enucleate the head as follows: My assistant administers the anesthetic continuously instead of intermittently from one or two pains prior to what would have been the last pain, and at the same time I instruct my patient to breathe deeply and not bear down. Pressure is made on the fundus, if necessary, to prevent the head from receding. As the head advances, gently push the clitoris and labia minora back, allowing the occiput to escape under the pubic arch, relieving some of the tension on the perineum and at the same time assist muscular relaxation with the compresses mentioned above. A sterile pad is placed midway between the coccyx and anus, and moderate pressure is made forward and upward, gently enucleating the head.

In uncomplicated instrumental deliveries when the head is approximately within two tractions of being delivered I remove the blades and enucleate as in a normal delivery. I believe this method has greatly reduced my lacerations in operative cases.

The shoulders may damage the perineum as much as, or even more than the head. Lift the anterior shoulder well up behind the pubes and deliver the posterior shoulder and arm and then the anterior. Very light anesthesia will aid in delivering the shoulders.

Episiotomy, when properly executed, is a prophylactic to severe perineal lacerations in cases where we encounter scar tissue, edema, persistent occiput posterior, elderly primiparæ, lacerations beginning around the anus, and emergencies demanding rapid delivery. It is not justifiable as a routine measure.

I have witnessed severe lacerations from allowing the instruments to slip off the advancing head. It is well to keep one finger in contact with the presenting part as a preventive measure.

Preliminary digital stretching of the perineal muscles may be found beneficial prior to administering pituitrin, in elderly primiparæ and in breech presentation. The injudicious use of pituitrin is to be condemned. Finally do not forget craniotomy in overgrowth or persistent malpositions with a dying or dead baby in preference to severe maternal lacerations.

Dr. Burke Diefendorf, of Hillsdale, N. Y., observes:

Prevention of tears of the perineum in childbirth depends largely on five factors: 1. Elasticity of the perineum; 2, expelling force; 3, time of passage over the pelvic floor and perineum; 4, size of engaging circumference of head and size of shoulders; 5, episiotomy. Bearing in mind that nearly all perineal tears are in the posterior median line, it has been my practice to relieve the strain at that point as much as possible. During the first stage of labor I see that the bladder is emptied, and the rectum thoroughly cleaned out with an enema, thus helping to maintain a normal position. I then examine the perineum to determine the rigidity of the vaginal orifice. If there is much scar tissue, I apply warm antiseptic packs, which are kept on until the perineum begins to bulge. To my mind one of the most frequent causes of tear is too rapid passage of the head over the pelvic floor and perineum.

Especially is this true with the use of pituitrin. My maxim is—*don't hurry* the perineal stage of labor if you would save the perineum; allow at least thirty minutes for delivery after the perineum begins to bulge. I seldom find it necessary to administer chloroform at this time, but control the descent of the head by pressing it up into the subpubic arch. It may be well to add that I always deliver my patients in the dorsal position, as they seem to be able to control the abdominal muscles better and do not bear down as much during the pain in the perineal stage of labor. At the beginning of a pain I insert a finger between the head and the vaginal orifice and allow it to remain until the height of the pain, in this way ascertaining the degree of tension. After the head has been held at the vaginal orifice for at least twenty minutes, which is usually long enough to stretch the perineum sufficiently, I let it slip past just as a pain starts, then holding the anterior shoulder well up against the subpubic arch, I wait until the next pain for delivery of the shoulders.

I have often seen a normal head delivery with no lacerations, only to find an extensive tear after the birth of the shoulders; and I think a large proportion of physicians could bear me out, if they observed conditions and were honest with themselves. To my mind the posterior shoulder is often overlooked or delivered carelessly. Too often no attention is paid to the birth of the shoulders. After the birth of the head, it is my custom to pass two fingers behind the posterior shoulder and allow it to ride out on them during the next pain, thus preventing the shoulder from ploughing through the perineum, which probably has a mucous tear already and is easy to tear further.

The frequency of tear in breech presentations is largely the result of undue haste; if time is taken and the head kept with its long axis in the proper direction, the number of tears will not greatly exceed the number of tears in head presentations.

It is my practice during forceps delivery to remove the blades as soon as the perineum has been well stretched.

As a last resort, where the tension seems too great and a tear inevitable, I perform a unilateral episiotomy.

(*To be continued.*)

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Contemporary Comment

Putting a Grown Man in Charge.—Under this head *The Sun* for June 18, 1916, pays a compliment to an esteemed assistant editor of the NEW YORK MEDICAL JOURNAL, in an editorial article on the recent inspection of the kitchens of New York, hotels, and restaurants.

Dr. Charles F. Bolduan of the health department, remarks the *Sun*, has squelched the enthusiastic young men who amused themselves last week upsetting the stomachs and impairing the appetites of patrons of restaurants and lunch rooms by announcing that of 265 examined, only one was "good," eight "fair," 256 were "bad." The suppression of these bulletins should have been accomplished before their issuance began, but as nothing can be done nowadays without the assistance of brass bands and press agents, the community may count itself fortunate that this foolish and unfair conduct was tolerated for only a week.

The impression conveyed by the announcements of the health department was that the vast majority of the eating houses subjected to its scrutiny were unfit for the purpose they serve, and were under the management of men whose principal desire was to sell dirty and unwholesome food to their customers. This is not the case. The health department score card seems to have been devised expressly to condemn. Apparently only a state of absolute perfection in accordance with the rules of the department could win for a restaurant the rating "good," and to attain "fair" a most unusual degree of compliance with the regulations is required. Nobody with a head on his shoulders believes that of 265 restaurants—any 265 restaurants—in New York, only one would win the approval of reasonable persons on the grounds of cleanliness, quality of supplies and manner of service. Nobody who eats his meals in public places will credit the record that 256 of any 265 restaurants in town are "bad." The thing is preposterous.

Every effort of the health department to improve conditions deserves public support. No man or woman who takes breakfast, luncheon or dinner in a restaurant wants to eat bad or badly prepared food. All of them are enlisted for cleanliness and decency in the preparation of their food, and not a few of them know when these conditions are observed. But the health department appears to have been made the victim of infantile notoriety seekers, and its foolish outgivings have seriously impaired its prestige.

The Care of Drunken Men.—That Cincinnati has made great strides in civic betterment in the past few years is a matter of gratification to all good citizens. There remains to be made one greatly needed reform which should have immediate attention. This concerns the method of handling our delinquents and perpetrators of minor crimes. In dealing with juvenile offenders we have taken a step in advance. After much effort our ancient *bastille*, the House of Refuge, has been abandoned and its children moved to farms. The next place that needs radical changes is our workhouse.

Our present method of dealing with alcoholics is a relic of barbarism and a disgrace to any civilized community, observes E. W. M. in the *Lancet-Clinic* for May 20th. A "drunk" brought into court, sentenced to so many days in the workhouse, stays there long enough to get very thirsty; term expires, is turned out; proceeds to satisfy that thirst; drunk again; back again, to court, to workhouse; out again with same old thirst, and ready to swing the same circle once more. Thus, innumerable dipsomaniacs alternate between sprees and thirsty days in the workhouse. Some have served thirty, forty, and fifty terms. One poor woman has had eighty sentences. There is neither sense, humanity, nor a vestige of science in the whole procedure.

In the first place, the law should allow an habitual drunkard to be sentenced for an indeterminate period; the release to be made on the recommendation of the medical staff. The place of confinement should not be a prison, but an institution for care and treatment. This institution should be a large farm removed from the city, with provision for all kinds of work, so that those committed could be given the work for which each is best fitted. This institution should have a medical staff of trained experts with full charge of the medical treatment, including a prescription for work, its kind, amount, etc. The business of the institution should be under the direction of experienced business managers. Such an institution, once thoroughly equipped and organized, would be self sustaining. The object of the institution should not be punitive but curative. The drunkard or criminal found incurable should be kept permanently in custodial care and given whatever work he is best capable of doing. If he has a family, whatever he earns beyond the cost of keeping him and a small percentage to be applied to the payment of overhead expenses, should be given to his family. How much human wastage could thus be conserved to the great benefit of the community and to the delinquents themselves is self evident.

Editorial Notes and Comments

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THE MEXICAN SITUATION.

The mobilization of the National Guard for service on the Mexican frontier has brought into active military service a large number of medical officers of the guard, who for the first time will be confronted with the grave problems of hygiene involved in the handling of large bodies of men. Fortunately many of the medical officers have already given careful study to these problems, and the higher military authorities have been brought to a full realization of the supreme importance of sanitation in camp life. We can count confidently upon the absence of any such sanitary scandals as that of Chickamauga Park, where during the mobilization of the National Guard for the Spanish war thousands of cases of preventable disease occurred through lack of proper sanitary precautions.

Medical officers of the National Guard will find that life under rigid military discipline is quite different from the practice of medicine in civil life. There will be less room for individuality, there will be constant and sometimes annoying restriction of action and initiative, there will be tedious and almost endless details of organization to be looked after, and all this along rigidly prescribed lines which may prove extremely irksome to men of a certain temperament. On the other hand, medical service in the field offers many interesting problems for study and will give scope to the surgeon for service to his country unexcelled by that of any other branch of the military establishments.

Mobilization has gone on very much more rapidly and more effectively than it did at the outbreak of the war with Spain. We seemed to have learned something, although the delay in entraining the troops which were ordered direct from their armories to the Mexican border, showed that there is still much to acquire in the matter of preparedness. The principal cause of delay seems to have been the faulty system of supplying extra equipment. At present, the respective commands of the National Guard are supplied with sufficient equipment only for the number of men enrolled on a peace basis, which is about fifty per cent. of the war strength. When the command was issued to mobilize the guard and increase it to full war strength, it became necessary to get additional equipment from the depots of the regular army. To ship this to every State in the Union in the right proportion and in the right number necessary involved considerable time. The system should certainly be revised, and each command kept supplied with sufficient equipment in reserve to fit it out at full war strength.

The medical department of the National Guard of the State of New York and possibly of other States as well, has been an exception to the general rule in having been kept up to eighty-five per cent. of its full war strength. In view of the importance of the work of the medical department, and of the difficulty in obtaining trained medical officers the wisdom of this practice becomes apparent. It should be a great comfort to the families of the members of the National Guard of the State of New York to know that in the medical department, at least, there has been a complete state of preparedness.

TESTIMONY WHICH MAY MISLEAD.

Dr. Torald Sollmann, who testified in the suit recently brought by a patent medicine concern against the association journal, made some statements that may both mislead and rejoice some of the irregular practitioners and omniscient laymen who are always on the lookout for good points of attack on the profession. His statement that he had never practised medicine will not absolve him in the minds of the uninstructed. According to the *Journal A. M. A.* for June 17th, page 2007, Doctor Sollmannn testified concerning the modern treatment of pneumonia, in part as follows:

> Take pneumonia. Pneumonia is a disease that runs a perfectly definite course. We know that. A patient gets a high fever; gets sometimes out of his head; he gets worse and worse for about four or five days. At the end of that five days a sudden change occurs; he either dies, or he gets well by himself, practically without any treatment. Before people fully realized that—they now know it, most of them, well enough—but before they realized that, they used to be giving all kinds of drugs in the treatment of pneumonia, drugs and other things, baths, and all sorts of things. They would give those, and the patient would go on, and after the five days, a certain number would get well, and a great many people attributed that to this drug, or that, or something else. It has been now shown, had they left those patients strictly alone, they would have gone through exactly the same course of events . . . many infectious diseases are the same way, they run an absolutely definite course, and we know what is going to happen.

All the foregoing testimony, as is perfectly proper, is open to perusal by the laity. Had the remarks been made before an audience composed exclusively of physicians, misunderstanding would have been impossible. All the connotations of Doctor Sollmann's statements would have been thoroughly understood. Physicians comprehend that the attending physician and the nurse would be far from idle during an attack of pneumonia, that symptoms would be treated as they arose, that the heart would be watched, plenty of fresh air would be secured, the skin and bowels would be attended to, the diet carefully prescribed, the sharp pleuritic pain controlled. Perhaps venesection would be performed. The average practitioner would order inhalations of oxygen under certain circumstances; indeed, it would be an unusual case in which no drugs were given, expectorants to lessen the cough, hypnotics for the sleeplessness, even opium, unless it was positively contraindicated. The patient would certainly be treated, if the pneumonia was not.

Such a course is far from what the laity will gather from Doctor Sollmann's evidence to be the latest and most scientific method of handling a patient with pneumonia. It is not at all unlikely that those who read this evidence will conclude that the profession has renounced drug therapeutics altogether, and they may begin to ask why the doctor should call daily or twice daily if he frankly acknowledges that he knows of nothing that will control the crisis. Moreover, what Doctor Sollmann said of pneumonia may soon, in the popular mind, be associated with every acute disease, which would convey a most unfortunate and distorted impression of the facts.

THE EFFECT OF CONSCIOUS SEXUAL INHIBITIONS.

Whatever may be considered the social justification for such artificial sexual inhibitions as are exemplified in coitus interruptus or coitus reservatus, it is certain that these practices have a most deleterious effect upon the systems of the persons who indulge in them. They often betray a desire to obtain overstimulations which perhaps other methods no longer furnish. They add perceptibly to the nervous pressure under which so many already live, and whose systems can little afford the added nervous strain.

While it is the trend of a higher civilization to keep reflex action under as central control as possible, this control refers to a control of function in its entirety and not the component activities of a function, once set in motion. Having set a function in motion, its stoppage has the same effect upon a nervous system as would be the effect on an explosive contrivance of lighting the fuse and stopping up the muzzle. The effect is, sooner or later, to shatter the nervous system.

Whereas the normal sexual function is depletive and sedative in its ultimate result, these practices are entirely congestive and irritative. Continual irritation of the nervous system is evidenced in the numerous types of sexual neurasthenics. Besides, in the case of coitus reservatus, while it is intended thereby to prolong the individual sexual cycle, this purpose is really defeated in the end because the general period of sexual potency is shortened—impotency setting in at a much earlier time. This condition is aided by the irritability and instability of the central nervous system. So far as their nervous effects are concerned these practices are more pernicious than the more condemned practice of masturbation.

Moreover, the undue and prolonged congestion entailed in these practices is the cause of very tangible and depraved physical conditions. They are the most prolific cause of the prostatic enlargements so common in middle life. It is easy to see the mechanism of this condition. The continual congestion causes the formation of connective tissue; often there is set up a nonspecific indolent urethritis. Indeed, such a condition in the male should always arouse a suspicion of one or other of these practices. Indulgence in such practices is due to the general ignorance of their baneful effects, and the enlightenment of the public by the profession should do much to curb it.

KILLING THE COCKROACH.

There is a well worn story of a doctor who was called in the night to take a man from one end of the city to the other, presumably to see a patient, but really because his fee was cheaper for the man he carried than the hire of a cab. Whether this is a true story or not, it is certain that the family physician is asked to do many things, not all of which are obviously connected with the healing art. Many ways to dispense with what have been called the minor horrors of war have been discussed in the medical journals since the present conflict began, but it is seldom that we find literature bearing on what might be called one of the plagues of peace, Blatta orientalis, in short, as Micawber would say, the cockroach.

Bearing in mind this dearth of material on the subject, we are indebted to Dr. Joseph J. H. Holt, of England, who for two or three years has persecuted the restless roach with all the means which science could suggest; he publishes the casualties in the *Lancet* for June 3d. He has powdered his insect enemy with everything from quinine to mustard, suffocated him with poisonous gases, and boiled him in oil. Altogether this indefatigable doctor has experimented with no less than 124 methods of dealing with the pest and his conclusions are worth recording. The best agents for quick destruction are bromine and sulphur dioxide. These agents must be used at least once a day for two or three weeks before the roaches definitely decide that the immediate atmosphere is unhealthy. As the room should be sealed when the gases are used, the method is impracticable for household use. Creosote, wood naptha, or the oil of rosemary, eucalyptus, or citronella, placed daily near their haunts for several weeks, will effectually rid the place of them, but of course the odor of such an agent is somewhat pungent. A dusting powder naturally suggests itself, and Holt finds that powdered sodium fluoride is the best and cheapest for the purpose.

Apart from its academic interest, these studies become of considerable value when we consider the cockroach as a possible disease carrier and are also alive to the dangerous nature of many of the pastes and other compounds offered to mitigate the pest, preparations which contain such things as arsenic and phosphorus.

IMMUNITY IN TUBERCULOSIS.

A consummation devoutly to be wished is the discovery of some method by means of which the human race may acquire immunity to tuberculosis; such immunity, if obtained, would indeed be one of the greatest advances of medical knowledge. For many centuries there has been a struggle between humanity and the tubercle bacillus, the one trying to acquire a resistance, the other a virulence sufficient to overwhelm its victims. The scales have gone up and down many times, but for some years past the ravages of the bacillus have become distinctly less. For that reason now is a most opportune time to make further attempts to control this affliction, and the attempts must be made along other paths than those of hygiene. Much can be and has been done in that way, but alone it cannot win the struggle. There must be found some method by which the individual can be protected.

Unfortunately tuberculosis appears to be one of those infections that do not confer a high degree of immunity. Although indications of this disease have been found in the bones of Egyptian mummies of 3500 B. C., yet no inherited immunity has developed. We are still fighting for our lives and must so continue. Inasmuch as there seems to be little if any natural immunity, the greatest amount of work has been directed along the line of artificial immunization, but as yet without satisfactory results.

The majority of the infectious fevers can be controlled or modified by the injection of the dead bodies of the invading organisms with their subsequent absorption. In tuberculosis similar attempts have been made, but with little encouragement, as the waxy structure of the bacillus interferes with its absorption.

As a result of the unsuccessful employment of dead bacilli it seems, as Koch remarked, that the only chance lies in the employment of living tubercle bacilli. This is, of course, fraught with more or less danger, but it is in this direction that the advance must be made.

It is evident, however, that the older people become the less likely they are to be infected with tuberculosis. It is also well known that the great majority of people have been infected at some time by tuberculosis, but have overcome the infection; it seems, therefore, that an infection may produce an immunity of some degree.

As it is in childhood that the greatest susceptibility exists, so during that age our greatest efforts must be exerted. If we can vaccinate successfully, or, in other words, increase, even to a slight degree, immunity in childhood, there will be less infection then and fewer cases in later life.

CONGENITAL CYANOSIS OF SYPHILITIC ORIGIN.

M. E. Jeanselme (*Presse médicale*, December 2, 1915) presented to the Société médicale des hôpitaux on November 26, 1915, an eleven year old girl in whom had tardily appeared all the physical and functional signs of cyanosis. An interesting point was that the physician had been observing in the girl's mother the evolution of a case of syphilis from the date of infection and had established the fact that this "blue child" had been conceived and carried by the mother while the latter was suffering from secondaries. Several times Jeanselme had treated the girl for lesions unmistakably specific, circumanal syphilides, for example, and perionychia.

One of the brothers of the little patient, six years of age, suffered from an abortive form of cyanosis; he had the indentations of the shins characteristic of inherited syphilis. The Wassermann test was positive in both these children. Another brother, seven and a half years old, was not cyanotic; he had a regular course of mercurial inunctions beginning shortly after birth. He has no syphilitic stigmata, although the Wassermann test is positive in him also. The youngest of the family, a boy of four years, seems alone to have escaped all traces of syphilis.

THE ABSORPTION OF A USEFUL JOURNAL.

Dr. Charles Chassaignac and Dr. Isadore Dyer, managing editors of the *American Journal of Tropical Diseases and Preventive Medicine,* announce in the June issue of that periodical its absorption into the *New Orleans Medical and Surgical Journal.* The former managing editors bespeak the interest of all members of the Society of Tropical Medicine as well as of those who have helped by subscriptions to the defunct journal, and hope that the additional material afforded by the combination will be found more than compensating. In closing the affairs of this *Journal,* they desire to express the utmost appreciation to all who helped along the way, and to assure everyone that in the new arrangement the interests of all will be considered and conserved. The excellent and venerable New Orleans organ will gain by the change, and the subscribers, who are thoroughly protected, will be pleased.

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News Items

Yale University to Open Medical School to Women.—Announcement is made that at a recent meeting of the Yale Corporation it was voted to approve the recommendation of the executive board of the school of medicine, that a limited number of women be admitted to the Yale Medical School.

Medical Women's National. Association.—This organization of women physicians, which was formed in Chicago last November at the golden jubilee of the Mary Thompson Hospital, held its first annual meeting in Detroit, on Tuesday, June 13th. Dr. Eliza Mosher, of Brooklyn, honorary president of the association, presided at the opening session of the meeting.

The Medical Society of New Jersey.—At the 150th annual meeting of this society, held in Asbury Park, June 20th, 21st, and 22d, Dr. Philip Marvel, of Atlantic City, was elected president, succeeding Dr. William J. Chandler, of South Orange. Other officers were elected as follows: Dr. William G. Schauffler, of Lakewood, first vice-president; Dr. Thomas W. Harvey, of Orange, second vice-president; Dr. Gordon K. Dickinson, of Jersey City, third vice-president; Dr. Thomas N. Gray, of East Orange, reelected recording secretary; Dr. Harry A. Stout, of Wenonah, reelected corresponding secretary; Dr. Archibald Mercer, of Newark, reelected treasurer.

Infantile Paralysis in New York.—According to figures compiled by the health department, twelve deaths from infantile paralysis were reported during the week ending June 24, 1916. Of these, eleven occurred in Brooklyn. The health department also reports that on June 26th thirty-seven new cases of the disease were reported, making a total to date of 183 cases in Brooklyn.

Hospital Supplies for the New York National Guard.—A gift of $25,000 to the New York National Guard has been made by Mrs. Cornelius Vanderbilt, to be used for hospital supplies as may be needed. Announcement of the gift was made by Lieutenant Colonel William S. Terriberry, chief surgeon of the New York Division, who has been commissioned to spend the money to the best advantage.

Assistants Wanted.—There is opportunity for two assistants in the Department for Diseases of Digestion and Metabolism at the German Polyclinic, Second Avenue and Eighth Street. Those who have had some chemical training are preferred. The hours are Tuesday, Thursday, and Saturday, from 2 to 4 p. m. Apply to Dr. A. I. Ringer, German Polyclinic, Second Avenue and Ninth Street.

Doctor Zinke Honored.—Dr. E. Gustav Zinke has resigned as professor of obstetrics in the Medical College of the University of Cincinnati, after serving for twenty years in that capacity. A dinner was tendered to him on the evening of June 19th by the medical profession of Cincinnati in recognition of his services. Dr. C. L. Bonifield acted as toastmaster and presented Doctor Zinke with a silver loving cup. Among those who spoke were Dr. C. R. Holmes, Dr. C. W. Dabney, Dr. William Gillespie, and Dr. Hugo O. Pantzer, of Indianapolis. Doctor Zinke spoke on My Country and My Profession and My Love for Both.

Navy Medical Corps Examinations.—The next examination of candidates for appointment in the Medical Corps of the United States Navy will be held on or about August 7th at Washington, D. C., New York, Boston, Philadelphia, Norfolk, Va., Charleston, S. C., Great Lakes (Chicago), Ill., Mare Island, Cal., and Puget Sound, Wash. Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary education and medical training. Full information regarding the physical and professional examinations, with instructions how to submit a formal application, may be obtained by addressing the Surgeon General of the Navy, Washington, D. C.

Street Accidents in New York.—During the year ending May 1, 1916, there were 2,120 accidents in which persons were killed or injured in Greater New York, according to the current issues of the *Police Bulletin.* These figures show an increase of seventy-nine over the previous year, in which 2,041 accidents were reported. In Manhattan alone 1,221 accidents occurred. Brooklyn had the next greatest number—612; the Bronx, 185; Queens, 87, and Richmond, 15. The largest number of accidents occuring in any one section were reported from the First District, which includes the territory between Fourteenth Street and the Battery and embraces the most thickly populated portion of the city.

Personal.—Alonzo Milton Nodine, D. D. S., assistant dental radiographer to the New York Nose, Throat, and Lung Hospital, and oral surgeon and dental consultant to the French Hospital, New York, has been appointed dental surgeon to the French Hospital of New York Military Foundation at Passy, France.

Dr. A. Strachstein, of New York, has been appointed chief of clinic and clinical instructor to the department of urology, Cornell University Medical College.

Dr. Frederic H. Gerrish, of Portland, Me., has resigned as professor of medical ethics at Bowdoin College. Doctor Gerrish was a member of the faculty of this institution for forty-four years.

Professor Selskar M. Gunn, director of the division of hygiene of the Massachusetts State Department of Health, has tendered his resignation, to take effect August 31, 1916. Dr. Lyman A. Jones, of North Adams, has been appointed his successor.

The Death Rate in New York.—During the week ending June 24, 1916, there were reported to the Department of Health of the City of New York 1,311 deaths from all causes, compared with 1,277 during the corresponding period in 1915, the respective rates being 12.24 and 12.22 in a thousand of population. The death rate for the first twenty-six weeks of 1916 was 14.82, compared with a rate of 15.10 for the first half of 1915.

Generous Bequests to Philadelphia Institutions.—The following bequests to Philadelphia institutions are included in the will of Charles W. Kolb, who died in Philadelphia on May 28th, leaving $1,000,000 to charity: Samaritan Hospital, $100,000; Temple University, $100,000; Christ Home for Homeless and Destitute Children, $100,000; Presbyterian Board of Foreign Missions, $200,000; Presbyterian Board of Home Missions, $200,000; Presbyterian Orphanage, $100,000; Presbyterian Home for Aged Couples and Aged Men, $100,000; Children's Country Week Association, $100,000.

Medical Unit Sails for Service with Central Powers of Europe.—Six doctors and six nurses, composing the sixth medical relief expedition to be sent from the United States to the Central Powers under the auspices of the American Physicians' Expedition Committee, sailed last Saturday for Rotterdam on the Holland-American liner *Ryndam*. The party was headed by Dr. Joseph Rilus Eastman, of Indianapolis, Ind., professor of surgery in the University of Indiana. The other physicians were Dr. H. Oberembt, of Milwaukee; Dr. Hubert Dunn, of Kentucky; Dr. Herrmann Schumm, of Sauk City, Wis.; Dr. Ralph Bettmann, of Chicago; and Dr. C. Rueth, of Milwaukee.

Civil Service Examinations.—Among the positions for which the Civil Service Commission of the State of New York will hold examinations on Saturday, July 15th, are the following: Assistant bacteriologist, Quarantine Laboratory, Department of the Health Officer of the Port of New York, men and women. Salary, $1,200 per annum. Physician, State prisons and reformatories. Salary, $2,000 without maintenance. Examination open only to men who are licensed medical practitioners in this State. Assistant physician, State prisons and reformatories. Salary, $1,500 without maintenance. Examination open only to men who are licensed medical practitioners in this State. Assistant physician, regular or homeopathic. This examination is intended to provide eligibles for the position of assistant physician in the State hospitals and for other positions of a similar nature in various State and county institutions. Salary in the State hospitals, $1,200, increasing $100 each year to $1,600, with maintenance.

Jefferson Medical College Commencement.—The degree of doctor of medicine was conferred upon 162 graduates at the ninety-first annual commencement of Jefferson Medical College, Philadelphia, held on Saturday, June 3d. This is said to be the largest graduating class in the history of the institution. The address was delivered by Dr. W. W. Keen, his subject being The Doctor's Duty. The award of two graduate degrees and of twenty-two prizes for college work were other features of the commencement exercises. Thirty-four States and Porto Rico, Nova Scotia, England, Persia, and Syria were represented among the graduates.

The American Posture League will hold a joint meeting with the American School Hygiene Association, Wednesday, July 5th, at 9:30 a. m., in the auditorium of the Horace Mann School, Teachers' College, New York. The program will include the following papers: The Relation of Posture to Health, by Dr. Eliza M. Mosher, of Brooklyn; Good Posture as a Condition of Efficient Brain Activity, by William H. Burnham, Ph. D., professor of pedagogy and school hygiene, Clark University; The Work of the American Posture League on School Furniture, by Dr. Henry Ling Taylor, of New York; Eye Strain and Posture, by Dr. E. M. Alger, of New York; The Relation of Clothing to Posture, by Dr. L. E. La Fetra, of New York; An X Ray Study of the Effects of Exercise, Posture, and Dress on the Position of Internal Organs, by Dr. Nathalie K. Mankell, of Buffalo, N. Y.; The Importance of Intensive Work on School Hygiene, by Lewis M. Terman, Ph. D., professor of education, Leland Stanford Junior University. Miss Jessie H. Bancroft, assistant director of physical training in the public schools of New York, will demonstrate, class room methods for training correct posture.

Fourth of July Preparedness.—In 1903, 415 persons in the United States acquired lockjaw (tetanus) following Fourth of July pistol and firecracker wounds. In 1908, there were 76 such cases with 55 deaths, and last year there were only 4 cases of lockjaw with 3 deaths. Two factors have led to this gratifying decrease in this unnecessary loss of life, namely safe and sane celebrations of Independence Day, and the prompt use of tetanus antitoxin. The antitoxin, while almost infallible as a preventive of lockjaw, has little value after the disease is fully developed. Inasmuch as the disease so often follows Fourth of July pistol and firecracker wounds, it is of the utmost importance to have tetanus antitoxin injected promptly. The department of health has for some years supplied tetanus antitoxin free of charge, and on request will even send a trained physician to inject the remedy. Not a single case of lockjaw has occurred in any patient promptly injected.

War Plans of the American Red Cross.—Colonel Jefferson R. Kean, Medical Corps, United States Army, who is director general of military relief for the American Red Cross Society, announces that the society has undertaken the organization of base hospital units from the personnel of the larger civil hospitals of the country. These base hospitals, each of which is equipped to receive 500 patients, are intended to be transported on the outbreak of war to the seat of military operations. Although organized by the Red Cross, they are not administered by it, but when called into active service pass under the exclusive authority of the War Department. The medical officers receive military commissions in the reserve corps, and volunteer commissions when called into active service. The nurses in the same way belong to the Red Cross Nursing Service, and in time of war become a part of the Army Nurse Corps.

The organization in time of peace of these units will place at the disposal of the government immediately on the outbreak of war organizations which it would require many weeks to create and equip, and offers our soldiers from the first the finest medical talent in the country. The following are the locations of these hospitals and the heads of their various services:

Presbyterian Hospital, New York.—Director and chief of surgical service, Dr. George E. Brewer; principal assistant, Dr. Alfred Stillman; chief of medical service, Dr. Warfield T. Longcope; chief of laboratory service, Dr. Karl M. Vogel; chief nurse, Miss Anna C. Maxwell.

Mount Sinai Hospital, New York.—Director, Dr. N. E. Brill; chief of surgical service, Dr. Howard Lilienthal; chief of medical service, Dr. R. Weil; chief of laboratory service, Dr. George Baehr; chief nurse, Miss Elizabeth A. Greener.

Bellevue Hospital, New York.—Director and chief of surgical service, Dr. George David Stewart; chief of medical service, Dr. Van Horne Norrie; chief of laboratory service, Dr. Charles Norris; chief nurse, Miss Clara D. Noyes.

New York Hospital, New York.—Director and chief of surgical service, Dr. Charles L. Gibson; chief of medical service, Dr. Lewis A. Conner; chief of laboratory service, Dr. William J. Elser; chief nurse, Miss M. H. Jordan.

New York Post-Graduate Hospital, New York.—Director, Dr. Samuel Lloyd; chief of surgical service, Dr. Edward W. Peterson; chief of medical service, Dr. Arthur F. Chace; chief of laboratory service, Dr. Ward J. MacNeal; chief nurse, Miss Amy Patmore.

Brooklyn, N. Y., for Navy.—Director and chief of surgical service, Dr. W. B. Brinsmade; chief of medical service, Dr. Luther F. Warren; chief of laboratory service, Dr. Robert F. Barber; chief nurse, Miss Frances van Ingen.

Massachusetts General Hospital, Boston.—Director, Dr. Frederic A. Washburn; chief of surgical service, Dr. George W. W. Brewster; chief of medical service, Dr. Richard C. Cabot; chief of laboratory service, Dr. J. Homer Wright; chief nurse, Miss Sara E Parsons.

Boston City Hospital, Boston.—Director, Dr. J. J. Dowling; chief of surgical service, Dr. Edward H. Nichols; chief of medical service, Dr. John Jenks Thomas; chief of laboratory service, Dr. Arial W. George; chief nurse, Miss Emma M. Nichols.

Harvard University, Mass.—Director and chief of surgical service, Dr. Harvey Cushing; chief of medical service, Dr. Roger Lee; chief of laboratory service, Dr. Richard P. Strong; chief nurse, Miss Carrie M. Hall.

Lakeside Hospital, Cleveland.—Director, Dr. George W. Crile; chief of surgical service, Dr. W. E. Lower; chief of medical service, Dr. C. F. Hoover; chief of laboratory service, Dr. H. T. Karsner; chief nurse, Miss Grace Allison.

Rochester, N. Y.—Director, Dr. John M. Swan; chief of surgical service, Dr. C. W. Hennington; chief of medical service, Dr. William V. Ewers; chief of laboratory service, Dr. C. C. Sutter; chief nurse, Miss Emma Jones; assistant, Miss Jessica Heal.

Johns Hopkins Hospital, Baltimore.—Director, Dr. Winford Smith; chief of surgical service, Dr. J. M. T. Finney; chief of medical service, Dr. T. C. Janeway; chief of laboratory service, Dr. T. R. Boggs; chief nurse, Miss Bessie E. Baker.

Harper Hospital, Detroit.—Director, Dr. Angus McLean; chief of surgical service, Dr. C. D. Brooks; chief of medical service, Dr. B. R. Shurly; chief of laboratory service, Dr. P. M. Hickey; chief nurse, Miss Emily McLaughlin.

Modern Treatment and Preventive Medicine

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THE THERAPEUTICS OF A PHARMACOLOGIST.

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ETHER AND CHLOROFORM.

The frequency with which these two anesthetics are used make a résumé of their physiological action desirable, especially for the general practitioner.

On the central nervous system these vapors produce a progressive downward paralysis, the action of chloroform being the more rapid. The medulla is the most resistant portion of the whole system, and the motor synapses throughout are less promptly affected than the sensory and receptive. It is assumed that ether and chloroform act through a solvent action on the fatty constituents of nerve cells.

The most important immediate action, after that producing unconsciousness, consists of the effect produced on the circulatory system. On the heart these vapors produce a progressive weakening of the auricles, with a toxic dilatation of the ventricles —a weak, slow heart action resulting. This effect is much more marked with chloroform than with ether; with chloroform the toxic action may be so sharp and severe as to quickly paralyze the heart, while ether may have relatively little effect on the heart until very late in the third stage of anesthetization. The exact mechanism of this depression of the heart is not satisfactorily explained, acute irritation of the inhibitors alone not seeming adequate.

With ether there is a preliminary rise in blood pressure, followed by a slow, steady fall; whereas with chloroform there is a continuous, though not necessarily rapid fall from the beginning, and this is more marked throughout than the fall produced by ether. In either case the fall of blood pressure is believed to be due to irritation of the vasodilators, resulting in a varying vascular relaxation. With ether the relaxation is more pronounced in the peripheral area, while with chloroform the principal seat of action is the splanchnic area; hence, in part, the facial pallor of chloroform anesthesia of the third stage, contrasted with the flushing seen when ether is administered.

With ether vapor the respiration is temporarily slowed from reflex irritation of both the trigeminal and the vagus, ether being the more irritant at first; but the slow, shallow breathing of the third stage is due to direct depressive action on the medulla.

In giving ether or chloroform it is customary to watch the pupil pass through a primary dilatation into a secondary contraction, at which point it is desirable to hold the extent of anesthesia, since a secondary dilatation with continued administration is usually indicative of impending coma. Contraction is assumedly due to irritation of the third cranial nerve; coma dilatation, to paralysis.

In the general metabolism chloroform tends to induce fatty infiltration, especially of the liver, degeneration being unfortunately a not infrequent sequel. Ether tends to form pulmonic complications, chiefly through a lowering of vital resistance, due in part to depressant action on the epithelium and in part to the high latency of heat in ether vaporization.

Absorption of ether or chloroform is exceedingly rapid through the alveoli of the lungs; excretion is largely by the same route, and is very prolonged, especially with ether, the characteristic odor of which is detectable on the breath of the patient from twelve to twenty-four hours after an operation, especially if the period of anesthetization has been unusually prolonged.

Both of these vapors are dangerous, hence they should be administered by those only who understand the reactions produced, and who are keenly alive to the responsibilities of the situation. Chloroform is estimated to be three times as depressant as ether and eight times as toxic.

Luargol or 102 in Syphilis.—G. Milian, in *Paris médical* for May 6, 1916, refers to a compound of dioxydiaminoarsenobenzol with bromine, silver, and antimony recently elaborated by Danysz. Experiments in the trypanosomiasis of rabbits showed that this compound will regularly yield a cure at a stage of the disease in which other arsenicals, including atoxyl, arsenophenylglycin, and arsenobenzol, frequently fail; in the last stage of the disease luargol will cure five out of six rabbits where the other compounds, in equal doses, have no effect whatever. The compound differs from arsenobenzol in that it gives better results when injected in small, repeated doses than in one large dose. It is supplied as an orange yellow powder, insoluble in water, but very soluble in caustic soda, with which it forms a dark brown solution. Luargol in the dose of 0.1 gram dissolves in 1.1 c. c. or better 1.5 c. c. of normal soda solution, and the injection is made with this solution diluted to one per cent. in sterile distilled water. As with salvarsan, the patient should fast before the injection and remain quiet for a few hours after it has been given. In the treatment of syphilis Danysz counsels injections in progressive doses of 0.15, 0.2, 0.25, and 0.3 gram, up to a total of 1.2 to 1.5 gram; intervals of two, three, or four days should be allowed between injections. Febrile and general reactions following injections of luargol are much less marked than after salvarsan. A patient who could only withstand 0.45 gram doses of neosalvarsan, augmentation beyond this point being impracticable owing to the chills, headache, and vomiting which followed even these amounts, received increasing doses of luargol, up to 0.3 gram amounts, without febrile reaction or other disturbance. Two cases of slight arsenical erythema have been observed after luargol, but no "nitritoid" attacks. The drug has pronounced therapeutic activity, syphilitic manifestations disappearing at times even more rapidly than after salvarsan or neosalvarsan. It has shown itself active in cases in which salvarsan failed to overcome ulcerative secondary lesions of syphilis. The new compound appears, therefore, to be an improvement over previous means of treatment in this disease.

Antianaphylactic Precautions in the Serum Treatment of Tetanus.—Genouville, at a recent meeting of the surgeons of the Fifth French Army (*Presse médicale,* May 8, 1916), reported five cases—additional to others previously reported—in which, with antianaphylactic precautions, injections of tetanus antitoxin were given to wounded men who had previously received such injections after former wounds. A preliminary injection of one c. c. of antitoxin was made very slowly into a vein at the bend of the elbow and a few minutes later a subcutaneous injection of ten c. c. administered. Of the five patients one acquired a mild serum eruption, another a temporary rise in temperature, and a third, suffering from bronchitis at the time, paroxysmal cough and faintness lasting fifteen minutes after the preliminary intravenous injection. In this last patient the subcutaneous injection was given on the next day without the least untoward result. These cases are held to demonstrate that, provided the antianaphylactic precautions referred to are taken, antitetanic prophylaxis can be applied without danger in wounded men who have received an injection of antitoxin some months before.

Rational Emetine Therapy.—R. L. Levy and L. G. Rowntree, in the *Archives of Internal Medicine* for March, 1916, point out, as a result of clinical observations and numerous experiments in animals, that the administration of emetine hydrochloride is not to be regarded as a harmless procedure, ill effects sometimes following its use, even in therapeutic doses. A man suffering from amebic dysentery and lues received twenty-nine grains of emetine subcutaneously in a period of twenty days. After slight amelioration this treatment was followed by violent diarrhea, abdominal pain, increasing albuminuria, acute renal insufficiency, acidosis, bronchopneumonia, vasomotor collapse, and death. A woman with pyorrhœa alveolaris, who received four half grain injections on successive days, acquired a distressing diarrhea lasting six days, with pain in the back and abdomen and tenesmus, these symptoms then gradually subsiding. The experiments and clinical notes of the authors showed that the toxicity of the various commercial preparations of emetine varies widely, and likewise that patients differ markedly in their susceptibility to the drug. Individualization in emetine treatment is therefore essential. The drug should preferably be given subcutaneously and in courses at intervals of several days or a week. In amebic infections Levy and Rowntree consider one third grain three times a day for a week or ten days usually a safe dose. It is rarely necessary to administer more than one and a half grain daily. According to Bass and Johns, one half grain of emetine daily for from three to six days is all that is required in pyorrhea. It should be borne in mind that over a long period of time even relatively small doses of emetine may prove harmful. Intravenous injections of emetine should be given only in extreme cases. Small doses, well diluted, e. g., one half grain in 100 c. c. of salt solution, should alone be used. The injection should be made slowly, and the blood pressure meantime be carefully observed, the experiments of the authors having shown that a sudden, pronounced drop in pressure is readily induced by this drug when given intravenously. The oral route of administering emetine is impracticable, even small doses causing marked irritation.

Intestinal Obstruction in Children.—T. Jason Wood (*British Journal of Children's Diseases,* June, 1916) remarks that apart from intussusception these cases are rare. Two cases are recorded, in one of which the first symptoms were associated with the respiratory organs, cough, etc., but there had been no bowel movement for two days. The temperature was 103° F., the abdomen was considerably distended and slightly tender all over with no local swelling. The rectal examination was negative. The following morning it was possible to make out a tumor in the region of the umbilicus, cylindrical in shape, resembling intussusception, and operation was advised. The following day the operation was performed. There was a mass, apparently tuberculous in nature, infiltrating three or four inches of the small intestine and its mesentery. It was fixed and could not be delivered through the wound. A lateral anastomosis was done and the child made a rapid recovery. The second case presented a cyst of the mesentery about the size of a duck's egg in the lower part of the ileum. In this case there had been no bowel movement for five days and she had vomited every day, the vomitus being fecal in character. At operation a gangrenous bowel was found and was resected.

Varied Aspects of Military Surgery.—R. Le Fort (*Presse médicale* for May 4, 1916) after observations in the Balkan wars in 1912, felt certain of the advantages, in nearly all cases, of prudent over bold surgery and of aseptic over antiseptic methods. Experience at the battle of the Marne in 1914 completely dispelled such impressions, the frequency of tetanus, gas gangrene, suppuration, etc., soon showing that painting of a wound with tincture of iodine and applying an individual dressing constituted a hopelessly inefficient method. Later improvements in transportation of the wounded and in the dressing of the wounded at the first aid posts, together with the institution of good base hospitals, restored to vogue academic discussions on the relative value of antisepsis and asepsis, but at any moment present views may again be upset. On the whole, it is clear that the surgical indications vary from one period, place, or series of wounded men to another. The present elative frequency of shell and shrapnel wounds and the short range at which bullet wounds are often inflicted greatly aggravate the average clinical course of the wounds met at present. The nature of the cases, and hence surgical indications, also vary, whether observations are made in an ambulance, a field hospital, or a base hospital.

and according to the type of military operations being conducted at the time. Thus, in large battles with continuous movement of entire armies, the medical corps is unavoidably overloaded with an immense number of cases requiring attention, and under shifting and unfavorable conditions, whereas in trench warfare, conditions are far better and surgical indications approximate those of civil practice. Other variable factors exerting a marked influence on military surgical practice are the physical and mental state of the troops at the time, the race to which the wounded men belong—Serbians and Bulgarians, as well as Moroccans and Senegalese, resisting infection better than the French and Germans—and the skill of the surgeons applying the initial treatment to the wounds. The good military surgeon must be a specialist in surgery and know how to adapt his treatment to the varied conditions under which the wounds are received and given care.

Trench Foot Tetanus.—George G. Davis and Joseph J. Hilton (*Journal A. M. A.*, June 17, 1916) report the case of a rifleman who had been in the trenches five days exposed to the cold and wet. On admission to the hospital both feet were reddened and edematous, the edema extending to slightly above the ankles. The great toe on the right foot was slightly blackened and all the toes were more or less cyanotic. Anesthesia was present over the entire surface of the foot. After a week in the hospital stiffening of the muscles of the jaw developed and 2,000 units of tetanus antitoxin were given. Later the muscles of respiration were involved and the patient died ten days after admission. The patient had had no prophylactic dose of tetanus antitoxin. All cases of trench feet should be considered as wounded and a prophylactic dose of antitetanic serum should be given.

Phagedenic Gangrene Following Vaccination.—F. Balzer and E. Moulard in *Bulletin de l'Académie de médecine* for May 2, 1916, state that the complications of vaccination, relatively rare, present varied clinical aspects, including vaccinal ulceration, erysipelas, lymphangitis, vaccinoid furuncle, abscess and phlegmonous inflammation. Phagedenic tendencies in these complicating lesions have at times been noted, and have been overcome successfully by Brocq, by means of a five to ten per cent. collargol ointment, hot air, and the thermocautery. In the case reported by the authors, a healthy adult of fifty-one years, acquired after vaccination a phagedenic ulcerative gangrene of the arm, ultimately invading the anterior aspect of the thorax down to the second rib, and the entire back and nuchal region. Cauterization and the use of various antiseptics during a period of seven months, including the employment of phenyl salicylate, methylene blue, and hot air, failed to stay the gangrenous process. A solution of trioxymethylene in glycerin removed the offensive odor. Finally, by the use of two polyvalent serums, that of Leclainche and Vallée and later that of Wurtz, prepared with organisms obtained from the wound, suppuration was arrested, extension of the disease checked, and the projecting gangrenous margins obliterated. The patient, nevertheless, succumbed from cachexia. In this case the infecting pyogenic organisms were of many varieties, Bacillus pyocyaneus, according to Wurtz, probably playing the principal role. Neither to the technic of vaccination nor the vaccine used is the gangrenous complication ascribed, 300 other persons having been vaccinated under like conditions on the same day without any untoward result. Poor resisting power and insufficiency of antibodies, together with secondary infection of the vaccination wound by scratching or rubbing by the clothing, are held to account for the serious complication witnessed. The patient was far from home and living under unhygienic conditions at the time.

Treatment of Gunshot Wounds by Packing with Salt Sacks.—Alfred J. Hull (*Lancet*, May 27, 1916) describes this method which has as its object drainage of cavities by the osmotic action of salt. Sacks are made of bandage and gauze sewed into shape, filled with salt and sterilized in an autoclave. When introduced into wounds the free end is immersed in saline solution and drainage takes place by capillary attraction. The salt remains undissolved for several days and forms a concentrated solution promoting resolution of inflammatory induration and aiding the separation of dead tissue by dissolving coagulated lymph. Six days is the average time that the sacks remain in the wound, thus obviating frequent dressing.

Psoriasis of Traumatic Origin and Its Treatment.—Gaucher and Klein, in *Paris médical* for May 6, 1916, refer to numerous cases of psoriasis starting more or less suddenly after a nervous shock or wound which they have met since the beginning of the European war. In a woman of twenty-five years, a refugee from Arras, psoriasis over the occiput was first noticed on the day after the bombardment of that town, and later extended to the back and lower extremities. In soldiers, psoriasis often developed over the scars of healed wounds. The treatment consisted in thorough removal of the scales and the application of the following ointment, which yielded excellent results and was nearly always well borne:

℞ Sulphuris præcipitati,
Camphoræ pulveris, ... āā 1 gram;
Acidi salicylici, ...
Olei cadini, ... 10 grams;
Zinci oxidi, ... 20 grams;
Petrolati albi, ... 30 grams.
Fiat unguentum.

The patients received a thorough bathing with soap every other day. Complete cure or marked betterment always followed the above mentioned treatment.

Duodenal Tube in Gallbladder Disease.—Max Einhorn (*Journal A. M. A.*, June 17, 1916) states that if turbid bile is found in the duodenum in the fasting condition, cholecystitis with gallstones is usually encountered. Turbid bile may be present without gallbladder disease in cirrhosis or neoplasms of the liver or in structure of the duodenum below the ampulla of Vater. Clear bile may exceptionally be associated with biliary calculi; in this case the gallbladder is not inflamed, or the gallbladder is entirely filled with calculi. The diagnosis of cholecystitis or cholelithiasis cannot be made from the appearance of the bile alone; with other clinical signs it is of great assistance. In the treatment of gallbladder lesions a weak solution of ichthyol or argyrol was instilled into the duodenum just above the ampulla of Vater. The plan of treatment is based on the idea that an astringent effect on the duodenum and the papilla of Vater will exert a beneficial effect on the bile duct. The treatment is given in the fasting condition. Cases of catarrhal jaundice and minor affections of the gallbladder not requiring surgical interference were much benefited by this method of treatment.

Quinine and Urea Hydrochloride as a Local Anesthetic in Tonsillectomy.—The advantages of this solution, according to Louis J. Burns (*Annals of Otology, Rhinology and Laryngology,* December, 1915) are that it is absolutely nontoxic even in as strong a solution as ten per cent. It always produces sufficient anesthesia to complete the operation without the necessity of stopping to make further application or injection. There is marked diminution of afterpain and discomfort. It has advantages over cocaine and its derivatives, owing to its nonsystemic action. There is absence of troublesome primary or secondary hemorrhage. It may be readily sterilized, frequently recurring high temperature producing no chemical or physiological change.

Treatment of Head Injuries.—Alexander Don (*Lancet,* May 20, 1916), in writing of cases treated in casualty clearing stations at the front in France, states that in two to four hours unconscious patients recovered sufficiently from shock to allow of operation. Scalp wounds are excised and trephining done when necessary—shell wounds almost always produce cerebral abscess. Indications for operations are the presence of a penetrating wound of the head, the fitness of the patient to take a general anesthetic and experience of the surgeon in cranial surgery. Cleansing of the scalp wound, opening of the cranium to allow the escape of blood and brain debris and restoring pulsation give good immediate results. Superficial drainage is preferable to the deep method.

The Nauheim Method.—Simon Baruch (*Medical Record,* June 17, 1916) describes the true Nauheim method which is often misunderstood and misused. The rationale may be divided into two essential elements; the effect of the carbon dioxide and that of the salines. The hyperemia of the skin seen in a carbon dioxide bath seems to be due to a specific mechanicochemical irritation by the bath. There is also a heightening of cutaneous sensibility with an enhancement of respiratory activity from absorption of carbon dioxide by the skin. There is no doubt of the superiority in therapeutic effect of natural carbonic acid water over the artificially prepared in cardiac disease. The principal guide to a prescription of the Nauheim method whether natural or artificial is adaptation of the bath in duration, temperature, and gas and mineral contents to each case and a careful watching of the response of the heart to the bath. Omitting the salines is as unwise as omitting any element of asepsis in surgery. In imitating the Nauheim bath the water temperature should not be higher than 94° F. nor lower than 86° F. unless the patient reacts well and is improving.

Treatment of Chronic Cough (*Journal of the Med. Soc. of N. J.,* May, 1916):

℞ Terpini hydratis, ...℥i;
Alcoholis, ...ʒi;
Syrupi pruni virginianæ, ...℥iii.
M. et Sig.: Teaspoonful, three or four times a day.

Treatment of Nervous Cough (*Journal of the Med. Soc. of N. J.,* May, 1916):

℞ Codeinæ, ...gr. v;
Acidi hydrocyanici diluti, ...ʒi;
Elixiris aurantii, q. s. ad....................℥iv.
M. et Sig.: Teaspoonful, four or five times a day.

Serum Treatment of Typhus Fever.—Charles Nicolle and Ludovic Blaizot, at a recent meeting of the Académie des sciences, Paris (*Presse médicale,* April 13, 1916), reported that they had found it practicable to produce an immunity to typhus fever in horses and donkeys by repeated inoculations of emulsions of spleen or adrenals from guineapigs suffering from typhus infection. The serum thus obtained, tried first in animals, was found to possess distinct preventive as well as curative properties. It is nontoxic to man, and was used in nineteen patients with typhus fever, with favorable results.

Congestion in the Treatment of Cerebrospinal Meningitis.—Duncan Forbes and Eveline Cohen (*Lancet,* May 27th, 1916) advocate the production of cerebral congestion in these cases by raising the foot of the bed so that the patient's body is at angle of 14° to 23° with the floor, while no pillow is allowed. In mild cases this results in a few days in normal temperature and free movement of the head with uninterrupted recovery. In severe cases the temperature rises and recovery is more gradual. Too high raising of the foot of the bed causes severe headache and persistent vomiting and requires a lowering of the bed with relief of tension by spinal puncture. The method was first tried in cases which showed low cerebrospinal pressure and threatened to become chronic, but it has also shown good results in the early stages of the disease. The patient should lie on the back as much as possible without pillows.

Fainting Attacks in Children.—Robert Hutchison (*British Journal of Children's Diseases,* June, 1916) reports that these attacks last from a few minutes to three quarters of an hour. The patients usually are very pale, but do not become wholly unconscious. Girls are more frequently affected than boys. The attacks do not come on, as a rule, until after the age of five years. The cause may be overstrain at school. The condition is to be diagnosed from minor epilepsy; in the latter the seizure is not as long and consciousness is usually gone. It is probable that the attacks are pimarily nervous in origin and due to a temporary sympathetic paralysis leading to uncontrolled action of the autonomic system with vasodilatation in the splanchnic area and inhibition of the heart. Removal from school, change of air to the seaside, strychnine and attention to the digestive organs usually bring about a speedy disappearance of the attacks.

Treatment of Hepatic Failure in Malaria and Yellow Fever.—Andrew Balfour (*Lancet*, May 20, 1916) agrees with Hunter that such cases require a keeping up of the supply of both protein and sugar. Glucose is administered by mouth or enema in solutions of five to ten per cent., while protein is given in peptonized enemata of beef tea, eggs, etc.

Treatment of Phlebitis in Typhoid.—Santa Maria y Marron (*Revista de Medicina y Cirugia Practicas*, May 14, 1916) reports a severe case of bilateral phlebitis of the leg in typhoid where brilliant results followed the use of enemata containing ten grams of pure peptone with 100 grams of fresh liver pulp emulsified therewith. Liver extract was also given by mouth. Pain disappeared in six days as did shortly afterward all physical signs.

Ozonized Isotonic Sea Water in the Treatment of Wounds.—R. Guyot and C. M. Rogues, at a recent meeting of the Société de biologie, Paris (*Presse médicale*, April 13, 1916), report favorable results from the use of sterile isotonic sea water for dressing wounds. Isotonicity with the body fluids is obtained by diluting the sea water with pure water sterilized in the autoclave., Further sterilization is procured by means of ozone, of which 8.7 grams are used in the treatment of every cubic metre of water. According to the clinical observations made, the resulting ozonized water exerts a marked effect in accelerating tissue healing.

The Antiseptic Properties of Iodized Oil.—In a communication to *Roussky Vratch*, for February 20, 1916, V. Golovin tells of his experience with iodine in oil as an antiseptic and antipruritic application in cases of wounds, boils, eczema and ulcers. He employs either olive or cottonseed oil to which a few drops of the tincture of iodine are added, the amount of iodine depending on the strength desired. The oil is heated in an open vessel and the iodine added drop by drop, stirring after each addition with a glass rod. It is put into a stoppered bottle. When freshly prepared the oil has the color of iodine, losing the color on standing. It is the decolorized oil that should be used. The author obtained satisfactory results with this preparation.

Treatment of Flat Foot in Soldiers.—Robert Jones (*British Medical Journal*, May 20. 1916) divides the treatment into three stages. In the first acutely tender stage the patient is kept in bed and gentle massage used. In the second stage the foot is adducted and inverted and kept continuously so if necessary, using plaster of Paris for ten days. The third stage, after the removal of the plaster, calls for massage and exercise, avoiding movements or eversion. Boots are then fitted to the feet with straight inner border of the sole, long heel raised on the inner side, and a patch is put on the inner side of the sole still further to invert the foot. Cases due to peroneal sprain call for exsection of the tendons. Contrast baths of hot and cold water may be used to stimulate the circulation, while electricity is of service in hastening the recovery.

Therapeutic Value of Spleen Extract.—H. M. Harrower (*Medical Record*, June 3, 1916) advocates the use of spleen organotherapy in anemia, malnutrition, leucopenia, malaria, typhoid, and tuberculosis. Its action is the production of leucocytosis.

Röntgenographic Control of Pneumothorax Treatment in Pulmonary Tuberculosis.—I. Seth Hirsh (*Medical Record*, June 10, 1916) states that x ray control assists in selection of cases, permits estimation of the degree of collapse of the lung and the effect on the opposite lung, it allows the study of the progress of the disease, it indicates graphically the displacement of the heart and mediastinum, and it makes possible the early discovery of complications. Both the plate and the fluoroscopic methods should be used.

Anaphylaxis in the Treatment of Gonorrheal Complications.—Louis D. Smith, in *Journal A. M. A.*, June 3, 1916, finds that patients who are markedly affected by anaphylaxis respond to the treatment with the specific serum. Factors other than the antibacterial play an important part, as when normal horse serum is substituted for antigonococcic serum the results are the same. To what factor the beneficial results of treatment with horse serum are to be attributed cannot be definitely stated. The best results are obtained at the time of the onset of serum sickness and the greater the reaction the better the result.

Laminectomy with Simple Exposure of the Spinal Cord.—Charles A. Elsberg and Pearce Bailey in the *Journal A. M. A.* for June 10, 1916, state that the free removal of spinous processes and laminæ with opening of the dura, in the absence of increased intradural pressure or a discoverable lesion, may be followed by a disappearance of normal cutaneous and tendon reflexes for a number of hours, or perhaps by the temporary return of pathological reflexes. The operation of laminectomy may have a profound effect in certain pathological states of the spinal cord and may so modify or check the disease that a return to normal conditions is possible. Because of the safety of laminectomy in experienced hands, except in the region of the conus and the cauda equina, exploratory operations should be done more frequently.

Epifascial Method of Injection of Mercury and Salvarsan Derivations.—A. L. Wolbarst (*Medical Record*, June 3, 1916) states that this method was first used in 1914 by Wechselmann in Berlin, and Wolbarst from personal experience considers it better than the intramuscular method because it provides ready absorption without necrosis, infiltration, or inflammation. The rationale of the method depends upon the theory that medicated fluid injection in proximity to the layers of the fascia lata will cause less pain than when deposited intramuscularly The needle is plunged into the gluteal muscle and then withdrawn, until the point turns freely from side to side. A local anesthetic solution may be first injected which will flow freely back through the needle after the syringe is detached from it when the proper level is reached, and this serves the second purpose of making painless the injection proper.

Miscellany from Home and Foreign Journals

Gas Gangrene.—E. Sacquépée in *Presse médicale* for May 4, 1916, holds that the term gas gangrene is ambiguous and misleading, for at times in true gas gangrene both gangrene and gas are clinically imperceptible, while at others gaseous and gangrenous infections occur which have nothing to do with gas gangrene. With rare exceptions, cases of true gas gangrene present a complex bacterial flora in the tissues involved. Experimental inoculations in animals furnish a basis for determining what bacterial species are the true etiological factors. Sacquépée divides the cases into three groups, that of the edematous forms, that of gas septicemia, and that of diffuse gangrene, the first occurring with relative frequency in the spring and early summer and the second in the summer and fall, while the third prevails at all seasons. The edematous forms are discussed in particular in the present article, and are divided into the pure edematous and the edematogaseous varieties. The former appears usually three to five days after the wound has been received. The limb affected becomes rapidly edematous, and the segment in which the wound lies may double in size in less than twelve hours. No trace of gaseous infiltration is noted, though a characteristic odor gradually appears. The general condition rapidly becomes bad, and death nearly always follows promptly. The initial gangrenous focus is usually found of the size of a large walnut, up to that of the fist. The organism responsible for this as well as the edematogaseous variety is the bacillus of malignant gaseous edema or *Bacillus bellonensis,* a strictly anaerobic bacillus three to ten microns long, often curved, sometimes occurring in chains, but generally separately. Both this organism and its soluble toxin produce edema, with or without gas formation, and cause early death when injected into guineapigs.

The Transmission of Typhus Fever.—The role of body lice in the transmission of typhus fever seems well established by experimental as well as by clinical investigations. Following the demonstration by Nicolle during the epidemic of typhus fever in Tunis in 1906, a number of investigators confirmed the result obtained by him not only by infecting lice with the blood of typhus patients, but by transmitting the disease to monkeys and guineapigs through the agency of the infected lice. Moreover, Nicolle and Conseil transmitted typhus fever to two healthy persons by permitting them to be bitten by infected lice. Thus, from the first demonstration of the relation of the tick to Texas fever, made by Theobold Smith in 1893, to the last evidence that the body louse is concerned in the transmission of typhus fever furnished by Nicolle thirteen years later, wonderful strides have been made in establishing the role of insects in carrying disease from the sick to the well. We may well be proud of the fact that the most notable contributions to this important phase of epidemiology were made by American investigators, Theobold Smith and the Yellow Fever Commission. However, in the case of typhus fever, the evidence that the louse is the sole carrier of the disease is not altogether conclusive. V. K. Stephansky (*Roussky Vratch,* February 20, 1916) has observed a number of cases of infection with typhus fever in which the agency of lice could be excluded with reasonable certainty, as in the case of physicians, students and nurses who never came in such contact with the patients as to become contaminated with the vermin. During an epidemic of typhus fever in Odessa, he observed that the majority of patients came from the better class of inhabitants, while in the cases of relapsing fever, a disease carried exclusively by the body louse, almost all patients were of the lower classes, coming from cheap lodging houses. The author suggests drop infection from the nasopharynx as another possible mode of transmission, pointing out that in the majority of cases of typhus fever, the secretions of the upper respiratory passages are streaked with blood which contains the typhus virus. In sneezing, coughing, or talking, a spray of infected secretions may be projected onto the mucous membranes of exposed persons. It would seem that while lice do carry typhus fever, the possibility of transmission of the disease through secretions containing blood should be borne in mind and guarded against.

Observations on Disorders Due to Meckel's Diverticulum.—Attention is drawn by E. Kirmisson in *Bulletin de l'Académie de médecine,* April 25, 1916, to the possibility of confounding intestinal obstruction due to constriction by Meckel's diverticulum with acute appendicitis. The diverticulum being attached to the bowel only a short distance from the ileocecal valve, symptoms referable to the right iliac fossa often attend the obstructive condition. Diverticular obstruction causes pain and vomiting similar to those of appendicitis, which, in turn, is sometimes complicated by indications of intestinal obstruction. In the case of a boy of fourteen years recently admitted to a hospital for supposed appendicitis, a matted mass of intestinal loops was found constricted by a large adherent Meckel's diverticulum near the brim of the pelvis. The diverticulum was of the same calibre as the small intestine to which it was attached twenty cm. above the ileocecal angle and also by a vascular band containing an artery and two veins at a point a few cm. above, thus forming a noose in which a loop of ileum was loosely caught. The band was cut between ligatures, but the diverticulum was not removed, owing to the patient's poor general condition, until about two months later, when he returned with recurrent obstructive symptoms. Recovery followed. Kirmisson recommends this two stage operation in patients similarly weakened at the time of the first intervention. In the formerly troublesome cases of Meckel's diverticulum open at the umbilicus, forming a fecal fistula, the author first ligates the pouting margins of the canal to prevent outflow of feces, next incises around the umbilicus through the peritoneum, delivers the diverticulum and loop of intestine to which it is attached, ligates the diverticulum at its base, removes it with the thermocautery, buries the stump, and closes the abdomen. Three cases were thus treated successfully. Infants operated in for this condition should be breastfed, to improve their resistance to the surgical procedure.

Agglutination Test in Pertussis.—A strongly agglutinating pertussis serum was obtained by O. R. Povitzky and E. Worth (*Archives of Internal Medicine,* February, 1916), by inoculating rabbits intraperitoneally, ten or twelve times at seven day intervals, with living pertussis cultures. By agglutination tests, B. pertussis could be specifically identified from hemoglobinophilic bacilli, pertussislike bacilli, and B. bronchisepticus. In the clinical diagnosis of pertussis, agglutination tests were found to compare favorably with complement fixation only in the first week of the whoop. A dilution of not less than one in 200 was found necessary for a practically positive diagnosis of pertussis by the agglutination reaction.

Diplococcic Pleuropulmonary Congestions.—These affections are now regarded by Umberto Baccarini in *Riforma medica,* May 8, 1916, from clinical observations and laboratory experiments, as systemic, with localization in the respiratory apparatus. Fränkel's pneumococcus first causes a diplococcus septicemia and later becomes localized in the lung—a frank pneumonia. Diplococcemia does not necessarily cause pneumonia, but may cause cerebrospinal meningitis. Varied degrees of severity of pneumococcus infections were shown by Banti to be due not to the patient's powers of resistance, but to a variety of pneumococci with distinct biological characteristics. Pleuropulmonary congestion may be looked upon as the equivalent of an attenuated pneumococcemia, or, as Baccarani terms it, a "modernized pneumonia."

Epidemic Catarrhal Jaundice.—John A. Procter and Gordon Ward (*British Journal of Children's Diseases,* June, 1916) report a patient, a boy aged twelve years, who had enjoyed good health up to the time of the attack of jaundice. For six months he had had repeated attacks of epistaxis, and for three weeks swelling of the feet and abdomen. At the first examination the spleen was found to be enlarged; the liver, however, was normal in size. Diarrhea was present, but no albuminuria. He was seen by another physician in consultation, who diagnosed sarcoma and advised an exploratory laparotomy. As his condition improved, this was not done. Later he became worse, the spleen again being enlarged, bleeding of the gums and edema also being present. Some time later he became acutely ill, was unconscious, with marked retraction of the head and seemed on the point of death. Two days later the head retraction and jaundice had disappeared. He now became very dyspneic, jaundice developed rapidly, and he died in two days. The autopsy showed a hobnail liver and an enlarged spleen; a completely collapsed left lung in a cavity full of recent lymph and exudation. The case had been diagnosed at various times as splenic anemia, tuberculous peritonitis and meningitis, and meningococcal meningitis. Sarcoma, sporadic acholuric jaundice *sine* jaundice and portal thrombosis were also suggested. The blood picture showed considerable anisocytosis and polychromasia, except in one examination.

Myelogenous Leucemia with Hematomyelia.—Romolo Rummo reports in *Riforma medica,* May 15, 1916, a case with fatal termination in a woman of thirty-four years with a syphilitic history, who showed marked splenomegaly, bone tenderness, ecchymoses of the thighs, and whose blood showed an enormous increase in leucocytes. Paraplegia developed in this case with lessened reflexes, neuralgic pains in the legs, and later incontinence of urine and feces. Post mortem examination showed the coexistence of a syringomyelia.

Fecal Concretions of the Appendix.—John Douglas and Leon Theodore LeWald (*Journal A. M. A.,* June 17, 1916) state that a fecalith in the appendix as a rule is not to be seen with the x ray. If calcium salts are deposited on the surface as the result of inflammation it may become demonstrable. A fecalith in the appendix may be mistaken for a ureteral calculus. The passage of an opaque ureteral catheter will usually help in making the differential diagnosis. When the shadow is above the crests of the iliac bones a lateral stereoscopic röntgenographic examination should be made with an opaque catheter in the ureter on the suspected side. If there is still doubt, a Röntgen examination, combined with an opaque meal or an enema, should be made. Finally, in making a differential diagnosis it must be remembered that there are cases in which the appendix is situated on the right side.

Malaria in Flanders.—In spite of the conditions strongly favoring outbreaks of malaria among the troops at the front in Flanders, e. g., purposeful inundation of the plains with brackish water, the resulting formation of stagnant pools, the admixture of already infected colonial troops, and the prolonged occupation of trenches partly filled with water, no epidemics of malaria have occurred, owing to the efficient sanitary precautions taken. F. Rathery and R. Michel, in *Paris médical,* April 22, 1916, have met with twenty-eight cases of malaria with positive blood findings, many of them in colonial men already infected, but some in Frenchmen not previously exposed. In addition, there were twenty-nine cases with intermittent febrile paroxysms but negative blood findings. Among the cases were instances of the ordinary periodic chills and fever (with double quotidian paroxysms in one case), of continued fever with typhoid state, of pernicious malarial fever with typhoid state, and of larval malaria. In some instances malarial manifestations appeared in the course of typhoid or paratyphoid fever. In two cases of paratyphoid B fever sudden febrile paroxysms were noted during the course of the disease and malarial plasmodia were thereafter found in the blood. On the whole, the malarial conditions met were seldom serious, and all seemed to yield to quinine, though sometimes tardily. Administration of quinine by mouth proved insufficient, necessitating recourse to injections of the drug, which were always well borne. Quinine medication should not be abandoned because it has failed to benefit in twenty-four hours.

An Unusual Stomach Case.—George E. Brown (*Journal A. M. A.*, June 17, 1916) reports that the x ray showed a pouch of the stomach on the lesser curvature near the pylorus. The diagnosis was in doubt, but the most likely was that of gastric ulcer. At operation a hernialike weakening of the stomach wall was found at the lesser curvature near the pylorus. It was plicated with three linen sutures. The recovery was uneventful. There was considerable improvement in the patient's symptoms, but an indiscretion in diet or an excess of alcohol would bring on many of the original symptoms.

Causes of Eczema.—Predisposing causes given by Eusebio de Oyarzabal, in *Revista de Medicina y Cirugia Practicas*, May 7, 1916, are the exudative diathesis of Czerny, with which is related the status thymolymphaticus, also arthritism, gout, diabetes, and disturbances of nutrition, such as overfeeding and excessive adipose tissue. Age is of importance, the newborn furnishing a majority of all cases. Neuroses and neuropathies may produce eczemas. Determining causes are variable, and two factors must be considered, namely, special sensibility of the skin and mucous membranes, and an excitant which acts either internally or externally. Overfeeding is not only a predisposing, but also a recognized determining cause, although proof that it is not invariably so, is seen in the fact that not all eczemas yield to diet, and that as a rule external medication is much more efficacious than regulation of diet. Physical causes are compression, abrasions, lack of fat in the skin, temperature conditions, secretions and excretions, and action of light. Unna is a believer in the parasitic nature of the disease.

Phlebitis migrans.—Carl A. Hedblom, in *Journal A. M. A.*, June 3, 1916, reports the case of a woman in her fourth pregnancy in five years. The labor was uneventful. On the eleventh day the patient had a drenching night sweat with a sharp rise of temperature to 104° F. There was marked tenderness and some induration over the course of the right saphenous vein and the leg soon became swollen and edematous. The usual treatment of rest and elevation, the use of the ice bag locally, etc., was carried out and there was a rather prompt improvement in the temperature and pulse, but the tenderness and swelling extended progressively down to the foot. At the end of the fourth week the temperature rose again to 104° and there was marked tenderness, induration and swelling of the right thigh. This was followed by similar attacks in the left thigh, left side of the neck, axilla, arm and left chest. In all there were six attacks. In the last attack eye and mental symptoms presented and both feet became gangrenous. There was complete recovery. In the course of the illness an autogenous vaccine was made from a blood culture which revealed a nonmotile spore forming bacillus which did not correspond to Bacillus subtilis in its cultural characteristics. Goat serum was also prepared and injected subcutaneously without effect.

Amebic Dysentery in a Man Who Had Never Left England.—Amebic dysentery in the British Isles, as described by C. Worster Drought and D. D. Rosewarne (*British Medical Journal*, May 25, 1916), is extremely rare and this justifies the reporting of a case occurring in a soldier, aged thirty-nine years, who had always lived near Manchester. Then Entamœba histolytica was formed in the stools and the case responded promptly to the emetine treatment.

Duodenal Ulcer Mistaken for Chronic Appendicitis.—Richard Lewisohn (*Medical Record*, June 17, 1916) reports four cases of duodenal ulcer which had been erroneously operated in for appendicitis. Three of the four cases had positive histories and x ray findings with negative chemical analysis, while the fourth had the whole triad, pointing toward duodenal ulcer. The fact that three cases of this type were admitted to one hospital in one day proves that this diagnostic error must occur frequently.

Angioma of the Larynx.—Emil Mayer (*Medical Record*, June 17, 1916) regards angioma of the larynx as rare. In the case recorded malignancy was suspected and an attempt at removal of a specimen for diagnosis might have been fatal. The patient was a woman of fifty-two years who had been hoarse for a year and had had a profuse hemorrhage from the mouth. There was cough and dyspnea on exertion, but no pain. A diagnosis of cancer had been made previously, but careful examination showed an angiomatous growth for which laryngotomy and excision of the mass was done under local anesthesia. The most interesting point in the case lay in the diagnosis, because fatal hemorrhage might have followed the removal of any part by the endolaryngeal method. A review of the literature by Phillips and Ruh showed only twenty-seven cases of this condition.

Indictment of the Tonsil.—Ben C. Gile, in *Annals of Otology, Rhinology, and Laryngology*, for December, 1915, states that in addition to the obstruction to respiration, deglutition, and phonation caused by hypertrophy and other abnormal conditions, the tonsils play an important part in the introduction and dissemination of pathogenic germs. They share in the causation of many morbid conditions which destroy health and endanger life at a time when no local symptoms are manifested. A focus of infection may exist in the crypts, while the surface may show nothing to excite suspicion. In fact, there may be not only a lack of symptoms, but also of notable change in appearance, so that a casual inspection may lead to a negative diagnosis. The tonsils cannot be placed in the class of organs that are presumably healthy until proved morbid. Their structure and location are such as to make them peculiarly liable to invasion. A marked increase of blood pressure during an attack of tonsillitis should cause a thorough investigation of the condition of the kidneys. Cases of nephritis have disappeared after the removal of diseased tonsils. Rheumatism, nervous disorders and many other diseases may be traced to morbid tonsils as the causative factor.

Proceedings of Societies

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, Held January 17, 1916, at the Academy of Medicine.

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

Cancer of the Breast.—Dr. JOHN EDWARD JENNINGS, of Brooklyn, New York, read this paper, which was published in the JOURNAL for May 20, 1916.

Dr. ROBERT T. MORRIS said that the frozen section could not always be depended upon, but nevertheless it was well to make use of it, for two or three reasons. In the first place, if the growth was small the patient might be told that it was of an uncertain nature, but that if she waited for operation until it could be definitely determined it might be too late. If a frozen section was made she might be able to escape with a small operation if the growth was benign. In that way they appealed to the psychology of the patient, aroused her curiosity, and she would be much more apt to consent to prompt operation than allow the growth to go until it became malignant. Women had almost as much curiosity as doctors, and if they could get hold of them early and arouse their curiosity, they could be led up to a frozen section and prompt operation. Otherwise the patient might delay and go from one person to another for advice. She might seek aid from a Christian scientist or from some quack who would massage the growth and hasten its development.

Last year he had operated on the wife of a physician, and had the report from the frozen section that it was a benign growth. Accordingly, the breast only was removed, and the patient came back in six months with a malignant carcinoma. In that case the report was absolutely misleading. In most instances, however, they could determine the condition pretty well. In regard to the question of multiple local recurrence, when the skin area, so well described by Doctor Jennings, had not been removed, the speaker had not been in the habit of removing it, but without reference to his case histories, he could recall very clearly that many did have this local skin recurrence, but when recurrent skin nodules did occur, they were remarkably amenable to the Coolidge x ray or to the gamma rays of radium.

In regard to the division of the minor pectoral muscle, he was at work in Hamburg when Heidenhain made his first study of the deposits of growths in the muscles, and he determined at that time that the minor pectoral muscle was not involved until very late; that had been confirmed by subsequent investigations. Instead of dividing the minor pectoral muscle near its arm attachment, he preferred to use Ruth's device, which consisted of dividing it from its rib attachment, then turning it into the axilla so that scar contraction in the axilla did not count. He depended a great deal on the value of this little procedure, of which he would be deprived if he was to follow Doctor Jennings' plan in that respect.

The point of moving the arm freely after the operation was not sufficiently emphasized by the authorities. He could not recall having heard any one speak of it as Doctor Jennings had done, and yet it was a most important point, for the reason that the joint being supplied in part by the circumflex nerve filled with some degree of exudate on account of the irritation of the circumflex nerve, and this exudate organized and formed adhesions. Many persons after amputation of the breast had a stiff arm and would complain of pain for months or years afterward. A number of such cases had come to him in consultation with the report of scar contraction causing pain, and he had called attention to joint adhesions instead. It was easy to break up the adhesions, and the next week a patient who had perhaps had a stiff arm for several years was ready to turn flapjacks with it.

He regretted that Doctor Jennings had omitted one point on which there was a great deal of discussion, viz., the value of the x rays and the gamma rays of radium in advanced cases. His own experience had been varied in that respect, for he had had cases of recurrence of carcinoma which went right on under the influence of the x rays and the gamma rays as though nothing had been done; others had been kept in check so that the patient gained a year or two years of time, until there were multiple occurrences elsewhere; while in the best group, a smaller group, the recurrent carcinomas had been so well held in check that they were spoken of as cured, temporarily though it might prove to be, but some of the cases had extended as long as seven or eight years (and they were held originally to be hopeless cases). These had been properly treated with x rays and radium. He had no doubt that in these cases conditions were still persisting which allowed the malignant disease to develop in the first place. There might be a tendency for the normal cells to assume an abnormal type of development; the chromosomes then might lead to neoplastic growth. On the other hand, the gamma rays or the x rays might so whip up the normal cells that they would no longer produce an irregular chromosome in new cells. This was the way perhaps in which the x ray and gamma radium acted, not by causing destruction, but by whipping up normal cells so that they no longer produced aberrant cells. This part of the subject was so great that he could only state his belief that they had been too skeptical of the influence of the x rays and radium, for the reason that they had not always been careful to refer patients to the men who used these resources in the best way. He himself had been very fortunate, for he had some patients who believed their cases to be hopeless who now called themselves cured. Only the day before he had seen the wife of a prominent man, a very lovely woman, who had not allowed any one to see her carcinoma until it was very far advanced. Her husband finally discovered it and insisted upon immediate operation. He had operated a year ago and the deposit about the vessels in the axilla was so extensive that the operation could not be completed without amputating the arm, so a mass was left attached to the bloodvessels, which could be easily felt after the closure of the wound. She was then referred to an authority in New York who uses the x ray and radium extensively. At the present time there was not a sign of cancer in that woman's axilla. She had red cheeks, carried on her social engagements, and had been traveling freely. That was an instance of the remarkable effects of radium, properly used, in a condition about which the profession was too skeptical.

Dr. Edward Wallace Lee said that the way in which the paper was presented left little for any one to add, and its conclusions were of great value. Before hearing the paper he had thought that if Doctor Jennings presented some phases of the subject it would give opportunity for a few questions, though perhaps they might not come strictly under the heading of the paper, i. e., something about the etiology of cancer. There was no disease, not even tuberculosis, which was so agitating the minds, not only of the profession but of the public, and every imaginable form of treatment was being tried. He had come in late, and did not hear whether Doctor Jennings had said anything about the etiology of cancer, though he had heard him say something about abscesses, and he did not know whether the doctor held that the disease was due to some form of irritation. For his own part, he knew of no other cause than irritation in the production of a cancer. His own definition of cancer was an abnormal distribution or an abnormal placement of normal tissue cells. Cancer was perfectly natural when there was a certain irritation of the cells placed in the condition that they were found in cancer. There was nothing unnatural about cancer. It came about as a natural result of certain conditions. It was a natural sequence of cause and effect.

Then as to metastasis—whether or not it traveled through what Sims used to call the absorbents (whatever he meant by that, for he said that it affected the adjacent glands), whether it affected the glandular system primarily, or the blood system primarily. The speaker had always considered it as traveling through the blood system primarily. So far as the surgical technic was concerned, no method had ever been devised that some expert surgeon had not criticised, and perhaps offered one of his own as a method of preference. He had been much interested in what Doctor Morris had said about the efficacy of radium and x rays in certain cases that he had observed; he himself had not been so fortunate.

Dr. J. H. Branth said that some five years ago he had heard Dr. George H. Balleray, of Paterson, N. J., read a remarkable paper before the association, and he recalled some of the remarks he had made in discussing the paper. In January, 1904, he (Doctor Branth) had read a paper stating that he had used x rays extensively in treating cancer of the breast and had not attained a single complete cure. This same statement was repeated in discussing Doctor Balleray's paper. At best, it only held the disease in check. Now, he would have to recall this opinion, for he has seen some cases—though not many—cured by the use of x rays aided by the high frequency high tension current. The x ray treatment, however, must be skillfully applied. If small doses were given they would only make the cancer grow faster. The quantity (dose) that the patient required in order to subdue the cancer was different in different cases. There were not the same conditions in every patient. The doctor must feel his way and give the treatment accordingly. X rays in small doses acted as an irritant and caused the cancer to grow faster. If that view was well founded, irritation would be one cause for developing cancer. Then, again, the large doses recommended by some practitioners had brought the x ray treatment into discredit, owing to the danger of burns. For treatment, the static machine was to be preferred, because the danger of burning was less than by using the coil as a generator.

Dr. J. A. Rivière and Dr. De Keating Hart, both of Paris (which two gentlemen had had a dispute regarding the priority in the use of the high frequency spark and were at war with each other) maintained that they had cured many cases—a result which Doctor Branth had not been able to achieve. Moreover, the treatment was so painful that patients would not stand it except under anesthesia. The high frequency spark had also been used by Czerni, at Heidelberg, but had been abandoned there. The high frequency high tension current was not painful.

It was now generally accepted that cancer in the beginning was a local affection. Why not cut it out quickly? for if left in, it became malignant nearly every time. Why not cut it out before that occurred? The cutting off of a small part for microscopical investigation invited the danger of diffusion through the cut lymph channels. It would show more wisdom to make microscopic examinations *after* removal of the tumor. Whenever a tumor appeared in the breast it ought to be removed by the knife, the excision extending well beyond the borders of the growth. If not originally malignant, it would almost certainly become so in time. In all cancer operations, x rays and high frequency currents should be applied before and after operation, with a view to subdue and kill all cancer cells that might have escaped the knife.

Another theory had been evolved and was described and demonstrated before the association by Doctor De Kraft, that is, that the cancer cells would be killed by high temperature, say 104° F., which temperature normal cells would tolerate. Doctor Nagelschmidt, of Berlin, also had invented a high frequency apparatus whereby he caused the internal tissues to be subjected to similar high temperature. Doctor Branth had used such an apparatus, but found it dangerous, and it had yet to be demonstrated to him that it worked well. He had been trying to get Dr. Francis C. Carter Wood, of the Crocker Cancer Research Laboratory, to come to some meeting of the association and describe some experiments that were being made in relation to the infectiousness of cancer. If the officers of the association could induce him to read a paper on this subject, it might throw some light upon conditions not generally known.

Doctor Jennings had nothing to add, except to thank the gentlemen who had participated in the discussion. He had said nothing about the treatment of cancer by x rays and radium, as his own experience with these agents had not been sufficient to enable him to give an opinion. It had been his custom in all cases in which he operated, either primarily or secondarily, to send the patient to the x ray man for a vigorous and prolonged course of treatment. He had a few recurrent cases which had remained well, but he hesitated to call them cures. The patients thought they were cured, and perhaps they were.

Doctor SOUTHWORTH said that good team work was not limited to intercollegiate athletics. It was an essential of modern warfare, but had its place also in the arts and times of peace. To be efficacious it must be intelligently aggressive, efficient, and direct its attention to the overcoming of obstacles. Such team work was accomplished in recent years by the members of the United States Public Health Service in the Philippine Islands, and when the history of this work was fully written still further honor would be accorded to the men who within a short time accomplished such marvelous results in those islands. It was a great pleasure to introduce one of the men who took part in these accomplishments, Dr. Victor G. Heiser, director of public health in the Philippine Islands and now connected with the Rockefeller Foundation, who would speak of the recent developments in the treatment of leprosy and give reports of a number of cures, together with some account of his work for the lepers during his administration, and how their segregation had been accomplished.

Recent Developments in the Treatment of Leprosy.—This paper, by Dr. VICTOR G. HEISER, appeared in the JOURNAL for February 12, 1916, page 289.

Dr. GEORGE HENRY FOX congratulated Doctor Heiser upon the excellent work he had done in the study of leprosy and on the success he had achieved in its treatment. His own experience with leprosy during the past forty-five years agreed with much that had been said. Years ago, when he saw more cases of leprosy than at present and had the opportunity to visit a number of large leper hospitals in Norway, Havana, and Trinidad, not to mention New Orleans and San Francisco, he formed certain definite conclusions regarding this disease, some of which had been strengthened by what he had just heard.

His first conclusion was that leprosy was not, as was generally imagined, an incurable disease. In the Canadian leper settlement at Tracadie he once saw an old woman whose fingers had been ulcerated and lost, leaving clublike stumps. This woman was ever eighty years of age, and had had leprosy for forty years, but looked as though she were doomed to die of old age and not of leprosy. Before that he had heard and thought that tubercular leprosy was almost always fatal in seven to nine years. This led him to believe that leprosy, like syphilis, in certain robust individuals might tend to run its course and leave the patient clinically in perfect health, with no external manifestations of active disease.

Another conclusion was that chaulmoogra oil was the best remedy, if not the only one, which had any decided effect on the progress of the disease. Some twenty-five or thirty years ago he had written upon the advantages of chaulmoogra oil in leprosy and reported a case apparently cured. The patient was a man from the Sandwich Islands, who was treated in his hospital service with chaulmoogra oil. In a short time the manifestations of leprosy had nearly disappeared. Later he went to California, where he met his wife and children and settled upon a ranch. He had reported at intervals, asserting a steady improvement, and after nine or ten years he wrote that he was still perfectly well and had no symptoms except the deformity of his fingers, which might be regarded as the result rather than as an evidence of the disease. After that the speaker lost track of the man, and could not say what had become of him. In all the cases in which he gave chaulmoogra oil, a rapid and decidedly beneficial effect was produced.

Another opinion which he had formed was that arsenic, strychnine, and similar remedies had absolutely no effect upon the progress of the disease. Most of the cases which he treated with chaulmoogra oil received alternating treatment with nux vomica when the digestion became impaired by the oil, but he never felt that nux vomica, however beneficial as a tonic, had any effect upon the course of the disease. It was easy to see that the hypodermic administration of chaulmoogra oil might be better than its internal administration, and also that the camphorated oil might be a valuable addition, but he was extremely skeptical as to the value of the resorcin added. It seemed strange that some patients could not take as much as three to five drops of chaulmoogra oil without complaining of nausea, while others could take one or two hundred drops without trouble. There was a marked difference in regard to the unpleasant effect, and Doctor Heiser had noted the same thing after hypodermic injections. Another conclusion was that locality and perhaps climatic conditions had much to do with improvement of the disease. Nearly every patient he had seen coming from the tropics or some country where the disease was endemic, had improved to a notable degree on coming to New York, even without treatment. In some instances where he had treated the patients with chaulmoogra oil, he was doubtful whether the improvement was due to the oil or to the change of climate, but after observing some of those who had been here for a long time without further improvement, he reached the conclusion that the improvement was due mainly to the oil. He also concluded that there was little or no fear of leprosy spreading in the city of New York. His views in this respect might differ from those of Doctor Heiser, but they should remember that there had been lepers here by the score for the past forty years or more, living in hotels and tenements, travelling in the trolley cars, and being treated in the hospitals, without any local increase in their number except from freshly imported cases. If the disease was going to spread from the mere presence of lepers, the fact should have been noted by this time. It might be all right and necessary in the Philippines, in New Orleans, and wherever leprosy was endemic, to segregate all those affected; but the hue and cry made here over some poor Chinaman by the newspaper men was absurd.

The fears of the public and of the profession that the disease might get a hold and spread in New York were groundless. In fact, the fear of leprosy in this city had done more real harm than the disease itself had done in the past or was likely to do in the future, even without compulsory segregation.

In regard to the psychological treatment of leprosy, Doctor Fox considered it important and generally neglected. The average doctor who examined a case of leprosy usually wore a long face and told the patient that he would do all he could. They could readily imagine the effect of such talk. They all knew that in general practice the mere presence of a trusted physician in the sick room often did the patient far more good than the prescription. In like manner a few words of cheer to a patient who was naturally worrying over the name of his disease and the assurance that leprosy was not necessarily incurable, would always improve his mental condition, which was highly important and acted as a most valuable adjunct to any plan of treatment. While leprosy might be fatal in a great many instances, it was also true that many persons did not die of the disease, but were simply scared to death. The treatment of lepers by some of the health officers, if reports were true, was an outrage. Let them imagine being told that they had leprosy, taken from home and friends, placed in some out of town shanty, and had their food poked in to them through a window on a long board by some health official afraid of getting the disease. It was easy to imagine that their symptoms would not improve, and that they would soon die under such treatment, whether they had leprosy or not. He sincerely wished that some wealthy man or woman would endow, not a hospital, but some large model farm where the lepers of New York city could be sent, not under compulsion, but at their own desire, where they could have plenty of outdoor work, enjoy life, and forget the name of their trouble. This alone would do a vast amount of good, and combined with the approved modern methods of treatment, would tend to teach the public the lesson that it needed to learn, viz., that leprosy was not the horrible and incurable disease which the average newspaper reporter so delighted to portray.

Doctor **Fordyce** said it had been a great delight to him to hear Doctor Heiser's very scientific and modest presentation of the subject; his great experience with the disease and his careful study of it entitled him to speak with authority. It would be foolish, therefore, to say anything in criticism of the method which the doctor had devised, unless they had equal experience in its use. Many methods of treatment had been employed by men dealing with leprosy in countries where it was endemic with more or less success. Ten years ago, while visiting Bergen, Norway, he had interviewed Doctor Lie, who was in charge of the leprosy hospitals in that city. In reply to an inquiry as to whether he had any methods of successfully treating the patients, Doctor Lie had replied that he had none, but simply treated the symptoms according to indications. Chaulmoogra oil had been used by physicians dealing with leprosy in all parts of the world, but no one heretofore had devised a method which had given the results obtained by Doctor Heiser. The reactions produced in leprous lesions and the general reaction which the patients experienced, were an indication that the drug had a specific effect on the lesions. This reaction impressed him as analogous to the Herxheimer reaction sometimes seen in syphilitic lesions after the administration of salvarsan, mercury, or the iodides. Another argument brought forth was the loss of the staining properties of the bacilli and the rapid involution of the leprous lesions by the chaulmoogra oil given in this way. It was true that many leprous lesions underwent spontaneous involution just as analogous lesions did in syphilis or in other members of the group of the infectious granulomata, but the involution of lesions which occurred spontaneously was much slower than after the chaulmoogra oil treatment. He did not care at this time to discuss the question of segregation of lepers, but he agreed that lepers would be better off if segregated under good conditions than if allowed to go at large as they were now.

Doctor **Heiser**, in closing, said that he had referred to the question of segregation of the lepers parenthetically, and not as a part of the paper. He had no intention of proposing a question of that kind before the association, but had thought it might be of interest to relate a few of their experiences in that direction. He had studied the question of the transmission of leprosy more than he had ever studied any other problem. When he first became associated with the leper question in the Philippines, he had some theories with regard to the transmission of the disease; but he had tested these theories, as well as those of others, and found them all wanting. So far as he was aware, there was no satisfactory explanation as to the manner of transmission; but in his experience, which involved many thousands of cases in different parts of the world, he had not found a case that was not associated with a previous case, so it would seem that direct or indirect human contact of some kind was necessary. In other words, he knew of no case of leprosy originating in a community in which there was not a previous case, or the person affected had not come from another district in which leprosy prevailed. As to its not being a danger in the United States, how could any one speak definitely upon that subject? When they first went to the Philippines, they were told that there was practically no cancer there. He consulted many old practitioners and they said cancer occurred so seldom as to be negligible. It was not a disease of the tropics. After large modern hospitals were opened and the diagnosis of disease was done on more scientific lines, cancer was found to be as prevalent in the Philippines as in the United States or Europe. It would seem that a similar experience might be had with leprosy in the United States.

Since he had returned to this country, he had been trying to obtain a trustworthy estimate as to the number of lepers in the United States, and had been surprised to learn that no such data were available. Some guesses had placed the number between several hundred and several thousand. Under such circumstances who could state with reasonable certainty whether the disease was increasing or decreasing?

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Involuntary Nervous System. By Walter Holbrook Gaskell, M. A., M. D., F. R. S.; Author of The Origin of Vertebrates, etc. With Colored Plates. Bombay, Calcutta, and Madras: Longmans, Green & Co., 1916. Pp. ix-178. (Price, $1.80.)

This is the first volume of a new series of monographs on physiology, under the general editorship of Dr. Ernest H. Starling. Each of the volumes announced is to be the work of one who has himself made special contribution to our present knowledge of the particular subject on which he writes. The volume before us is by Doctor Gaskell, who for forty years made a special study of the sympathetic nervous system, and who, therefore, was able to write authoritatively upon the subject. This little book of 160 pages is a model of what such a work should be. The first chapter is historical, and shows in an interesting manner the rise, predominance, and fall of the theory of Bichat on the sympathetic nervous system, which was accepted for a long period of time. Adequate recognition is made of the work of other scholars, and there is an ample bibliography appended to the volume. The last chapter contains a brief summary, and (together with the first chapter) should be read by all students of physiology. The other chapters are on: The characteristic motor functions of the nerve cells belonging to the thoracicolumbar, bulbosacral, and midbrain outflow of connector nerves; the inhibitory nerves; the rhythmic and peristaltic movements in the involuntary muscles of the vertebrate; the innervation of glandular structures; the connector neurons of the involuntary nervous system; and the phylogenetic origin of the sympathetic nervous system. It is to be hoped that the remaining volumes of the series will not be delayed unduly, and that they will be of the same handy size as the present instalment. The work of the printers and publishers is first class throughout, in pleasing contrast with some of the sloppy work which we have noticed of late.

A Guide to Gynæcology in General Practice. By Comyns Berkeley, M. A., M. D., M. C. (Cantab.), F. R. C. P. (Lond.), Obstetric and Gynæcological Surgeon to the Middlesex Hospital and Surgeon in Charge of its Military Hospital at Clacton-on-Sea; Surgeon to the Chelsea Hospital for Women; Senior Obstetric Surgeon to the City of London Lying-in Hospital, etc., and Victor Bonney, M. S., M. D., B. Sc. (Lond.), F. R. C. S. (Eng.), M. R. C. P. (Lond.), Assistant Obstetric and Gynæcological Surgeon to the Middlesex Hospital and Surgeon in Charge of its Military Hospital at Clacton-on-Sea; Surgeon to the Chelsea Hospital for Women and the Hounslow Hospital, etc. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. xxiii-452. (Price, $6.50.)

In this book, intended for the general practitioner, a special attempt has been made to overcome difficulties in diagnosis arising from the varying aspects under which given affections may present themselves in actual practice. Clear distinction is made between the various forms under which certain conditions may be met with owing to different causative factors, and the therapeutic indications in each are separately discussed. Part i is occupied with the methods of gynecological examination; Part ii with the significance of symptoms, e. g., amenorrhea, uterine hemorrhage, abdominopelvic pain, backache, dysmenorrhea, symptoms referable to the urinary tract, etc.; Part iii with the interpretation of physical signs, such as abdominal tenderness, abdominal swelling, the size of the uterus as noted on vaginal examination, uterine displacement, abnormalities of the vulva, etc., and Part iv with the treatment of the various conditions previously taken up. No details of operative technic are given, these being taken up in the textbook of gynecological surgery, by the same authors. From the standpoint of diagnosis the work is all that can be desired by the practitioner as a handy manual. The illustrations in Parts i and ii are numerous and helpful. In Part iv, however, although many remedial measures are mentioned, there seems to be in places a lack of specific details as to the nonoperative therapeutic procedures (other than the use of drugs) recommended. The indications for operative intervention are clearly given throughout, and the practitioner will be in no doubt on this score. Part v, dealing with the medicolegal aspects of gynecology, though based on English law, is of particular utility, covering a field which few textbooks enter into, and yet with which the physician is frequently concerned. Such questions as nullity of marriage, rape, criminal abortion, evidences of present or remote pregnancy, foreign bodies, and claims for compensation are succinctly discussed in this final portion of the text. The index is very full, occupying thirty-five pages.

Practical Physiological Chemistry. A Book Designed for Use in Courses in Practical Physiological Chemistry in Schools of Medicine and of Science. By Philip B Hawk, M. S., Ph. D., Professor of Physiological Chemistry and Toxicology in the Jefferson Medical College of Philadelphia. Fifth Edition, Revised and Enlarged. With Two Full Page Plates of Absorption Spectra in Colors, Four Additional Full Page Color Plates and One Hundred and Seventy-two Figures, of Which Twelve are in Colors. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xiv-638.

This standard textbook, now in its fifth edition, has been thoroughly revised and in part rewritten, so that it is more than ever indispensable as a reference book for the internist, the dietitian, and the laboratory worker. The new chapters deal with nucleic acids and nucleoproteins, gastric analysis, intestinal digestion, blood analysis, and metabolism. To economize time and effort the important laboratory procedures have been set forth in black face type. The latest and best methods of quantitative analysis have been introduced. The nephelometer has been discussed and nephelometric methods have been described. The book is enhanced in value by its virtues of intelligent omission and wise selection in tests and procedures. The letter press is admirable despite the weight of the paper, and thirty-five new illustrations give added value to the text.

Interclinical Notes

According to the *Medical Summary* for June, 1916, the new edition of Osler in five volumes just out—$25—tells one everything except how to treat the sick.

* * *

Protagonists of the bobtail spelling, the *Journal A. M. A.* in particular, prove too much when they aver that appendectomy is a better because shorter form than appendicectomy. The latter form is as correct as a hybrid can be, and to correctness scientific men should be slaves. All the arguments for appendicectomy apply with equal force to appenditis as a substitute for appendicitis. But why argue seriously with people who can calmly mutilate the spelling of the words of a dead language?

* * *

A curious sentence in the *Century* for July is: "He looked at the fire and lighted a cigarette, a very unusual habit for him." It occurs in a story called Burney's Laugh, by Stacy Aumonier. The idea of an unusual habit is quaint.

* * *

The *Survey* for May 20th gives attention to the recent State Conference of Charities and Corrections held at Hoboken, April 30th to May 2d. Speaker after speaker at this conference pointed out that not only were physical handicaps responsible for much dumbness and stupidity, but that many a mental quirk and peculiarity was due to a "wrong mental attitude toward life." Expert treatment was as necessary, they added, for "complexes" which blot straight mental vision as are correct glasses for bad physical vision. Thus Dr. Pearce Bailey, of the New York Neurological Institute, divided "thinking" into two classes—"logical thinking" and "wish and fear thinking." The latter kind must be controlled, he urged, sometimes by the aid of a physician, if a person is going to adjust himself to life. Doctor Bailey recommended a central examining plant in every city for adolescent children who were shiftless and purposeless or had some twist in their mental makeup.

We note in the articles on religion in *Current Opinion* for June, that Christianity seems to command no more respect or space than many another cult—a sign of the times, we presume. The department of literature and art in this periodical is extremely well done; this month there is a capital discussion of the humorous French journals issued from the trenches and a selection of astonishingly good poetry.

* * *

Veiled Island, by Marjory Morten, in the July *Century*, is a collection of material for a story rather than a formal tale; the entire personnel is dumped just when the problem presents itself. They Both Needed It, is a singular psychological study of a boy and his father, by Fanny Kemble Johnson. There is a charming essay, Neighbors, by Eugene Wood, which contrasts the social conditions of town and country, not always to the advantage of the latter. The illustrations are beautiful, including a frontispiece from a miniature of the Princess Marie-José of Belgium. The *Century* is always decorative as well as entertaining and instructive.

* * *

In the *Medical Review of Reviews* for June the charge is made that a physician was responsible for all the damage done by the four per cent. cocaine snuff once known as Doctor Cole's Catarrh Cure—Doctor Cole presumably being the depraved physician in question. There never was a Doctor Cole; the originator and owner of this preparation, as a matter of fact, was neither a physician nor a druggist; he was a manufacturer of several patent medicines and invented Doctor Cole, simply to secure what he considered a desirable alliteration. Thus one slur on the profession is disproved.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the United States Public Health Service for the seven days ending June 21, 1916:

COLLINS, G. L., Surgeon. Relieved from special duty at Pittsburgh, Pa., and ordered to return to Washington, D. C.

HURLEY, J. R., Passed Assistant Surgeon. Granted two days' leave of absence on account of sickness, June 12 and 13, 1916.

KEMPF, GROVER A., Assistant Surgeon. Granted one day's leave of absence on account of sickness, June 10, 1916.

KRULISH, EMIL, Passed Assistant Surgeon. Directed to proceed to Juneau, Alaska, to assist in organization of hospital for Board of Education, Department of the Interior.

OAKLEY, J. H., Surgeon. Granted three days' leave of absence from June 17, 1916, under paragraph 193, Service Regulations.

SAFFORD, M. V., Assistant Surgeon. Granted two days' leave of absence, June 19-20, 1916.

WHITE, M. J., Surgeon. Directed to attend a Better Community Conference at the University of Illinois, Urbana, Ill., June 20-21, 1916.

Board Convened.

Senior Surgeon Fairfax Irwin and Passed Assistant Surgeon C. P. Knight designated as members of a board to revise the regulations of the Coast Guard governing the physical qualifications required for enlistment and reenlistment and for appointment, to meet at the Treasury Department, Washington, D. C., June 21, 1916.

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the week ending June 17, 1916:

BENTON, F. L., Surgeon. Detached from duty at the Naval Station, Key West, Fla., and ordered to duty with the expeditionary forces, Santo Domingo.

CARSON, V. H., Assistant Surgeon. Detached from the naval recruiting station, New York, N. Y., and ordered to duty with the expeditionary forces, Santo Domingo.

FREEMAN, ARTHUR, Assistant Surgeon. Ordered to duty at the Navy Yard, New York, N. Y.

HARPER, JOHN, Assistant Surgeon. Detached from the Navy Yard, New York, and ordered to the Minnesota.

ROYSTER, H. A., Assistant Surgeon, Medical Reserve Corps. Commissioned from May 15, 1916.

ZALESKY, W. J., Passed Assistant Surgeon. Ordered to naval recruiting station, Brooklyn, N. Y.

Births, Marriages, and Deaths

Married.

BAGNALL-SALMON.—In Mountain Lakes, N. J., on Saturday, June 3rd, Dr. Elmer S. Bagnall, of Boston, and Miss Aida H. Salmon.

BOGLE-WOODWARD.—In Santa Rosa, Cal., on Saturday, June 3rd, Dr. Samuel S. Bogle, of San Francisco, Cal., and Miss Bess Woodward.

DWYER-COUIG.—In Boston, Mass., on Wednesday, June 14th, Dr. John E. Dwyer, Jr., of Cambridge, Mass., and Miss Margaret D. Couig.

GARVIN-MEYER.—In Cleveland, Ohio, on Friday, June 16th, Dr. Justin Garvin and Miss Charlotte Meyer.

GOLDEN-LEGARDE.—In Stoughton, Mass., on Wednesday, June 14th, Dr. Joseph F. Golden and Miss Stella K. Legarde.

GREENMAN-SNOW.—In Kankakee, Ill., on Monday, June 5th, Dr. Ernest N. Greenman, of Sheldon, Ill., and Miss Portia Snow.

HERBST-KOCH.—In Allentown, Pa., on Monday, June 12th, Dr. William Frederick Herbst and Miss Florence L. Koch.

JONES-KROME.—In Alton, Ill., on Saturday, June 3rd, Dr. Fred Wade Jones and Miss Mary Krome.

MCCANN-BUCKLEY.—In Brockton, Mass., on Thursday, June 15th, Dr. Charles D. McCann and Miss Rose Buckley.

PERKINS-PHILLIP.—In Yonkers, N. Y., on Thursday, June 15th, Dr. Edward Carter Perkins and Miss Georgiana M. Phillip.

SPICER-LEYDIG.—In Cumberland, Md., on Thursday, June 15th, Dr. Joseph H. Spicer and Miss Leah Leydig.

STONE-WILLIAMS.—In Brookline, Mass., on Thursday, June 15th, Dr. Eugene P. Stone and Miss Eleanor Williams.

WELDON-ABBERTON.—In Bridgeport, Conn., on Saturday, June 17th, Dr. Edwin B. Weldon and Miss Helen Abberton.

Died.

AITKEN.—In Brooklyn, N. Y., on Sunday, June 18th, Dr. Lawrence T. Aitken, aged thirty-one years.

BILLS.—In Alkegan, Mich., on Saturday, June 10th, Dr. Walter H. Bills, aged seventy-one years.

CLEVELAND.—In Fargo, N. D., on Tuesday, May 30th, Dr. William P. Cleveland, aged sixty-eight years.

COOPER.—In Brownsville, Tenn., on Friday, June 9th, Dr. Thomas W. Cooper, aged eighty-seven years.

CREASY.—In Rock Glen, Pa., on Tuesday, June 13th, Dr. Lloyd S. Creasy, aged fifty-three years.

DRYDEN.—In Morley, Colo., on Monday, June 5th, Dr. Frederick G. Dryden.

GILMAN.—In Boston, Mass., on Saturday, June 17th, Dr. Eugene Albert Gilman.

HOKE.—In Richfield Springs, N. Y., on Friday, June 16th, Dr. Fenimore C. Hoke, aged forty-five years.

KENDALL.—In Pittsburgh, Pa., on Saturday, June 10th, Dr. William H. Kendall.

KENDIG.—In Philadelphia, Pa., on Saturday, June 17th, Dr. Rudolph Kendig, aged fifty-one years.

LEARY.—In Lowell, Mass., on Sunday, June 11th, Dr. James E. Leary, aged forty-three years.

MONTGOMERY.—In Charleston, Ill., on Wednesday, June 14th, Dr. J. R. Montgomery, aged sixty-two years.

MUNSON.—In Brooklyn, N. Y., on Tuesday, June 13th, Dr. Lansing Munson, aged eighty-two years.

MURTLAND.—In New York, on Thursday, June 15th, Dr. Samuel Murtland, aged sixty-six years.

RIEGER.—In Kansas City, Mo., on Wednesday, June 14th, Dr. Joel H. Rieger, aged sixty-six years.

SWEENEY.—In Jeffersontown, Ky., on Friday, June 16th, Dr. John Tyler Sweeney, aged thirty-seven years.

WHITE.—In South Glens Falls, N. Y., on Monday, June 19th, Dr. J. Seward White, aged fifty-nine years.

WILLIAMSON.—In Tuscaloosa, Ala., on Friday, June 16th, Dr. James Lewis Williamson.

WILLARD.—In Hartford, Conn., on Friday, June 16th, Dr. Frederick Buel Willard, aged forty-three.

New York Medical Journal

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Original Communications

EXOPHTHALMIC GOITRE.*

With Special Reference to the Etiology and Treatment with Radium.

By W. H. B. Aikins, M. D.,
Toronto, Ont.

Exophthalmic goitre is referred to in literature under several different names, including Graves's disease, Basedow's disease, and Parry's disease, and the designation of hyperthyroidism has recently been applied to it by some observers. This latter term, however, can scarcely be regarded as an appropriate one, as it is now generally assumed that hyperthyroidism, although it probably plays a certain role in the causation of the disease, is not by any means the only etiological factor. The designation of exophthalmic goitre also has the disadvantage that the assumption on which it is based, namely, that exophthalmos and enlargement of the thyroid are invariably present, has now been shown to be without foundation, as one or both of these symptoms may be absent in an otherwise typical case; but it has been so generally adopted that I propose to use it.

In spite of the fact that there is probably no condition in regard to which such extensive investigations, both clinical and experimental, have been made during the last few years, and notwithstanding the amount of literature which has accumulated upon the subject, the etiology of exophthalmic goitre still remains obscure, although considerable light has been thrown upon it. The two chief theories which have been advanced may be considered under the following headings: 1. The glandular theory; 2. the neurogenic theory.

1. THE GLANDULAR THEORY.

The theory of Mœbius was for a long time very generally accepted as a sufficient explanation of the symptoms of exophthalmic goitre. It assumes that it is due to a primary functional disturbance of the thyroid, resulting in the production of an excess of secretion, which saturates the organism, and causes the symptom complex. Many writers now consider it probable that abnormalities of the other endocrinous glands, such as the thymus, suprarenals, hypophysis and ovary, also play a more or less important part in the etiology of the condition.

2. THE NEUROGENIC THEORY.

The neurogenic theory does not negative the glandular theory, but is complementary to it, there still being difference of opinion whether the glandular or the neurogenous disturbance is to be regarded as the primary one. Feeding with thyroid substance, both experimentally and by the administration of thyroid tablets in man, sometimes produces the typical symptoms, while in other cases it fails to do so, even if continued for a prolonged period. This indicates that the disease cannot be regarded as a pure hyperthyroidism, but that, in addition to an abnormal secretory function of the thyroid, a predisposing factor of some kind is essential, and the facts which are now at our disposal lead to the assumption that this predisposing factor is to be sought for in a primary defect or injury to the central nervous system. This hypothesis is confirmed by the comparative frequency of the disease in neurotic persons and those with a neuropathic heredity, as manifested by the occurrence of diseases such as insanity, hysteria or epilepsy in other members of the patient's family. The predominance of symptoms referable to the nervous system in the clinical picture is also confirmatory. Bumsted (1) emphasizes the fact that direct inheritance of the disease itself is not so uncommon as is generally supposed. He cites Rosenberg's case, in which the patient's grandmother, father, two aunts, and two sisters had suffered from exophthalmic goitre, and Oesterreicher's statement that in a family of ten children eight suffered. Bumsted himself has had four sisters under his observation during the last five years. Two of them have severe exophthalmic goitre and a third early symptoms, while the fourth manifested symptoms when she had been for some time at home with her sisters after leaving school.

Although it has not yet been definitely proved, it appears probable that abnormalities of the other endocrinous glands play a part in the production of the symptoms. This applies more especially to persistence and hyperplasia of the thymus, which has been observed in a large proportion of the cases which have been examined post mortem, and is described by the French writers as rejuvenescence of the thymus. Capelle and Bayer (2) found enlargement of the gland in forty-three of sixty autopsies (seventy per cent.), Matti (3) in seventy-five per

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*Read at a meeting of the Ontario Medical Association June 2, 1916.

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cent. of 133 autopsies, Berry (4) in 100 per cent. of the autopsies that he has made, and Klosé (5) goes so far as to say that exophthalmic goitre never occurs without enlargement of the thymus. Capelle and Bayer believe that in most cases the symptoms result from abnormal function of the thyroid, which is supplied by the sympathetic nervous system, and the thymus which is supplied by the vagus. Some writers explain the symptoms, not by disease of the thyroid, but of the thymus, and Garre (6), who now operates on the thymus in every case, states that its removal causes the disappearance of Garre's characteristic blood picture. Hart (7) is inclined to agree with this opinion, and believes that the thymus of itself is capable of causing the symptoms usually ascribed to the thyroid. He therefore assumes secondary disease of the thyroid, due partially to persistence of the thymus and partially to constitutional anomalies, above all, lesions of the nervous system. On the other hand, Kocher (8) says there is no proof that typical exophthalmic goitre can be induced by the thymus alone without hypersecretion of the thyroid, but that it is possible that hyperplasia and persistence of the thymus predispose to it. He finds that an enlarged and persistent thymus is particularly common in certain districts and certain families, in which it is seen both with and without symptoms of exophthalmic goitre. He accordingly regards it as merely a regional familial late involution, dependent upon congenital or possibly constitutional peculiarities, and not as a direct cause of the disease.

There seems reason to believe that other internal secretion glands have some influence. In exophthalmic goitre Kocher found general hyperplasia of the lymphoid organs and proliferation of ectopic lymphoid tissue, involving the suprarenals, and ovaries, and more rarely the pancreas. The frequency of pigmentation of the skin suggests the possibility of an influence of the suprarenals, while the greater frequency of the disease in women points to the influence of ovarian secretion. It is a well known fact that there is a predisposition to the onset of exophthalmic goitre at puberty and the cessation of menstruation, and to exacerbations of the already existing disease during menstruation and pregnancy.

While there is evidence that an excess of thyroid secretion is of importance in giving rise to the symptoms of exophthalmic goitre, there seems reason to believe that it does so only if some predisposing factor is present, and that this primary predisposing factor consists in an injury to the nervous system. The secretion of the thyroid gland consists of iodine, an albumin body, and a group of proteins, and described collectively as iodothyreoglobulin. This combination appears to possess specific characteristics, which none of its constituents possesses in itself, either alone or in combination with one of the others. Oswald, who has made extensive investigations in this connection, states that iodothyreoglobulin increases nerve tonus and the excitability of the nervous system, and also favors metabolism and degeneration of the albumin and fat. These properties explain the clinical pictures of myxedema and hyperthyroidism, thyroid secretion in the former being reduced or abolished, and in the latter increased. Oswald (9) points out the significance of the fact that symptoms of exophthalmic goitre do not invariably develop in response to saturation of the organism with iodothyreoglobulin, and therefore concludes that the exothyroid contributory factor must be something more than a mere predisposition. Oswald does not regard the saturation of the organism with iodothyreoglobulin as primary, but as a result of increased innervation of the gland and excessive flow of blood through it, in which the nervous system plays the primary role. A so called vicious circle is thus established, the excessive amount of secretion poured out increasing still further the tonus and excitability of the nervous system, and the latter in its turn reacting on the thyroid, and intensifying its innervation and thereby its secretory activity.

Constitutional diseases, such as diabetes, gout, and obesity, are not infrequently present in these cases, and careful inquiry will often elicit the information that the patient has for a long time suffered from severe nervous and psychical disorders, sometimes dating back to childhood. We find that long before the appearance of the typical symptoms the patient has been nervous, unduly excitable, irritable, and "difficult," and has perhaps suffered from cardiac troubles. A very common statement in the anamnesis is that there is intolerance for cocaine, as manifested on the extraction of a tooth. The general conclusion seems to be that, whatever part the thyroid and other internal secretion glands play in the setting up of the pathological process, injury to the nervous system is by far the most important etiological factor.

Exophthalmic goitre may follow acute diseases, such as typhoid, rheumatism, diphtheria, and especially influenza. Bialokur reports its occurrence in twenty-seven of 337 cases of pulmonary tuberculosis, and its stimulation in the early stages of the symptoms of the latter disease has sometimes led to an erroneous diagnosis. It is not uncommon in chlorosis. McCarrison's (10) extensive researches in relation to endemic goitre, in the course of which he obtained good results from vaccines prepared from organisms isolated from goitre, suggest the possibility that the enlargement of the thyroid in exophthalmic goitre may also be due to some nonspecific infection.

TREATMENT.

The treatment of cases of exophthalmic goitre is always difficult, and demands a maximum of good judgment on the part of the physician if he wishes to obtain a successful result without referring them to the surgeon for thyroidectomy. It is a mistake to assume that the condition is practically incurable by medical treatment, and after a careful study of its results in the hands of various writers, including Hale White (11) and Mackenzie (12), Solis Cohen (13) concludes that there is a reasonable prospect of recovery in about seventy-five per cent. of the cases, which is about the same proportion as that allotted to surgery in the hands of competent surgeons. At the same time there is no doubt that for some cases surgery is imperative, and in this respect each case should be judged on its own merits. Whatever the treatment adopted, it is exceptional for all the symptoms to disappear completely, but most authorities agree that we are justified in speaking of cure if the general condition and strength are maintained, and the symptoms are relieved to such an extent that the patient is able to resume her ordinary occupation.

The brief account which has been given of the various hypotheses in regard to the causation of the disease makes it obvious that in the treatment it is essential to adopt measures tending to reduce excessive vascularity of the gland, thereby diminishing secretion and the tendency to hyperthyroidism. With this object in view it is absolutely necessary to secure for the patient the most complete bodily and mental rest obtainable under the circumstances, thus removing the stimulating effect on the thyroid of exercise and excitement. In some of the slighter cases a simple rest and isolation cure alone may relieve the symptoms, and if persevered in for some considerable time result in subsidence of the enlargement of the gland. During the first stage of the treatment rest should be so complete that it should not even be disturbed by the administration of medicaments. The length of time during which it is advisable for the patient to remain in bed varies in accordance with the progress of the case. The best guide in this respect is the condition of the pulse. When it has remained regular and practically normal for three or four weeks, the patient may be allowed to rest on a sofa in the room for an hour or so daily, and subsequently increase the amount of exertion very gradually day by day. The benefit of the rest cure is likely to be greater if it is possible to take it in the country, preferably in a bracing climate, and away from the ordinary surroundings of the patient.

Defective nutrition is commonly associated with this disease, and therefore a liberal and nutritious diet, similar to that often recommended in pulmonary tuberculosis, is frequently indicated. Foods rich in extractives should be avoided, the diet consisting chiefly of milk and cereals, together with fruit and the more easily digested vegetables. It should be borne in mind, however, that gastric hyperacidity is present in not a few of these cases, and that under such circumstances it is advisable to forbid acid fruits.

MEDICAMENTS.

As regards the medicaments which have been recommended, their name is legion, and the most contradictory opinions are given by different writers as to the efficacy of most of them. Opinions differ as to the advisability of giving hypnotic drugs, such as verónal, sulphonal, and trional. Some writers recommend them for the purpose of procuring sleep and lessening excitability, while others emphasize the fact that in neurotic cases of this description the drug habit is easily formed, and not so easily given up. Williams (15) thinks that the only sedative drug permissible is aspirin. The benefit sometimes derived from belladonna is due rather to its property of controlling glandular secretion than to its sedative qualities.

Of the bromides the only preparation which has been found useful is hydrobromide of quinine, which is highly recommended by Miller (16), Forschheimer (17) and others. Bumsted states that with it he has been able to cure several cases which had previously proved refractory to all other forms of treatment, including operation, and that one of its advantages is that it can be taken for months together without bad effects. In my own practice I have found that the most effective drug treatment is the administration of this preparation in the form of capsules or cachets, each containing five grains of hydrobromide of quinine and one grain of ergotin, the dose being given three times daily.

Leigh Watson (18) reports beneficial results from the injection of one to four c. c. of a thirty to forty per cent. solution of quinine and urea in fifty cases of exophthalmic goitre, the dose being repeated every third day. Two severe cases remained free from symptoms eighteen months after the last injection, and sixteen have been free from symptoms for one year.

On the assumption that exophthalmic goitre is more common in districts in which the water is deficient in lime, treatment by the administration of calcium salts has been recommended. Campbell (19) states that during the last eighteen months he has been in the habit of treating his cases in this way, and has had better results than from any other form of medication. He does not suggest that it should be the only treatment, but that it should be combined with any other form of treatment selected. He gives a dose of ten grains of chloride of calcium daily.

In view of the liability to digitalis toxemia in toxic conditions of the thyroid, many writers emphasize the desirability of avoiding the use of this and other cardiac drugs, except in cases in which special indications, similar to those in organic disease of the heart, are present. Weiland (20) points out that such indications are absent in the cases in which some surgeons recommend a dose of digitalis before operation, and that they should therefore be included in the category in which the drug is contraindicated.

ORGANOTHERAPY.

Some writers state that they have obtained satisfactory results from administration of extract of the thymus gland, but the reports as regards treatment by organotherapy, including the administration of thyroid substance, are on the whole not very favorable, and do not compare with the brilliant results obtained in cretinism and myxedema from organotherapy. Serum from thyroidectomized sheep and milk from thyroidectomized goats are sometimes used in the forms of preparations known as rodagen, thyroidectin, and antithyroidin, and have been found useful in some cases.

RÖNTGEN RAYS.

The fact that x rays are known to have a selective effect upon glandular tissue, justifies the assumption that their use may be beneficial in exophthalmic goitre, and they have accordingly been extensively used, both alone and in combination with surgery.

Satisfactory results are reported by several writers, and Kienbock (21), Nagelschmidt (23) and others go so far as to say that no operation for this condition should be undertaken without preliminary treatment by x rays, and that if this procedure were universally adopted it would be likely materially to reduce the operative mortality of exophthalmic goitre. Belot (23) is of the opinion that even in the so called abortive cases in which struma is absent, the rays have a favorable influence on excessive and dysfunction (deficient or perverse function) respectively of the glands of internal secretion, even if these abnormalities are not associated with appreciable enlargement. Dr. Dawson Turner (24) reports successful cases, in which application of the x rays was followed by diminution in the size of the thyroid and subsidence of the symptoms. This retrogressive process was associated with atrophy of the secretory epithelium and interstitial and extracapsular fibrosis.

RADIUM TREATMENT.

Clinical experience shows that many cases do not respond satisfactorily to any of these methods, and in these refractory cases I have found the employment of radium to be of decided benefit. Abbe, of New York, first used radium successfully in exophthalmic goitre, and his favorable experience of its results has been repeatedly confirmed by other writers. The experiments of Victor Horsley and Finzi (25) show that the most constant changes after the application of radium affect the blood and lymph vessels. My own clinical experience shows that, when applied over the thyroid, the more penetrating radium rays diminish the vascularity and reduce the secretion of the gland.

Dawson Turner, who has had very favorable results, thinks that radium has two definite advantages when compared with the x rays, i. e., 1, the possibility of giving definite doses; 2, the fact that it can be applied without noise or excitement, while the patient remains in bed.

The following cases will serve as examples of the benefit to be derived from the use of radium rays in exophthalmic goitre:

Case I.—Mrs. M., aged thirty-one years; married; two children. Five years before coming to me, she noticed enlargement of the thyroid and had used local applications, probably iodine, with no effect. A month before she consulted me the growth had increased to such an extent that it was spreading to the lateral lobe. She had suffered from difficulty in breathing, and discomfort on speaking or swallowing. Recently her appetite had been bad, and she had felt tired, nervous, and disinclined for work. On examination, the thyroid was found to be definitely enlarged and pulsating, especially its middle and right lobes, the neck being fifteen inches in circumference. The pulse rate was 88, accelerated on slight exertion. The condition appeared to be an early stage of exophthalmic goitre.

Three thyroidectin tablets, each containing five grains, were given daily, and in addition a radiation of 100 mg. hours was given with a large radium plaque. A week later the circumference of the neck had diminished to fourteen inches, the pressure symptoms were better, and the patient felt better. Five weeks after the beginning of the treatment the neck was thirteen inches in circumference, the tumor had almost disappeared, the patient no longer complained of nervousness, and she has remained well ever since.

Case II.—A young unmarried woman of twenty-one years had for a year been so nervous, excitable, and changed in disposition that her parents feared for her mental condition. A physician was consulted, but apparently he did not suspect the real nature of the disease. When she first came under observation, she was in a highly nervous condition, with marked tremor, cardiac rapidity, and enlargement of the thyroid, the circumference of the neck being fourteen inches. The treatment adopted was rest in bed, with an ice bag applied over the heart, and the administration thrice daily of a quinine hydrobromide capsule (five grains hydrobromide, ergotin, one grain). The thyroid gland was subjected to a heavy exposure to radium rays. Three months later the neck was only twelve and one half inches in circumference, and the tachycardia and nervous symptoms had disappeared. Further radium treatment has since been given; she has now continued well for more than two years, and has been able to resume her normal life.

Case III.—In this case, in a young woman, the circumference of the neck was sixteen and three quarter inches. When first seen, signs of hyperthyroidism were not marked, there being slight tremor, but no tachycardia. She was not treated by absolute rest until severe tachycardia suddenly developed, the pulse rate going up to 160, when she was at once put to bed with an ice bag over the precordia. Radium was applied to the thyroid, and in three months the neck measured only twelve and one half inches, the pulse rate at the same time becoming normal. She has remained well ever since, that is for over three years.

Case IV.—A married woman, aged thirty-five years, was referred to me by Dr. G. W. Smith, of North Bay. She had suffered for the previous five months from exophthalmic goitre, which developed six months after the removal of the ovaries. The thyroid gland was only slightly enlarged, but there was well marked tremor, and the pulse rate was 140. She had been treated at home by rest in bed, suitable diet and medication, together with other ordinary recognized measures of treatment, but without result. As a last resort she was sent to me for radium treatment. I prescribed absolute rest in bed with an ice bag over the precordium, and the administration thrice daily of hydrobromide of quinine (five grains, with one grain ergotin). In addition, heavy radiation was instituted of the thyroid. The improvement was marvellous. Within two weeks the pulse rate had dropped to 75, and nervousness had almost entirely disappeared. The patient was kept under observation for six weeks, when she went home in apparently normal health. When seen again, about six months later, there had been no return of the symptoms of hyperthyroidism, and I am informed that she continues well.

Case V.—A girl of nineteen years, referred to me by Doctor Clarke, of Bowmanville, Ontario, who presented the typical picture of Graves's disease. The thyroid was fairly prominent, the circumference of the neck being fourteen and one half inches. There was well marked exophthalmos, the pulse rate was 120, and the patient was very nervous. No benefit had resulted from all the ordinary measures of medical treatment, which had included the administration of hydrobromide of quinine and ergotin and of Mœbius's serum, together with absolute rest for some months. She was kept in bed with an ice bag over the precordium, the quinine and ergotin being continued. In addition an exposure of seventy mg. hours of radium was given over the thyroid. She went home and was not seen again for five weeks. At the end of this time the pulse rate was still 120, but the circumference of the neck was reduced to thirteen inches. She was further radiumized, and when seen again, two months later, the pulse rate had dropped to 76, tremor had disappeared, and the exophthalmos was scarcely noticeable.

This patient was last seen in September, 1915, when she had improved sufficiently to be able to do light housework. The neck measurement remained thirteen inches, and the pulse rate was 80. The effect of radium in this case was most marked, as before its employment no improvement whatever had resulted in the patient's condition.

Case VI.—An unmarried woman, aged forty-five years, manifested symptoms of exophthalmic goitre in March, 1915. She complained of a "sick nervous feeling," and marked tremor. The pulse rate was about 130. There was considerable improvement after a rest cure, but the slightest exertion brought about a return of the symptoms. She first consulted me early in October, 1915, when there was definite exophthalmos and tremor, the pulse rate rising to 120 on the least exertion. There was marked prominence of the left lobe of the thyroid, the neck measuring fourteen and one half inches. Hydrobromide of quinine and ergotin were given, with an ice bag over the heart. Radiation was applied over the thyroid. After receiving the treatment she returned to her home in the country. When next seen, on November 2d, she looked and felt very much better. The neck measurement was half an inch less, the pulse at no time exceeded 90, and the nervousness had disappeared. Further radiation was given.

In January, 1916, the patient returned for observation. The pulse was only 76 a minute, even and regular. The left lobe of the thyroid was still somewhat prominent, but the symptoms of hyperthyroidism had disappeared completely.

Case VII.—In this case all the recognized symptoms of severe hyperthyroidism were present, with the exception of enlargement of the thyroid gland. The patient was a married woman of twenty-seven years. Protuberance of the eyes was first noticed after an attack of influenza in the spring of 1913, and subsequently dyspnea and palpitation. During the following winter, the symptoms diminished somewhat in severity, but after an attack of tonsillitis in March, 1915, she began to have attacks of vomiting, suffering from palpitation, and was easily excited or startled, the action of the heart becoming very rapid. In June, 1915, she was kept in bed for five weeks, when her pulse became normal. When see in August, 1915, there was no enlargement of the thyroid, but the eyes were prominent, and the pulse ranged from 84 to 120. Radiation was given over the thyroid, and in October she reported that she was much better, the pulse was steadier, and she had gained in weight. In January, 1916, after further treatment, she was able to take short walks and do light housework without disturbing the pulse, nervousness had nearly disappeared, and instead of having become a confirmed invalid she had become a normal young woman.

HYDROTHERAPY.

Hallevorden (26), whose article is based on 100 cases, has had excellent results from the hydrotherapeutic method recommended by von Winternitz, which consists of packings and demibaths. The treatment is always agreeable to the patient, and the pulse usually goes down on the application of the packing. With it he gives daily cold applications to the neck and back, and also to the heart if cardiac symptoms are prominent. The avoidance of exhausting and depressing baths is advisable. In slighter cases benefit is often derived from indifferent, salt or gaseous baths of comparatively low temperature. If fever is present, it should be treated by tepid full baths or cool full baths, in accordance with the indications. Tight collars and tight lacing should always be avoided.

CONCLUSION.

In conclusion, I should like to refer briefly to the psychological aspect of the condition, and its significance in relation to treatment. In view of the fact, which is now generally accepted, that injury of some kind to the nervous system is—even if not a primary factor—at least a very important factor in the etiology of exophthalmic goitre, and that as a rule symptoms referable to it predominate in the clinical picture, it follows that one of the essential objects in our treatment is to endeavor to relieve these nervous symptoms, and that therefore psychotherapy plays an important role. This being so, it is obvious that it is highly desirable that physicians who have not had much experience with neurotic and neurasthenic people, and consequently do not understand them and have no sympathy with them, should refrain from undertaking the medical treatment of cases of this kind, in which the psychic element is such an important feature.

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VAGINAL HYSTERECTOMY.*

Its Indications and a Method of Performing It.

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Vaginal hysterectomy is by no means an operation of recent origin. To the French belongs the credit of having given it a foremost place in gynecological operations. Péan was one of the first to take it up, and his work was followed up by Segond. At the time these gentlemen began to experiment, the mortality from abdominal operations was very high, running up to thirty per cent. in some instances, and it can readily be seen what an incentive there was to branch out in the vaginal direction. From almost the very first they were able to show a mortality in their cases not exceeding six per cent., which was considered in their time marvelous. They performed the operation by clamping progressively from below upward, and the majority of their deaths were due to the clamp which was applied to the ovarian vessel, causing either an erosion of the bowel or irritation sufficient to produce general peritonitis.

The operation has passed since that time through different stages of perfection, and many deviations from the original method have come into vogue, and some of them have passed out—for instance, the angiotribe which was brought over here by Tuffier and used at one time quite extensively. Later it was discarded because of the number of secondary hemorrhages which followed its use. Then came the ligation operation, where the ligation of the vessels progressed from below upward; this met with marked success, the main objection being that in purulent cases where the ligature on the ovarian vessel was placed in the field of suppuration, secondary peritoneal involvement followed. A very ingenious device was evolved by Doctor Skene whereby the vessels were clamped progressively and the tissue in the jaws of the clamps was cooked by means of wires in a platinum conductor underneath one blade of the clamp; this operation was particularly successful, as it sterilized the whole field, the only objection being the time required for the application of the clamps, the cooking of the tissues, etc.

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Doctor Pryor, with whom I was formerly associated, was among the first really to establish the technic of division of the uterus into two parts and clamping progressively from above downward.

I do not wish to give the impression that I consider that every patient who has suffered from an infection of the pelvic viscera is a fit subject for vaginal hysterectomy. On the contrary, the larger proportion, especially in the young, should have the benefit of conservative work, even at the risk of a second operation later. There is, however, a certain proportion who have suffered, perhaps, repeated attacks of gonorrheal infection, often mixed, which has invaded all the pelvic viscera and rendered them functionless organs and a constant source of absorption of poisonous toxins. The uterus, generally considered to be damaged the least by gonorrheal infection, is often the seat of extensive tissue destruction, especially in mixed infection, as well as the other pelvic viscera. I have seen cases in which nearly one half of the uterine body had been destroyed, with a history of foul discharge extending over a period of weeks.

A pure gonorrheal infection does not as a rule produce such dire results in the uterine body as does one mixed with the colon bacillus. In the tubes and ovaries, however, the gonococcus causes extensive destruction of tissue, especially of the tubes and in often repeated attacks, as frequently seen in prostitutes, the ovaries as well have undergone cystic degeneration, are encased in adhesions, and are practically worthless, diseased organs which cannot be restored. I maintain that the uterus should be removed in these cases of badly affected annexa, as that organ in nearly all such cases is also diseased and will probably give trouble in the future if left in the body. Moreover, of what service can it possibly be without the annexa? If left in the body it is prone to shrink in size, become retroverted, and be a source of annoyance in the future. As to contraindications, in that large group of cases of young women who have been unfortunate enough to contract gonorrhea and have had their annexa affected thereby, it is my firm belief that ovarian conservatism should be attempted, even at the peril of a second operation.

In cases where the surgeon, upon careful examination, decides that the appendix is involved as well, the abdominal route should by all means be selected. The vaginal route is contraindicated in all cases of appendicular involvement or intestinal as well when situated in the abdominal cavity. This operation is not indicated in young women suffering from prolapsus uteri, but is confined to those who have reached or are about at the menopause.

Hysterectomy, vaginal or abdominal, is indicated in cases where the operator is satisfied by the history and by his examination that conservative treatment of the annexa is not possible, also frequently in cases where conservatism has been attempted and destructive processes have followed, and the symptoms and tissue changes, in place of abating, have continued until the health of the patient and her usefulness are jeopardized. I have achieved some of my best results in cases of this class.

There are many points to be considered in the selection of the route, in doing a hysterectomy for fibromyomata. First, the proportion between the size of the growth and the vaginal outlet, which varies at different times, for instance, the tissues of a younger woman are much more pliable than in one who has reached the climacteric and has never had children; in the latter type, vaginal hysterectomy is out of the question, especially if the growth is of considerable size. On the other hand, if the patient has given birth, the vaginal outlet will have been rendered lax enough to allow of the removal of a larger uterine growth by the morcellation method, which will be described later.

One of the main points in selecting the vaginal route is to discern whether the main bulk of the growth is in the pelvic cavity. If the growth is mainly in the pelvis, with the upper zone floating free, the vaginal route is preferable in skilled hands. On the other hand, in cases where the growth has been rapid, carrying the uterine body well up into the abdominal cavity, incision through the abdominal wall is preferable.

The vaginal method is efficient in intraligamentous and retroperitoneal growths, as they can be attacked by this method with less disturbance to surrounding structures. Vaginal hysterectomy is without equal in that class of cases we often meet in women who have passed the menopause and later have hemorrhages from a small fibroid situated near the endometrium, as a useless organ which has become a nuisance can be removed without danger and with comparatively little discomfort.

There is a class of cases which formerly were difficult to cure, and many and varied plastic procedures were devised to obtain relief, which vaginal hysterectomy renders easy of cure practically without risk. I refer to complete prolapse after the menopause. Often we see cases where the cervix is eroded even to a raw state, by the rubbing of the clothing against the protruding parts, and the annoyance and inconvenience cause the patient to become distracted and consider herself almost a useless member of society. The most gratifying of results is to restore such a woman to normal health and mental poise. Some care in the technic (to be described later) is necessary to restore the bladder to its normal position and function.

Vaginal hysterectomy is applicable in cancer of the uterus in only two conditions: 1. In cancer of the cervix where the disease is so far advanced that a Wertheim is unlikely to result in a cure and is deemed advisable for the relief of pain and the nauseous discharges. I might add that such cases have been successfully treated of late by first applying radium and later by performing a Wertheim. 2. Cancer of the fundus has been treated equally well, so far as results show, by the vaginal method as by the abdominal.

We might add to this list cases of epithelioma of the cervix occurring in elderly women who are stout, or who have a tendency to cardiac or nephritic disease. The method differs from that of bisection, hereinafter described, in that the operation should be done *en masse*. The uterine arteries are first exposed and clamped, and an incision is made through them so as to free the lower zone of the uterus. The upper zone is then freed from the bladder and the ovarian vessels are clamped well out toward the pelvic brim and the whole mass is delivered intact through the vagina. Otherwise the technic and aftertreatment do not differ from the method now to be described.

The cervix is seized with a pair of bullet forceps and drawn down and then released to determine the vesicovaginal fold. Incision is made where the vaginal mucosa joins the cervical, across in front, and the mucous membrane is pushed upward. An area of very light tissue is encountered beneath the base of the bladder, and the finger readily pushes up through this to the reflexion of the peritoneum.

At this stage, the posterior lip of the cervix is grasped with a bullet forceps and drawn upward so as to disclose the junction of the posterior vaginal mucosa with the cervix, which is incised across. The two incisions, however, do not meet; about one eighth of an inch of tissue is left at each lateral angle, representing a point which corresponds to the base of the broad ligament on either side. The incision is made at the junction of the cervical with the vaginal mucosa and not lower down, for the reason that the tissue surrounding the os is apt to be inelastic.

With the finger introduced into the posterior opening and shoved upward, the reflexion of the peritoneum forming the cul-de-sac of Douglas is encountered and usually is easily penetrated by the finger without incising it. This incision is enlarged by inserting the forefingers of both hands and doing blunt dissection laterally, carrying the uterosacral ligaments on the palmar surface of the fingers. At this stage a small pad is introduced into the posterior opening and attention is then given to the anterior surface.

The os is grasped on either side by bullet forceps and one blade of the scissors is introduced into the cervical canal; with the other blade anterior, an incision is made through the uterine tissue from the canal forward. Heavy traction forceps are then applied to either side of the divided tissue, and constant downward traction is made by the assistants. The incision is carried up to the fold of the peritoneum which is reflected on to the bladder, the traction forceps being progressively applied as the incision is carried upward.

At this stage, the finger as a rule can be made to penetrate the peritoneum close to the uterine tissue. If it dissects away from the uterus ahead of the finger, it can easily be grasped by a pair of long mouse tooth forceps and divided. The finger, when inserted into this opening, can easily be passed in a normal sized uterus to the fundus. It is then gently swept out to either side, carrying the bladder in front. After the bladder is dissected away, a trowel is inserted into the opening and the bladder is pressed forward toward the symphysis, thereby carrying the neck of the bladder and the ureters out of the field of operation. The ureter normally is about one inch from the cervix, but this trowel, inserted as it is, carries it even further away from the neck of the uterus and the uterine arteries, preventing damage to these organs. Anatomically the bladder extends out to the broad ligaments on either side.

The incision made through the anterior wall is carried up to the fundus. The fundus is seized on either side by strong traction forceps and delivered beneath the arch of the symphysis, bringing the annexa into view. If the annexa are diseased or adherent to the intestines, they can easily be separated, as is done through the abdomen, by the use of gauze sponges. The posterior pad is withdrawn and a large groove director inserted in the posterior opening, passing behind the uterus and out at the top of the fundus. This blade is held steadily in place by an assistant, and the operator then completes the bisection of the uterus with a long handled knife. Each half of the uterus is grasped firmly with heavy traction forceps and the hand is inserted into the pelvic cavity and the annexa are thoroughly explored. If they are adherent to the pelvic peritoneum or other adjacent viscera, the adhesions are gently broken up, freeing the annexa on both sides.

Half of the uterus is inserted into the pelvis, being firmly grasped with a pair of heavy forceps, while the other half with the fundus is drawn well down into the vagina. The thumb and forefinger of one hand are passed up through the opening behind the tube and ovary, and grasp the upper portion of the broad ligament; the ovarian artery can easily be felt pulsating. A hysterectomy clamp, with thumb and forefinger as a guide, is applied to the upper portion of the broad ligament, including the artery, from above downward, so that the heel of the clamp grasps the artery.

The intestines have already been well walled off by a thin abdominal pad. The upper portion of the broad ligament is then divided down to the point of the clamp and the second clamp is applied in such a way as to include the uterine vessel in its grasp as well as the portion of the undivided tissue at the base of the broad ligament. These clamps are steadied by an assistant, while the operator applies the same technic to the other side, removing the uterus and the annexa.

At this stage of the operation the pad is removed and the patient placed in the Trendelenburg position in order that the intestines and omentum may gravitate out of the field of operation, and a strip of gauze is inserted between the clamps on both sides and the vaginal mucosa, to protect that surface from contact with metal. Then the space between the clamps on either side is packed with recrystallized iodoform gauze, folded in such a manner that a yard in width is only about one inch thick; by means of lateral retractors this gauze is packed around the ends of the clamps to protect the intestines and omentum above and very snugly in a transverse plane holding the clamps down in the vagina.

A self retaining catheter is inserted into the bladder with instructions to have it opened every four hours. This is allowed to remain for four days, after which the patient voids her urine normally.

The clamps are left *in situ* for forty-eight hours, when they are removed. The gauze packing is changed on the sixth or seventh day, lighter packing being inserted; this packing is renewed every four or five days with two or three dressings, and the patient is put on a douche.

This operation has an added advantage in that there is never any fear of vaginal hernia owing to the fact that the base of the broad ligament becomes agglutinated to the vault of the vagina and serves as traction to keep the vagina of normal length. I have measured the vaginæ of many women before this operation, and two years after have found the length to be the same.

As to the aftereffect in the vault of the vagina, painful scars are out of the question inasmuch as the main nerve supply of these parts is cut off during the excision of the cervix.

The method described above suffices in all ordinary cases, but in those in which we have to deal with multiple fibroids the technic has to be modified because the size of the tumor is so geat that it cannot be delivered through the vagina without morcellation.

For morcellation, the technic of stripping the bladder up anteriorly and the posterior incision are the same as in the simple type of operation. But after having gained through the incision of the anterior wall to the midde zone of the uterus, V shaped sections are cut from either side of the incision and the sides are pulled in in such a manner as to draw the edges into the field If fibroid tumors of any size are encountered, they are seized either by heavy traction forceps or by a corkscrew instrument and, with the scissors curved on the flat and closed, they are manipulated from their bed, thereby reducing the size of the tumor.

In cases where the enlargement is more symmetrical, V shaped pieces are continuously cut away until the top of the fundus is reached; when this has been accomplished, the remainder of the uterus is pulled down underneath the arch, a curved director is passed behind, and the whole uterus divided into halves. The rest of the operation is then as previously described.

CASE I. A case of this kind was that of Mrs. B. R., which I remember particularly because the chief symptom in uterine fibroid, hemorrhage, was lacking owing to the predominance of the pressure symptom. She was forty-seven years of age and there had been no sign of the menopause, which was of course significant. She was the mother of five children, the youngest four years of age, and had had four miscarriages since the birth of the last. For fifteen years she had backache, pain in the lower abdomen, and a leucorrheal discharge. Examination revealed a tumefaction in the right side, situated anteriorly, and the uterus was increased in size 300 per cent., being tilted backward. Operation was advised and vaginal hysterectomy was performed after the morcellation method. The patient made an uneventful recovery and, the abdominal pain and backache having disappeared, she was well satisfied at the result of the experience.

Another deviation is in cases of complete prolapse. Here the first part is carried on as before stated, but after the clamps have been applied, ligatures are inserted around the ovarian vessels behind the clamps and tied, while the assistant removes the clamps. The same method is applied to the uterine arteries, leaving the ends of the ligatures undivided. Kangaroo tendon is the preferable ligature material. The undivided ends of the ligatures about the ovarian vessels are threaded on a needle, and the needle is passed through the divided edges of the vaginal vault about one third of the distance up from either angle. The same process is gone through with the ligature about the uterine artery, outside of the ovarian vessels, so when these ligatures are tied into a ball in the vagina, the whole base of the broad ligament on either side is sutured into the vaginal vault. A small wick of iodoform gauze is placed in the middle, between the two ovarian ligatures which have been sutured in. This is left *in situ* for a period of three or four days, then removed, and iodoform packing is placed against the sutures, the idea being that the traction produced by suturing the base of the broad ligament on either side to the vaginal vault will be sufficient to keep the vagina patchless and the bladder in normal position. This is particularly applicable in the case of elderly women, as there is practically no shock and no risk beyond that of anesthesia in the elderly.

CASE II. I recall the case of an old lady, seventy-two years of age, Mrs. H., who had borne several children and had grown grandchildren. She had passed the menopause at about the age of forty-five years. When she came to me for advice she had for fifteen years been a constant sufferer from complete prolapse. On examination I found that the uterus had so far descended that the erosion caused by friction was most severe, and for this reason walking and indeed moving about at all were seriously distressing. The uterus was almost entirely out of the body with both vaginal walls prolapsed, and the bladder was distended.

As is customary with me in these cases, the cervix was treated locally for some weeks until the erosion had nearly disappeared, the patient resting in bed. Then the operation described was done and the patient subsequently made an uneventful recovery. The results were most gratifying; three months after the operation, the patient called to express her appreciation; she was in perfect health, in the best of spirits, and was going about her household duties with an ease and comfort she had never expected to know again.

The results of vaginal hysterectomy in general have been all that I could wish. I do not mean to allege superiority of vaginal operation over abdominal, but wish only to show the results of cases where the vaginal method is applicable and preferable. In a series of cases comprising more than 300, there have been but three deaths; one from pneumonia, one from ether nephritis, and one from cerebral embolus. Not a single death could be traced directly to the operation itself; only to unfortunate accidents occurring with it.

117 WEST SEVENTY-NINTH STREET.

RADIUM.*

A Physical Curiosity and a Practical Remedy,

By SINCLAIR TOUSEY, A. M., M. D.,
New York.

It may interest my readers to learn of my first acquaintance with the x ray and radium, two of the agents through which I have been of the most service to my fellow men. The first time I ever saw the x ray was in a little side show where I paid a quarter and walked into a perfectly dark room. Presently I discovered that some one was trying to find my hand so as to hold it up before the fluoroscope and let me see the bones. One hand was busy protecting my watch and the other my pocketbook.

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*Read at the meeting of The Audubon Medical Society, December 17, 1915.

My introduction to radium took place when that too was an unknown quantity. We had heard of the wonderful light, so intense that a small quantity would blind every one in a large room; and of heat so intense that a certain small quantity would burn up the world.

Imagine my surprise when I found that we had to remain for some minutes in a completely darkened room in order to see the light at all. Then it was visible to only six of us who stood close to the table at which the demonstrator sat. We learned that the radium does not feel hot, but constantly generates in itself sufficient heat to remain at a temperature one degree higher than its environment. It is the same way with the electrical effects. They are visible to the naked eye, but delicate instruments and calculation are required to measure them.

We remember the wonderful dog who could talk. He could not talk wonderfully well, the wonder was that he could talk at all.

The marvellous thing about these slight, luminous, caloric, and electric effects of radium is that they are spontaneous. Ordinary substances give out heat which they have received from being near some hot body or from being subjected to chemical action, such as combustion, or from being subjected to friction or the passage of an electric current, or some other extraneous physical force.

Radium and other radioactive substances possess the unique property of originating force of various kinds through transformations in their own substance alone.

I have a spinthariscope which I bought a dozen years ago. It contains a tiny bit of radium in front of a fluorescent screen. Day and night for all these years thousands of particles have been thrown out from the radium every second. And as each particle strikes the fluorescent screen, that part of the screen becomes brilliantly illuminated for an instant. The whole effect is like a continuous display of fireworks. The radium and the fluorescent screen are enclosed in a dark tube, at the other end of which is a lens with adjustable focus. With a larger amount of radium we should see only a continuous general illumination of the screen and should miss the separate splashes of light due to the impact of individual particles.

On a larger scale a tube of radium for treating cancer and less serious troubles, is used by radiologists. To protect myself from its influence I carry it in a box wrapped in several thicknesses of x ray metal of the weight of the plumber's lead pipe. Inside is a silver carrying case and inside that an aluminum treatment tube. Finally we come to a sealed glass tube, within which we see the radium itself as a mass of crystalline powder about as large as the lead of an ordinary pencil and about two thirds of an inch long. This small quantity is worth several thousand dollars and is twice as much as the total amount used by one of the early German operators in a wonderful series of cures of uterine cancer and fibromyomata. These patients were treated in a hospital where all the radiation from the metal was acting upon the tissues of one patient after another for ten hours a day. If we darken the room we shall soon be able to see the faint glow from the radium itself. A much stronger light, almost strong enough to read by, is generated by a fluorescent substance such as zinc silicate held near radium. An interesting experiment is to enclose the radium in an opaque substance; a pocketbook will do. The luminosity of the radium itself is no longer seen, but there are invisible radiations like the x ray, which pass through the leather and brightly illuminate a piece of zinc silicate brought near it. These invisible rays which pass through opaque substances have the same fluorescent effect upon the diamond. A Spanish American physician who saw this property demonstrated in my dark room, spent the rest of the afternoon glancing at his diamond solitaire to see whether it had been permanently damaged.

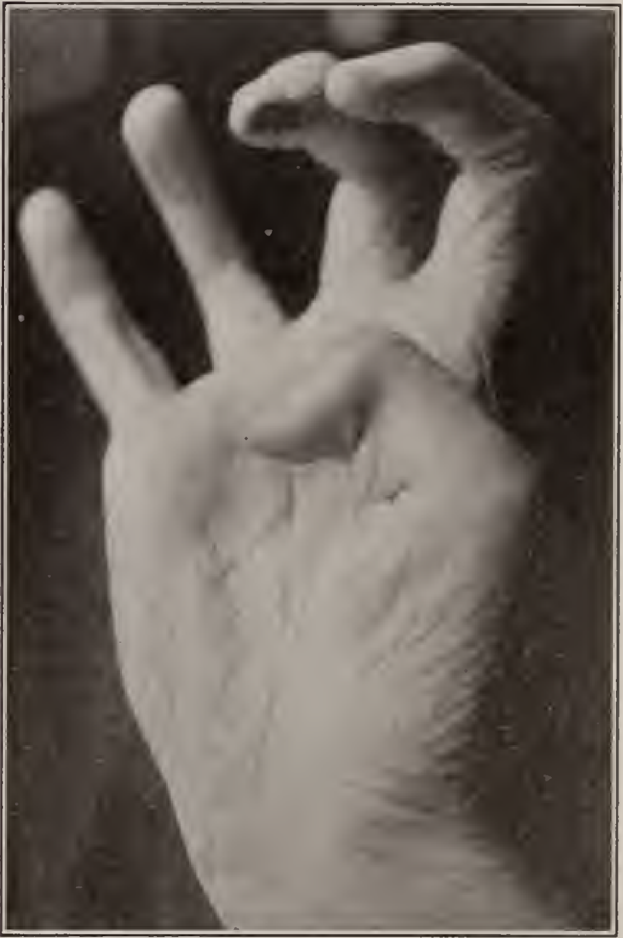

FIG. 1.—Cicatricial contracture before radium treatment.

The curative properties of such a tube of radium are applied in different ways. For certain cases an escharotic effect is produced which destroys all the tissues, healthy as well as abnormal, to any desired depth. Unlike the escharotic effect of chemical caustics and of the hot iron, there is no sensation at the time that the radium is applied. There is a period of incubation of some weeks before the effect becomes visible. After the part destroyed has come away the normal tissues are regenerated and the abnormal ones are usually found to have been permanently destroyed.

An example of this use of radium is to be seen in my own hands, which were badly affected by repeated exposure to the x ray. Cancer seemed inevitable, and while the different growths, x ray keratoses, had been removed with acids and a very great deal of suffering, they always returned. On November 10, 1914, I made an application of this identical tube of radium to a keratosis on the dorsum of the interphalangeal joint of the left ring finger. The growth had a translucent warty appearance with a black surface and was about half an inch in diameter and perhaps an eighth of an inch thick. It seemed to involve the entire thickness of tissue over the articulation. The surrounding skin was protected by x ray metal in a way of my own devising. A circle of double coated adhesive plaster was applied around the growth, and to the outer adhesive surface was applied a circle of x ray metal. The opening in the latter was large enough to expose the entire growth, but very little of the surrounding skin. Pieces of the same double coated adhesive plaster retained the radium tube in position, laid across the opening in the x ray metal. The application lasted thirty minutes. There was no sensation at the time or for many days afterward. The wartlike growth had been pared down almost to the bleeding point before the radium treatment and would ordinarily have sprung up in a few days, but it never did so. After a couple of weeks the joint took on a pink color without any feeling of inflammation. Thirty days after the application, the edges of the skin area looked white and loosened, and in a few minutes I had picked off the entire growth like a scab. This left a pink and tender but perfectly sound cutaneous surface in which there has never been a recurrence of the growth.

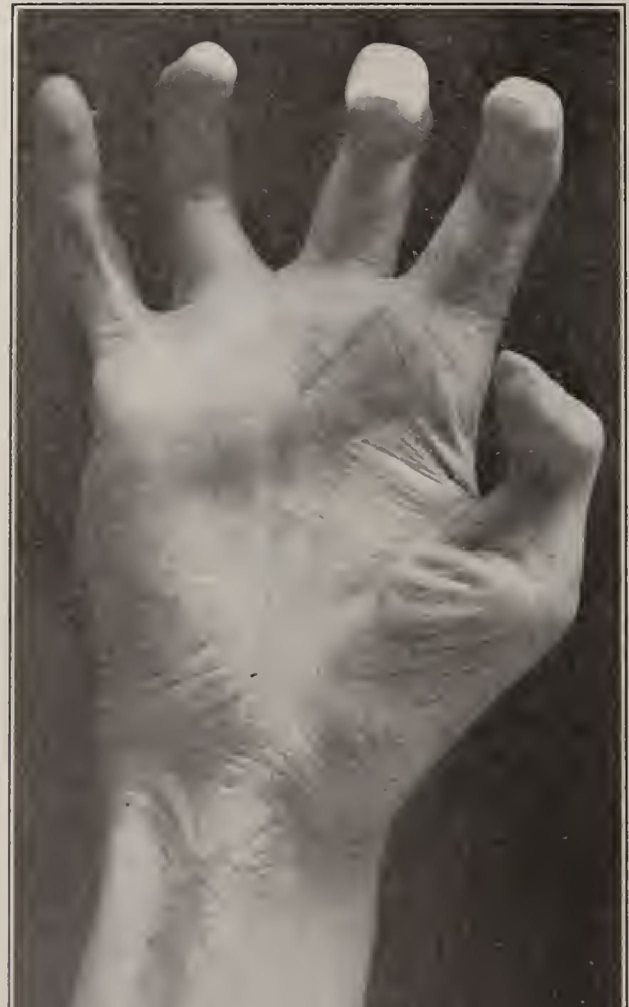

Fig. 2.—Cicatricial contracture, showing improvement after radium and operation.

Next to be treated were two growths on the forefinger which had hollowed out the bone to some extent. They were permanently cured by a single application. Altogether about fifteen keratoses were treated and the remaining trivial one will be cured in the same way when I have time. The same kind of an effect is curative in cases of telangiectases or dilated bloodvessels disfiguring the skin for years after acute or chronic x ray dermatitis. This method is ideal for all kinds of warts.

The treatment of epithelioma is essentially the same. For example, the mother of a physician came to me with a deep ulcer in the ala of the nose, with indurated borders. A single application was followed by separation of the tissues, apparently in an unchanged condition, but leaving a healed and permanently cured surface beneath. Cancer of the lip would ordinarily be referred to the surgeon for excision; subsequently we should apply the x ray or radium by nondestructive methods to prevent recurrence.

In the case of a retired physician, eighty-two years of age, so grave an operation seemed undesirable, and I have treated the epithelioma of the lower lip with radium. The method has been the same as for the cases previously mentioned, but the effect upon a mucous surface is decidedly different. There is a molecular casting off of diseased tissue instead of a separation *en masse*. The old gentleman has returned for treatment every few months for the last year and a half. He is hale and hearty, and perhaps some time I shall be able to keep the radium in such successful contact with the growth on the inner surface of the lip as to prevent slight recurrences such as have been noted in the past.

The same destructive property of radium is made use of in the treatment of cancerous tumors of the neck, breast, or bones. In these cases it is often possible to introduce the radium tube through a puncture and allow it to exercise its destructive influence inside the cancerous mass.

The same application is made for vernal catarrh. Patients whom I have treated have had the upper eyelids covered on the inner surface with large masses of granulation tissue. These had resisted all effort at destruction by caustics and sprang up repeatedly after being cut away. Strong applications of radium, filtered only by the glass wall of the tube, resulted in changing this granulation mass at first into white cicatricial tissue which looked like waterlogged skin. This finally changed into the normal lining membrane of the upper eyelid. During these applications it is my custom to protect the eyeball by a smooth metal shield hollowed so as to fit over the eyeball and inside the eyelids. The same destructive effect is made use of in cases of lupus erythematosus and also for nevus and other birthmarks.

To produce this effect in all the cases so far described, the beta rays are chiefly employed. The alpha rays are particles thrown out by the radium and have so little penetration that they will pass through scarcely half an inch of air and are practically all arrested by the thin glass wall of the tube. The alpha rays form about ninety per cent. of the original radiation, but are practically all excluded from use by this method of application.

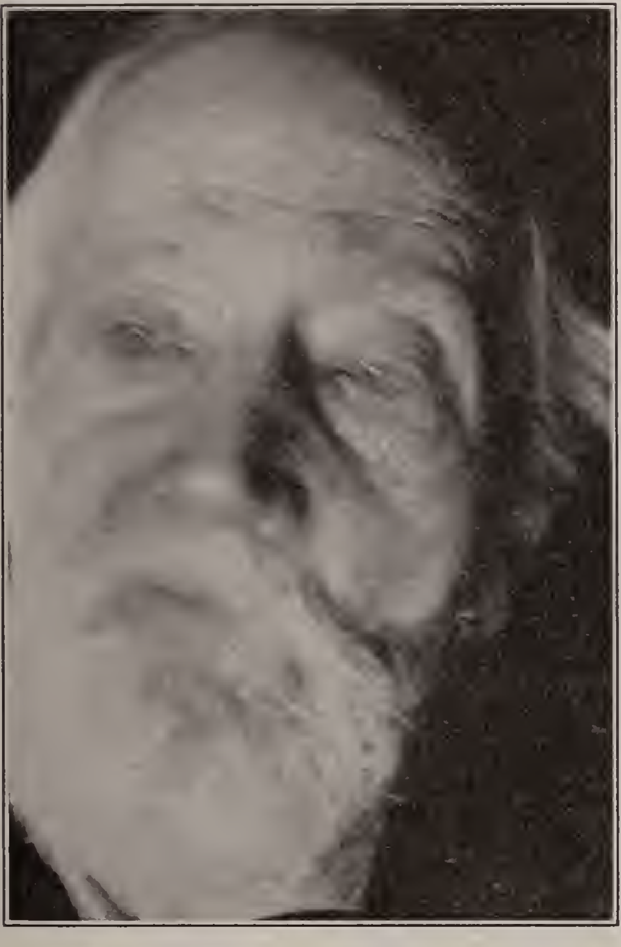

FIG. 3.—Epithelioma of the lip, successfully treated with radium. Patient eighty-two years old; growth still remains healed two years after beginning treatment.

The beta rays are also particles of matter, but have a much greater average penetration. Some are arrested by the glass walls of the tube, but most of them pass through and are the active agents in the cure of the lesions above described.

The gamma rays are vibrations very similar to the most penetrating x rays and readily pass through the glass. They form, however, an insignificant fraction of the radiation filtered by the glass tube alone, and are not instrumental in the cures.

Quite a different effect of radium is suited for the treatment of keloid and cicatricial contractures. The glass tube is surrounded by an aluminum treatment tube, which filters out about two thirds of the radiation which passes through the glass. This method applies practically none of the alpha rays or of the slightly penetrating beta, but all of the highly penetrating beta rays and all of the gamma rays. The radiation can be applied three times as long without unduly irritating the skin. No destruction takes place, but an alterative effect which causes disappearance of the fibrous tissue by a process of absorption. One such case in my practice was a keloid occurring in the cicatrix from appendicectomy. Another was the case of a hospital nurse who had extraordinary contractures crippling the hand after cellulitis with numerous extensive incisions in the hand and forearm. This latter case was referred to me by Dr. Forbes Hawkes, in the condition shown by the first picture. The hope was that treatment by radium and the ultraviolet ray would so affect the contractures and adhesions as to render operative treatment feasible. The motility was decidedly increased by my applications; then Doctor Hawkes performed an operation; then another course of my applications was made. The second picture shows the wonderful improvement, which has enabled the patient to become a stenographer and typewriter.

Still a third method of applying such a powerful tube of radium is by adding a lead filter through which pass only a small proportion of the most highly penetrating beta rays and the gamma rays. This lead filter may be from one twentieth to one quarter inch thick. The duration of each application varies from ninety minutes, as in a case of recurrent inoperable cancer of the pelvic viscera, to twenty-four hours for some cases of rheumatoid arthritis. The applications are made repeatedly and have accomplished a great deal in my practice.

The emanation from radium is an extraordinary substance. It is a gas, heavier than water. A bubble liberated in a bottle of water, but not yet dissolved, would sink to the bottom like a drop of quicksilver. The emanation charges any substance with radioactive properties, which, however, are lost when the radium emanation has become dissipated.

One way of applying it medically is to allow the patient to inhale air charged with it. An emanatorium may be a large room in which a number of patients are seated, the entire atmosphere being charged with the emanation from a very large amount of radium. This treatment by inhalation has given good results, especially in arterial and rheumatic cases.

A much more generally available method is by drinking water in which the emanation is dissolved. A single successful example may be interesting. A lady seventy years old had sciatica and a great deal of pain and lameness. This had persisted for years, in spite of medicine and massage. It was partially relieved when she came to me for treatment by high frequency currents applied from ultraviolet ray vacuum electrodes and by vibration. A good deal of pain remained, however, and about a year ago I started her on radium water. Within a few weeks, the pain was gone and there has never been a return. I have known of a number of cases with equally prompt results and also of a number without perceptible benefit. The latter are perhaps cases due to infection, for instance, from a blind abscess of a tooth, and naturally medicine fails while the cause continues to pour poison into the system.

These remarks cover only a small part of the subject, but I thought perhaps a few personal experiences would be more acceptable than an encyclopedic article.

850 Seventh Avenue.

SYPHILITIC AORTIC DISEASE.

A Case with an Anomalous Electrocardiogram Suggesting Ventricular Asynchronism.

By G. W. McCaskey, M. D.,
Fort Wayne, Ind.

The introduction of the electrocardiograph and ink polygraph into clinical medicine has made possible the scientific study of many interesting cases of cardiac disease, which could heretofore only be carried on in well equipped institutions. Scientific medicine should be greatly benefited by the records of such cases, many of which occur far removed from large medical centres, to which such methods of investigation were formerly confined. The following case presents features which seem well worth study:

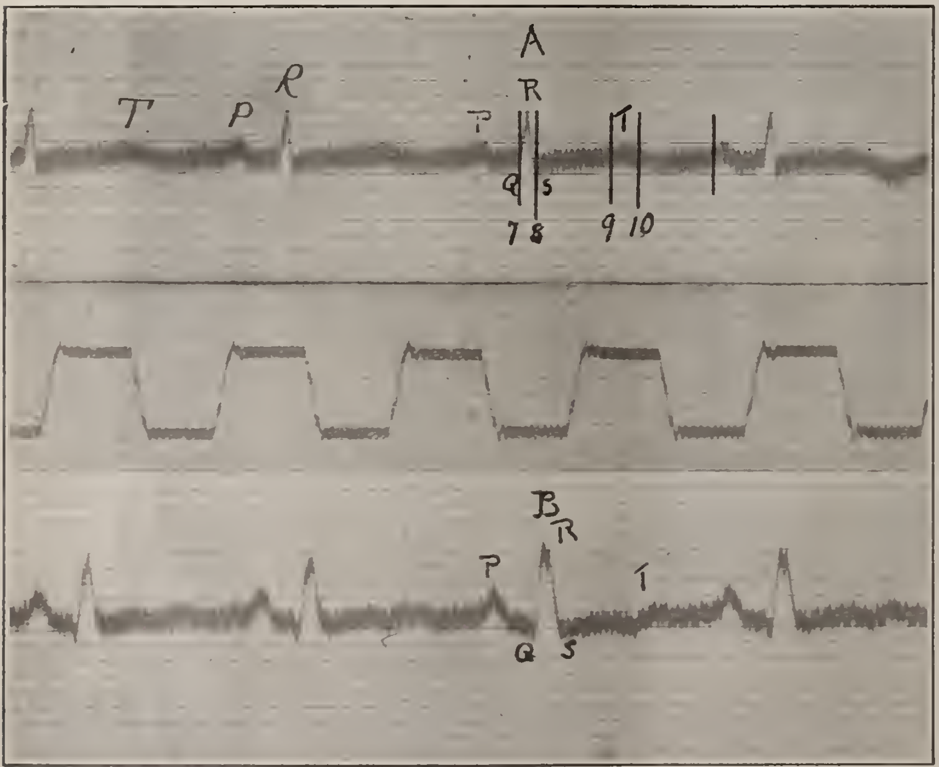

Fig. 1.—Electrocardiogram.

Case: Woman, aged thirty-three years, married, first seen in office, October 15, 1915. Complaint: Paroxysmal pain in upper left chest, and dyspnea. Family history: Father living, had arteriosclerosis and nephritis. Mother living and well. One brother killed by accident. No other brothers or sisters. Personal history: Had acute articular rheumatism when thirteen years of age. Eleven years later (nine years ago) began to have some symptoms of cardiac disorder. Recently these symptoms had grown much worse and consisted of sharp paroxysmal pain in upper half of chest on left side, caused mostly by exertion, though sometimes spontaneous. The attacks were severe, lasting an hour or longer, and associated with marked dyspnea.

Appetite and digestion poor. Menses regular and normal. Had three children living and well, the youngest two months old. One miscarriage followed first pregnancy. Unable to nurse any of her children.

Physical examination. Patient fairly well nourished. Thyroid palpable. Marked Corrigan and distinct capillary pulse. Temperature 99.2° F., pulse 100. Blood pressure (auscultatory method) systolic 170, diastolic 60 mm. Hg. Pulse pressure 110; at subsequent examination, systolic 160, diastolic 50. Heart: Left border three cm. to left of midclavicular line. Auscultation showed double aortic bruits, not very loud. No arrhythmia. Otherwise normal. No reduplication of either first or second sound could be detected at any time. Urine: Specific gravity 1.015, acid (40°), no albumin nor sugar. A few hyaline casts and leucocytes. Blood: Hgb eighty per cent., leucocytes 6,000. Blood, Wasserman +. Luetin doubtful.

The patient was placed upon mercury and iodides, the salvarsan preparations, with which the treatment would have started by preference, being available for only very grave cases at that time. She objected to the pain of intramuscular injections, which were followed by protiodide of mercury in doses as large as could be tolerated, about one quarter to one half grain three times a day. After about three months' treatment the symptoms are very much improved, although there are still occasional attacks. The physical signs are, of course, unchanged. Rest in bed was carried out as rigidly as possible.

On January 15, 1916, the Wassermann examination was negative. The aortic regurgitation, judged by the pulse pressure, should be extensive. The systolic pressure is nearly three times as great as the diastolic and the pulse pressure is 110. The capillary pulse is very marked. These points indicate rapid collapse of the peripheral arteries. Rather curiously this is not shown in the polygram.

There was no arrhythmia at the time of the first examination unless the disturbance of the R wave in the ventricular complex, to be shown later, is to be so considered. The sequence of successive cardiac cycles occurred in perfect time. The incidents of this wave can perhaps best be indicated and discussed by the aid of diagrams. Diagrams *a* and *b* (Fig. 2) are enlargements approximately to scale (x6) of the R waves marked *a* and *b* in the first and second leads respectively. It so happened that these anomalous waves occurred at the time when lead II was taken. Very slight similar disturbances were shown in one or two of the R waves of lead III, but none in lead I. That they were due to a transient disturbance of heart action at the instant when lead II was taken is further indicated by their practical disappearance, only a bare occasional suggestion, in an electrocardiogram taken November 11, 1915. They were not the result of any persistent perversion, functional or organic, manifested in lead II, in which the intercepted heart currents pass from the right arm to the left leg.

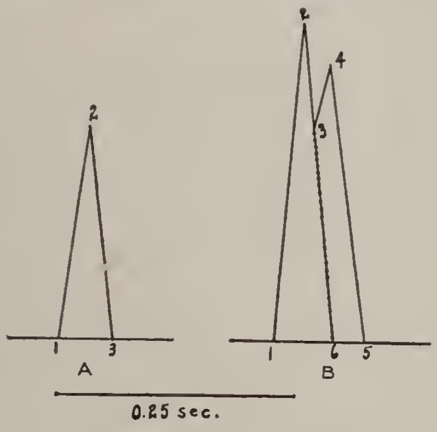

Fig. 2.—Diagrams of electrocardiograms.

In studying these diagrams we find that the new electrical impulse referred to above occurred at the point designated 3 in Diagram *b*. Had this not occurred the R wave would have been normal or perhaps slightly prolonged, the down stroke of the wave reaching the base line at about 6, as indicated by the dotted line. The return of the deflected string to the rest position, being arrested at 3, the string is again deflected in the initial direction to 4, then dropping normally to the base line at 5. In these diagrams the time space on a horizontal line is indicated by the scale below which represents 0.25 second. It will thus be seen that from the beginning of the R wave at 1 to the beginning of the auxiliary wave at 3 is about 0.02 second.

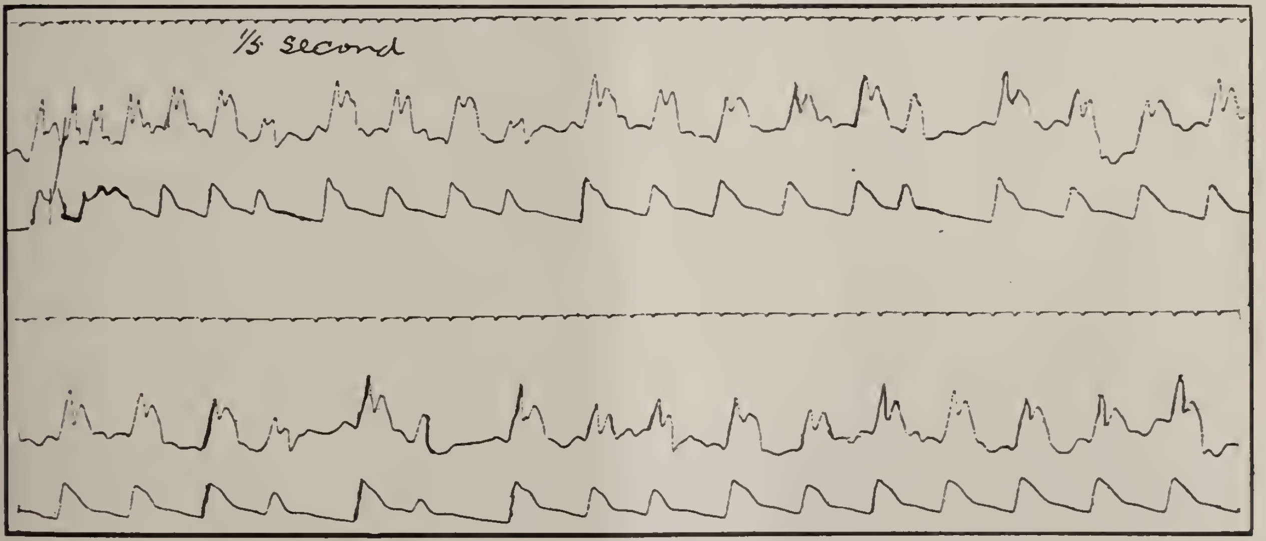

Fig. 3.—Polygram.

The next most striking incident in this tracing is the greatly increased duration of the anomalous R wave as shown by the time from 1 to 5. This is about one twelfth of a second as compared with one twenty-fourth of a second in the normal wave as shown in Diagram 2—almost exactly twice as long.

Now what is the clinical and physiological significance of this bifurcated and prolonged R wave? The R wave is the principal or at least the most conspicuous event in what is called the ventricular complex, which includes the waves arbitrarily designated Q, R, S, and T. In other words, all the events of the ventricular systole, including the initial electrical phenomena, occupy the time between the ordinates marked 7 to 10 in the ventricular complex designated *a* in lead I. Q and S are often inconspicuous or absent. The R wave is due to an electrical current caused by a relative negativity of the base of the heart, immediately preceding the actual contraction of the ventricular muscle, which begins almost exactly as the R wave ends.

It will thus be seen that the bifurcation of the R waves occurs during a precontractional systolic event, which is, however, probably just as essentially a part of the ventricular systole as the mechanical movements of contraction. Does it indicate an asynchronism of the ventricles? It cannot be due to successive reversals of electrical conditions in the same musculature caused by successive contractions. Such phenomena do not follow each other so rapidly as in periods of 0.02 second.

It may, I think, be confidently assumed that the secondary R wave is caused by electrical changes initiated in a group of muscles entirely distinct from those responsible for the primary wave. That the two ventricles might constitute the two muscular areas indicated seems plausible. That the ventricles may act asynchronously has been proved experimentally and assumed clinically by competent investigators. So far as this particular form of electrocardiogram is concerned, I am unable to find anything like it in the clinical records of the literature at hand. The only similar tracings that I can find were produced experimentally by Lewis (*Mechanism of the Heart Beat,* 1911), and resulted from heart cycles originating in the ventricle by abnormal stimulation below the auricle. That the anomalous R wave in this case was not produced in this way is proved by the fact that the contractions are of the physiological supraventricular type, originating in or near the "pace maker." In most of Lewis's electrocardiograms above referred to, the auricular contraction (P wave) follows the ventricular. In this case the P wave precedes the R wave by a perfectly normal time, thus establishing not only a normal sequence of the cardiac events, but a normal conduction time between auricle and ventricle.

I do not think that the electrocardiographic evidence in this case proves ventricular asynchronism. The most that can be said is that from some cause, perhaps a lesion of the branches of the a. v. bundle, irregular contraction of large muscular masses occurred.

It so happens that the polygram taken at another time recorded arrhythmias which were entirely absent at the time when the electrocardiogram was taken. These arrhythmias occurred in parts of the polygrams only, one advantage of which over the electrocardiogram is that the ink tracing can be continued for any length of time, thus enabling the clinician to secure a graphic tracing for study over a long period of time. The easy portability of the polygraph is another important point in its favor.

The irregularities of heart action shown in the polygram are apparently all of sinus origin. The ventricle responds to the auricle regularly, although the latter is not regular. There is a considerable variation in the height of the apices of the radial tracings, which is at times suggestive of the very serious condition known as pulsus alternans. In many if not all of the small arteriograms, however, the corresponding venous wave is abnormal, so that the ventricle was perhaps not adequately filled. This would, of course, diminish the volume of blood distributed to the peripheral arteries, and limit the expansion of the radial artery upon which the characteristics of the tracings depend.

The diagnosis is undoubtedly syphilis of the heart and aorta, with evident involvement of the aortic valves. It is true that there is a history of articular rheumatism which has to be taken into account as a possible etiological factor. The mitral valves, however, which are the site of predilection of "rheumatic" infections of the heart, were not involved. The only anatomical lesions clinically demonstrable were in the aortic area. The fact that about seventy-five per cent. of all cases of aortic disease occurring in early adult life are due to syphilis, coupled with a positive Wassermann, and steady improvement under antisyphilitic treatment, clinches the diagnosis. The prognosis for a relative recovery seems good.

The interpretation of the anomalous electrocardiogram is admittedly doubtful, but, taken in connection with the arrhythmia demonstrated by the polygram, we may reasonably infer a rather widespread treponemal infection of the heart, by no means limited to the aortic zone. That such a condition might be expected in cardiac syphilis is indicated by the work of Warthin, from which it would appear not only that the heart is a site of predilection for the treponemata, but that they can in such cases usually be found widely distributed throughout the tissues of that organ. If Warthin's work is to be credited, then treponemal infection of the auricular wall, of the branches of the bundle of His, and other widely separated structures, can almost be fairly assumed, whether it produces active clinical manifestations or not.

Physicians' Defense Building.

TRANSMISSIBLE DISEASES IN WAR.

By P. W. Huntington, M. D.,
New York,
Captain, Medical Corps, United States Army.

There are no diseases peculiar to the soldier, but there are several classes of diseases, embracing many separate pathological entities, to which soldiers, by the nature of their occupation and surroundings, are particularly susceptible, especially in time of war.

It is easily understood that sanitary conditions in war are necessarily much different from those of peace; that is, that military exigency and advantage take precedence over sanitary measures.

When sanitation is necessarily violated for reasons of military urgency, however, the commander should be aware of the fact and should be able and ready to pay the inevitable price in the future reduction of efficiency. It is well known that in nearly all past wars preventable disease has killed more men than have perished from wounds. In the Civil War there were killed in battle and died of wounds 93,969; died of disease, 186,216. In the Spanish-American War deaths from battle, 293; from disease, 3,681. These examples might be multiplied almost indefinitely and, in all wars, the deaths from disease are caused by preventable diseases in by far the greatest number of cases, and are due to ignorance or misapplication of the laws of hygiene.

There are four classes of diseases to which soldiers are particularly liable, namely, intestinal, respiratory, renal, and venereal. As it would be impossible within the scope of a paper such as this to discuss all the diseases in these classes, we shall consider first, and as the type disease of the class of intestinal diseases, typhoid fever.

TYPHOID FEVER.

Colonel Kean has truly said that "typhoid fever is today, on account of its wide dissemination, the persistent vitality of the infecting organism, the duration and severity of its attack, and its large death rate the most formidable infectious disease with which we have to contend in military life." In garrisons it is comparatively easy to control typhoid, but in camps the situation is very different on account of the difficulty of disposing of human excreta, lack of facilities for bathing, and constantly renewed contact with articles in common use. As typhoid is endemic in the United States, it will hardly be possible to mobilize any unit without including an incubating case, a convalescent, or a carrier. We may look on such cases as inevitable, but should be duly on our guard to learn of them at the earliest possible moment to prevent further cases; in other words, to prevent this preventable disease. We must be particularly careful not to overlook the mild or otherwise atypical cases, as our experience in the Spanish-American War showed that such were frequently the starting point of company epidemics. We do not here need to concern ourselves with the symptomatology, pathology, or treatment of typhoid, but chiefly with its prevention. In order to accomplish this we must apply the rules of hygiene that are applicable to all intestinal diseases caused by a living microorganism which is introduced with the food or drink. These are: 1. The deposit of the excreta in proper receptacles under proper conditions; 2, the provision of a food and a water supply that is uncontaminated; 3, the preaching and practice of cleanliness; 4, the isolation of the sick, and, 5, the prevention of the fly. In addition to these general measures we have another which is especially applicable to typhoid, namely, the antityphoid vaccine.

To furnish an uncontaminated water supply to a command in the field is a much more difficult problem than might be supposed. To this end the following rules may be a help: 1. In all cases of doubt, have the drinking water made safe by boiling, by use of the Darnall filter, or the Lyster hypochlorite bag; 2, regard all surface water as doubtful; 3, water from deep (artesian) wells is usually safe. The care of the food supply naturally includes measures for the selection and training of cooks, provision and preparation of the food under proper conditions and its protection from contamination until consumed—this latter to include screening of kitchens and mess tents whenever necessary. The measures in regard to excreta include providing proper pits, latrines, as they are called, with fly proof covers, for the reception of feces and urine, and, also providing water nearby for cleansing of hands. The details of latrines, incinerators, baths, and many other sanitary measures and appliances will be taken up in a later paper on the subject of camp sanitation.

The necessity for the isolation of the sick is at once understood. The prevention of the fly is a measure of some difficulty, especially in camps of mounted troops. The necessary measures include careful sanitation of picket lines, the disposal of manure by burying, burning or drying, and careful attention to the surrounding civilian settlements which are often breeding places of myriads of these pests. Fly traps of proper construction and properly baited can produce a noticeable diminution in the number of flies. Last and most important, all these measures must be supplemented by the vaccination of the entire army, and the surrounding civil population if it is thought necessary. It must be remembered that the military medical officer will always in war time be the final authority as to the sanitation of areas within the zone of operations and also in the vicinity of camps of mobilization.

The antityphoid vaccine in use in the United States army is a whole killed culture of the Rawlings strain obtained originally from the spleen of a fatal case in England. This strain still retains its toxicity and a considerable degree of its virulence. Its efficiency in the vaccine depends on its toxicity. The vaccine is prepared in the laboratory of the Army Medical School in Washington, D. C., and is required to be given to every enlisted man and officer in the army. Three doses (500 million units—1,000 million units—1,000 million units) are given, at ten day intervals. That its use has been attended by satisfactory results is shown by the fact that whereas before 1910 there were in the army, annually, in a strength of about 86,000 men, about 300 cases, since 1910 there have been, in five years, thirty-two cases. During that time there have been no great advances in general or military sanitation to account for this tremendous decrease in typhoid incidence. It should be remembered that the soldiers at almost all stations mix freely with the civilian population, and that several times in the past five year camps have been near towns in which typhoid was prevalent, as at San Antonio, Texas, in 1911 and 1912. The immunity probably lasts on an average for two and a half to three years. The vaccine rapidly loses its toxicity and therefore its efficiency after four months is considerably lessened and after eight months it is probably quite inert.

In the European armies a polyvalent vaccine containing Bacillus typhosus, Bacillus paratyphosus A, Bacillus paratyphosus B, and Streptococcus choleræ asiaticæ is being used with good results.

PNEUMONIA.

Pneumonia is, of course, a disease of war time on account of the conditions of hardship and exposure incident to campaigns, especially in such trench warfare as is now being waged in France. Its prevention depends on the avoidance of those factors in so far as possible and the prohibition of the use of alcohol by the troops. In regard to its treatment nothing new can be said except that, among soldiers, the death rate, usually, will be low, as they are a selected set of men of favorable age with presumably healthy hearts.

BRIGHT'S DISEASE.

Acute Bright's disease has been one of the medical problems of the present war that has caused and is still causing much discussion. There have been a large number of acute cases among the men from the trenches who, when brought back to the base hospitals, were found to have partial or complete suppression, edema, and all of the usual symptoms of acute Bright's disease, which was thought to have been produced by cold and other hardships, until it was found that several of the hospital orderlies and others at the base, who had not been exposed to these hardships, were manifesting the same symptoms. It is now an unsettled question whether this particular type of Bright's disease is not due to some specific infectious cause. The cases have nearly all ended in rapid recovery with rest and the usual attention to diet and drink.

VENEREAL DISEASES.

Venereal diseases have for years been, at least in our army, the greatest and most important cause of constant ineffectiveness, being, in our army of about 86,000, the cause of a constant loss of the services of the equivalent of about a regiment of men. Compared with other diseases they become of less importance in war time, but in the past this has not been due to any decrease in the incidence of venereal diseases, but to the fact that other diseases are more common.

Field Service Regulations provide for a physical examination of the men of a command about to take the field, and, at that time, the medical officers should make an earnest effort to detect all cases, as infected men would quickly break down under the terrific strains incident to modern warfare. The admission rate for venereal diseases has been higher in the United States army than that of any of the European armies, but, as human nature is much the same in all countries, I am inclined to think that the difference is much more one of records than of facts.

In regard to the treatment of these diseases, the military surgeon has no methods that are not available to the whole profession, but we do have the advantage of having our patients under military control and of being able to follow them up for years if necessary, at least as long as they remain in the military service.

In regard to prophylaxis, one of the most efficient means that we have at hand was provided by Congress when it enacted that no man should receive pay for any time lost from duty by reason of alcoholism or disease, the result of immoral habits. Venereal morbidity in our army has been much reduced since 1912 as the result of orders which initiated the system of personal prophylaxis now in use. In general it is as follows: Each man who, while away from his barracks, has exposed himself to possible venereal infection, is required, on returning to the post, to proceed at once to the hospital, where a room is set apart and an attendant is always on duty to see that prophylaxis is properly carried out. This consists of a preliminary cleansing with soap and water, then an injection of two per cent. protargol solution, followed by a thorough and painstaking inunction of all the genital parts with thirty per cent. calomel ointment.

I think that nearly all medical officers feel assured that this procedure will, if applied within three hours after exposure, prevent practically all cases of venereal infection. A card record is made of the prophylactic treatment at the time, showing the hours of exposure and of treatment. To prevent concealment of cases and to discover unsuspected cases, all enlisted men, with the exception of married men of good character, receive a careful physical examination twice a month. If any man conceals a case of venereal disease, or, having a case, fails when exposed to take the prophylactic treatment, he may be and usually is brought before a court martial for trial and punishment.

In my opinion a collapsible tube containing small quantities of the agents necessary for this prophylactic which could be issued to the men without cost, would protect nearly all of the remaining infections, as experience has shown that they occur now in men who are on pass for twenty-four hours or more, or in chronic alcoholics, or in men who for some reason or other do not receive the prophylactic within a sufficiently short time after exposure.

Further important measures of prophylaxis include instruction in the benefits of continence and the dangers and prevalence of venereal diseases, and, last and not least, in providing the soldier with some employment for his mind and hands when off duty, for it is still true that idleness fosters vice. In time of war all loose and lewd women should be promptly expelled from the zone of military operations and in and near garrison towns the prostitutes and shop girls should be kept under careful oversight.

39 Whitehall Street.

SYNCOPE IMMEDIATELY AFTER THE ADMINISTRATION OF DIARSENOL.

By Sylvan H. Likes, M. D.,
Baltimore;
And Herbert Schoenrich, M. D.,
Baltimore.

During the past three months we have had occasion to administer numerous intravenous injections of a preparation made in Canada and which we understand the manufacturers hold to be identical with the German salvarsan, and to which they have given the name diarsenol. This preparation is marketed in glass ampoules, consists of a yellow powder in appearance similar to the German product, though the contents of some of the ampoules were of a darker shade of yellow. The powder seems to dissolve somewhat less readily than salvarsan, requires a greater degree of heat for its complete solution, and gives off a rather strong garlicky, disagreeable odor. The precipitate which forms after the addition of the alkali is darker, which is also at times the case with the solution when ready for administration. In mixing the powder, we noticed that the bulk in different ampoules containing the same dose varied; this fact was made more evident when placing a number of ampoules side by side in a rack, even though we made allowances for the possible difference in the diameter of the ampoule.

The therapeutical efficacy of the drug did not seem to differ materially from that of salvarsan. Initial lesions healed within ten days. Secondary lesions, particularly macular syphilides, yielded readily. Encouraging results were also observed in cases presenting some of the other phases of syphilis. The Wassermann test, which in our work is made not only as a means of diagnosis but with which every case is carefully followed up, was influenced favorably by repeated doses, and occasionally by even a single injection of diarsenol.

The main point of interest is the peculiar reaction which in some cases has followed the administration of diarsenol. On the whole, the reaction we may expect does not seem to differ very materially from that of salvarsan, although it was observed in a greater percentage of our cases, and when present came on earlier, was more severe in character, and in three cases to be hereafter mentioned, indeed alarming. It is with a certain degree of amusement when we think back to our early experience with salvarsan, when we took all the prescribed precautions for giving absolute rest to the patient for several days following the treatment, how the first few patients were carried from the operating table to a room specially fitted for this purpose where they were kept for three days, the temperature being taken every four hours and the urine examined each day. Following this, patients went unassisted to the room and were kept there for one day. Not seeing any alarming aftereffects, we have since then advised our patients either to rest at our office for six to eight hours, or to go home immediately and rest there for a similar length of time. We have administered several thousand intravenous injections of salvarsan in the past five years, and while reactions followed in possibly sixty per cent. of our cases, the symptoms were fortunately never alarming in character and consisted largely of headache, rigors, and fever; the more severe reactions being accompanied by nausea and vomiting. In only one case was the reaction sufficient to cause anxiety. In this instance there was a suppression of urine for twenty-four hours, due to a nephritis evidenced by albumin and casts in the urine. This nephritis lasted for several days, after which the urine became normal and the patient experienced no further trouble. Several patients, although against our advice, did not take the prescribed rest and immediately went on with their customary duties and nevertheless suffered no ill aftereffects. Furthermore, reactions seldom came on before the expiration of one hour; they usually appeared during the second hour, but seldom later.

Prompted by the fact that after five years' experience with salvarsan with absolutely no alarming symptoms other than the exceptions mentioned, we naturally followed the same procedure when administering diarsenol. The technic employed in the preparation of the fluid was that recommended by the manufacturers. Our experience with the drug was at first practically the same as with salvarsan, until we administered the eighteenth injection.

THE EIGHTEENTH INJECTION.

The patient had already received five intravenous injections of salvarsan. On January 25th he received 0.6 diarsenol with practically no reaction. Two weeks subsequent to his first diarsenol injection, he had a second dose of 0.6 diarsenol. Hardly had we completed its administration, when the patient went into a profound syncope with profuse sweating and extreme pallor. The wrist pulse was not palpable. Fortunately, this attack was of only short duration, as the man responded rapidly to the inhalation of amyl nitrite and hypodermic injections of strychnine. He was able to go home in an hour's time. On March 4th he received 0.4 diarsenol with no subsequent reaction.

THE TWENTY-SECOND INJECTION.

This patient had on a previous occasion received 0.6 salvarsan, followed in an hour by a fairly marked reaction. On February 21st he had 0.6 diarsenol injection. Immediately after the treatment and while the patient was still in the recumbent posture on the operating table, he was seized with intense nausea and violent vomiting, and became extremely exhausted. There was very slight syncope, but no loss of consciousness. The radial pulse was rapid and respiration shallow and rapid. He was kept in the recumbent position for over an hour, after which he regained his strength and was later able to proceed to his home.

THE FIFTY-THIRD INJECTION.

This case is of interest, first from the viewpoint of salvarsan, in that the patient showed unusual resistance to antisyphilitic treatment, in spite of the fact that the diagnosis was made early; and, second, from the viewpoint of diarsenol on account of the rather alarming reaction.

He first consulted us, September 24, 1912, presenting a sore on his penis of only a few days' duration, which was recognized as luetic by the aid of the dark field condenser. Within twenty-four hours of the diagnosis he received 0.6 salvarsan, which caused the initial lesion to disappear in ten days. Subsequently he received twelve more injections of salvarsan and this treatment was reinforced with mercury and potassium iodide. His Wassermann test taken on frequent occasions showed a varying degree of hemolysis, the last test, February 17, 1916, still showed one plus. This failure to obtain a negative Wassermann in cases in which the diagnosis was early established, viz., within a few days of the appearance of the initial lesion and energetically treated, is contrary to our experience.

The fact that his last Wassermann test was still positive, prompted us to administer 0.6 diarsenol. This was his first injection of the new product, and was given on March 8th. Within two minutes following its administration this patient went into a profound syncope. First, his face became deathly pale, then cyanosed, profuse sweating ensued, the wrist pulse was not palpable and only the first sound of heart could be heard. Respirations were not perceptible; there was a loss of consciousness and his pupils were widely dilated. He had inhalations of amyl nitrite and strychnine hypodermically, and within a few minutes he showed signs of returning consciousness, and then became intensely nauseated and vomited profusely. The wrist pulse and heart sounds soon became normal; he was kept under close observation for three hours, at the end of which time he was in fairly good shape and able to go home.

In no case observed so far has there been any evidence of kidney irritation nor change in the urinary secretion.

We cite these three cases because they contrast with the numerous others in which salvarsan, diarsenol, or both, have been given, and, strange to say, it was only with the more recent injections that we encountered trouble. From the fact that diarsenol on previous occasions and subsequently had been given without reaction other than might be expected to follow salvarsan, and that alarming reactions occurred in individuals who already had diarsenol treatments without untoward symptoms, we should infer that this unusual reaction is not due to suceptibility on the part of the patient, but rather to some possible variation in the drug itself.

It will be our plan in the future until we have learned more concerning the exact cause of the peculiar reaction, to give a somewhat smaller dose and have the patient maintain the recumbent posture for at least fifteen minutes. From our limited experience, we feel that if there is no evidence of syncope within that time it probably will not occur.

1134 Linden Avenue.

CHRONIC INTERSTITIAL NEPHRITIS,

An Apparently Hopeless Case, Benefited by Treatment with the Emanations of Radium and Thorium.

By Francis E. Park, M. D.,
Stoneham, Mass.

It seems strange that at this late day, when for several years in leading centres of Europe, notably Berlin, Vienna and Budapest, there have been in successful operation institutions where the internal diseases are being treated with emanations of radium and thorium with wonderful success, that apparently scant notice and interest is taken in the results by the medical profession in this country. It is in the hope of awakening interest and stimulating research work among our men that this case is reported. It is but one of many, but I think will be more striking if related alone.

In the fall of 1914 I was called in consultation to see a lady in a neighboring town. Her physician told me that she had been in poor health for several years, getting progressively worse. The preceding year she had spent in Germany under the care of a celebrated practitioner, but had returned weaker than when she went. At that time she had come under his care, and he had found well advanced lesions of the kidneys and arterial system. There had followed the usual sequence in such cases, and in the summer of 1914 she had been compelled to take to her bed. It was decided at a consultation that there was practically nothing more to be done, and from that time until I saw her, the following October, she had been confined to bed a large part of the time.

Case. On examination, I found a woman of sixty-two years, fairly well nourished; color poor; tongue coated; slight degree of anarsarca present. She was very weak and unable to assist herself. On examining the heart I found a mitral murmur which her physician assured me had developed within a few months and had grown steadily louder. The organ was beating irregularly, 120 to the minute, and the blood pressure, systolic, was 240 mm. Hg. The urine was pale, specific gravity 1.010, with slight trace of albumin. Digestion was impaired, there being much fermentation, and she had a great deal of gas. She complained very much of pressure in the head and singing sounds in the ears.

This history of a progressive decline under good care and treatment, coupled with the very bad general condition, made me feel dubious as to the result, but as a last resort the family wished to try radium treatment and she was accordingly removed to Stoneham and placed under my care. The treatment that was instituted tended to keep a constant degree of radioactivity present in all of the body tissues, while the diet was carefully worked out so as to avoid fermentation as much as possible. All through the early weeks of the treatment it was necessary to use the various forms of pepsin and the usual mild stomach remedies such as tincture of nux vomica, bismuth, sodium bicarbonate, etc. Apart from this, which was along the same lines as formerly, the treatment was entirely with the emanations. These were given both in drinking water and intravenously. There was also some radioactive effect derived from a pad which she wore constantly over her heart. During the latter part of the treatment she was able to go into a radiotorium and inhale the air which contained ten Maché units to the litre. She also was given, through the first half of her stay, thirty c. c. of radioactive plasma (Quinton) daily.

After the first week she began to show signs of improvement. Up to that time she was so weak as to be unable to feed herself. On the tenth day she sat up on the side of the bed for a few minutes. From that time on, the improvement was steady, though very slow. The time of sitting up was lengthened and more frequent intervals were observed. The appetite began to come, and there was a steady change in the urine. At the end of eight weeks she was eating a variety of things and walking about the room. The heart action was markedly altered, the rate dropping toward normal and the murmur becoming indistinct.

By January the urine was practically normal, also the heart, except when under some excitement, and she began walking outdoors a little. The feeling of pressure and the noises in the head began to diminish. Shortly afterward she was greatly pleased to discover that she could hear her clock tick from its accustomed place in the room, something she assured me had not happened for several years. By February she was walking every morning, half a mile on the sidewalk in front of the sanatorium, and her pulse was constant at 72, while the murmur was not to be heard. She was eating well and was the picture of health. She discontinued treatment at this time and returned to her home. The subsequent history up to the present time, a year later, is that of improvement. She is back in her home life, outdoors every day and, as she recently expressed herself to me, "gaining all the time."

Now we have here the history of a case that seems, judged by our old standards, impossible, yet it is strictly as reported, and enough careful observers saw the case to put the diagnosis beyond a peradventure. She had had the best of care from the onset of her disease, and in spite of it had followed the inevitable course, then, at the eleventh hour, was subjected to the influence of radium and thorium, and at once swung about and crept steadily back to a condition of comparative good health, and is still tending to improve, a year after ceasing treatment. As I look back and compare the case with many others that I have personally seen that were just as wonderful and some of them of widely diverse conditions, I feel sure that in the radioactive emanations there exists a power such as we have never known before, that stimulates the vitality of the individual protoplasmic cells and assists them to regain their function.

So far my work with the emanations has been limited to very chronic types of disease. This is to be expected, for on the same principle that a drowning man grasps at a straw, so these hopeless patients who have tried everything in vain reach out for a possible help in radium and in the great majority of cases find it. The point I wish to make is this: If radium and thorium emanations have the power to help advanced cases of disease—and I think we must admit that enough evidence has been accumulated from the great number of cases reported by various observers—then how much more beneficial will they be if used in the early stages when the functions are first becoming deranged. Judging from a two years' large experience in this field, I venture to predict that the day will come when it will be a customary thing as middle age is reached, regularly to take a course of radium treatment in order to revive and stimulate the functions of the whole body and put back by appreciable years the inevitable decline which we call old age.

A TRUSTWORTHY NONPOISONOUS ANTISEPTIC.

By William M. Gregory, M. D.,
Berea, Ohio.

When Doctor Crile, of Cleveland, returned from his tour of duty in the European military hospitals he remarked: "Modern antiseptic treatment has totally broken down in its application to military surgery in Europe." We hear from time to time of fatal accidents resulting from the careless use of mercury bichloride.

It is a good time to remind the entire medical profession, and especially the surgical end of it, that calendula will kill all pus germs. As the drug may not be familiar to some, I will say that I refer to the nonalcoholic fluid extract of calendula, which is Calendula officinalis, the common or garden marigold. Perhaps fifteen years ago I read in some medical journal that "a good extract of calendula will absolutely prevent the formation of pus in all contused and lacerated wounds, no matter how dirty, unclean, and far from aseptic they may be." I considered this statement probably exaggerated, but tried the remedy, and found that it made good in every instance. I have done a good deal of accident and emergency surgery, and have had some exceedingly filthy wounds to treat, caused by railroad and stone quarry accidents, contaminated by coal dust, machine oil, and dirty clothing, and not one of them has ever produced a drop of pus when dressed with a good extract of calendula.

Extensive burns are pretty sure to become contaminated from burned dirty clothing and other causes, and if dressed with linseed oil and lime water, will be covered with foul yellow pus in about two days. If dressed with calendula and saturated solution of boric acid, the burns will remain perfectly clean and sterile till healing is complete. Beside its antiseptic qualities, calendula alleviates the pain of burns better than any other remedy ever discovered. It is so much better than dilute picric acid that any one who has used it for burns will never care to use the acid. I wish to make my meaning perfectly clear, I do not mean that it has sometimes, or occasionally prevented pus formation in dirty wounds, but that it has absolutely inhibited the formation of pus in every wound that I have ever dressed with it.

If you ask me how it does this, I have to say frankly that I do not know, as chemistry can tell us nothing about it that I know of. It is a nonpoisonous plant, often used internally, and is the best remedy I have ever found for a certain very acute and inflammatory type of gastric catarrh.

Have any of the readers of the Journal ever been called to treat a badly bruised or wrenched knee joint with a violent acute synovitis rapidly setting in? If they have, they know what wreck and ruin is likely to take place unless the doctor is both energetic and skillful. In a case like this, two ounces of concentrated extract of calendula, six drams of lead acetate, to one pint of hot water, applied on compresses of absorbent cotton, will work a wonderful cure. The lotion must be applied very hot, and the compresses must be changed before they get cold. This treatment, faithfully end energetically followed up for two or three days and nights, will positively prevent effusion, suppuration, and the wrecked and ankylosed knee joints that I used to see in my hospital days. This treatment is equally good for a badly sprained ankle.

I wish especially to warn the profession to get a reliable preparation of this remedy, as there is much on the market that is almost worthless. The reliable fluid extract is so concentrated that it is almost of the consistence of syrup. In that form of erysipelas in which a light red surface is interspersed with numerous pustules, and which is most certainly a mixed infection, calendula, lead acetate, and saturated solution of boric acid will effect a prompt cure.

An exceedingly efficient treatment for very bad cases of leucorrhea contains equal parts of nonalcoholic calendula, nonalcoholic hydrastis, and glycerin. This prescription can be used on tampons, or with hot water as a medicated douche. Where patients object to the present very high price of hydrastis, the calendula, boric acid, and glycerin can be used with great success.

General knowledge of the power of calendula as a germicide, and its general use in hospitals and surgeries, would prevent thousands of cases of infection and suppuration every year. It is no new or experimental remedy. It has been thoroughly tried out. It has stood the test of years, and it is absolutely sure death to all pus germs whatsoever. But it must be the right calendula. Many a man, not knowing good from bad, has tried some poor preparation of the drug, got no good results, and concluded that the claims made for it were false.

Lectures and Addresses.

A PRESIDENTIAL ADDRESS.*

By Albert C. Geyser, M. D.,
New York.
Professor of Physiological Therapy, Fordham University Medical College.

Members and Guests of the New York Society for the Promotion of Physical Therapy:

It is my privilege and pleasure to bring to your notice the scope of our aim, the goal of our endeavor. This society has been guarded in the selection of its members for several reasons. In the first place, membership was limited to professors and clinical instructors and to those of the medical profession who practically specialized in this field of therapeutics.

The reason for this was that whatever emanated from the members was expected to be based upon the sound reasoning that is born of real practical, everyday experience. Long experience has taught that however much we may owe to the great minds that evolved basic generalizations and hypotheses, real progress in science ultimately rests on the establishment of facts. Our reasoning faculties by themselves are unable to cope with the complexity in the physical world, and are sure to stray from reality unless they are continually guided by observation and experience. Nature always proves to be less complex and ever so much more simple in her operations than would seem to be true to the theoretical considerations of the closest philosopher. In the minds of those who formed this society was the dominant thought that whatever emanated from this society must be the acme of science built upon the corner stone of truth.

This society sees before it a duty to itself, a duty to physical therapeutics, and a duty to medical science. The duty that it owes to itself is to be ever guarded in the selection of its members. Science, experience, and truth are the pass words that lead to its sanctum sanctorum, and without adherence to the full meaning of these words no man should be able to enjoy the pleasure and privilege of its membership. Quality not quantity is our aim.

This society has taken upon itself the endeavor to place physical therapy upon the high pinnacle that it so justly deserves. It will relentlessly wage war by every lawful means as its disposal to uproot any and all quackery practised by the lay pretender.

This society does not subscribe to the altogether too prevalent idea that *"to practise physical therapeutics is not to practise medicine."* On the contrary, it firmly believes that only a graduate in medicine is capable of appreciating the actions and reactions which take place almost immediately under his eyes the moment such means as electrotherapy, hydrotherapy, thermotherapy, psychotherapy, phototherapy, etc., are applied to the living body.

It was only a short time ago that the practitioner was compelled to abandon the idea that electrotherapy was useful only in diseases of the nervous system. Because the electric current, especially the faradic or the galvanic, was able to furnish such unerring data in the diagnosis of central and peripheral nerve lesions, the neurologists appropriated unto themselves the entire field of electrotherapy. On the other hand, the physical therapeutist recognizes that in the field of neurology electrotherapy plays only a very minor part. Diathermia, one of the phases of a faradic current, is indicated in every condition of disease where the natural forces seem to be inadequate. In tuberculosis pulmonalis it is almost a physiological specific.

Hydrotherapy is becoming better understood and is without doubt the best general therapeutic agent in the entire field of neurological diseases.

Dietotherapy in diseases of faulty metabolism, such as obesity, diabetes, nephritis and arteriosclerosis, is certainly our sheet anchor.

Psychotherapy, an agent not yet fully appreciated, promises much in the functional diseases. No better proof of the truth of this assertion is needed than to observe the effects of psychotherapy upon that large army, the Christian scientists.

Phototherapy, a much abused therapeutic agent, is slowly but surely coming into its own. The extravagant assertions made concerning the Röntgen ray, radium, and the ultraviolet ray are gradually subsiding. Most of these agents are understood by few, misunderstood by many, and underestimated by everybody. Instead of relegating them to persons not trained in anatomy, physiology, chemistry, and pathology, they should be tolerated only in the hands of medical men who are willing to equip their brains as well as their offices.

Not only that, but the application of these therapeutic procedures should go hand in hand with drug therapeutics. Physical therapeutics and drug therapeutics are not to be torn asunder, but are to be more firmly welded together. The one will be assisted by the other, they may even displace each other when used to produce physiological reaction. Our motto is: *"It is not the agent, but the reaction of living cells to an agent that must be our guide in therapeutics."*

It is daily being recognized more and more that the word, disease, is limited in its significance. Disease is the deviation of a process from the normal. Reactions by the system are processes to establish the normal. Physical therapeutics brings about normal physiological reactions, thereby assisting the economy to hasten or bring about in a normal physiological manner a process for the restoration of conditions previously existing.

There is nearly always a distinct feeling of opposition to the introduction of new devices, because physicians, like other men, walk in the path of least resistance; again, because of the inconvenience involved at having them at hand or the habits of accuracy demanded for their proper use.

We, therefore, who specialize in the application of the various physical therapeutic measures, owe it to the science of medicine to bring to realization the real merits of the agencies we advocate, for once they are introduced we wonder how we ever managed to do without them, but we realize how handicapped were preceding generations of physicians who knew nothing of them.

231 West Ninety-sixth Street.

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*Read at the meeting of the New York Society for the Promotion of Physical Therapy, March 8, 1916.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXI.—How do you treat a sprained ankle? (Closed.)

CLXXII.—What are your methods of resuscitation and aftercare of persons apparently drowned? (Answers due not later than July 15th.)

CLXXIII.—How do you perform circumcision? (Answers due not later than August 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXX was awarded to Dr. Henry J. Noerling, of Valatie, N. Y., whose paper appeared on page 27.

PRIZE QUESTION CLXX.

THE PREVENTION OF PERINEAL LACERATION.

(Continued from page 29.)

Dr. Louis L. Hoff, of Holyoke, Mass., states:

The perineum usually requires attention to prevent rupture, but there is no fear of laceration if the anterior border of it maintains a considerable thickness and is not fully on the stretch during the pain. Therefore no support is needed and nothing is required but to watch the progress of the head as it passes over the perineum. Advise the woman to refrain from bearing down, from holding her breath, pulling with her hands, pushing with her knees, etc. If she is unable to control her strainings, anesthesia is necessary. The methods of manipulation to prevent laceration of the perineum are too numerous to mention, but the principles involved, which are highly important to understand, are few and always the same:

First, give the perineum time to stretch by retarding expulsion; secondly, guide the head so that it may occupy as little space as possible. By keeping the plane of its smallest circumference parallel with the plane of the perineal ring through which it must pass, or, what is the same thing, keep the long diameter of the head at right angles to the plane of the perineum girdle. The central point of the occiput must lead; keep in the centre of the ring. Thirdly, relax the perineum as much as possible by gathering in tether from surrounding tissues; "give it rope" from the outside. The manipulations may be accomplished with the woman either on the left side or in the dorsal position, provided the lower limbs are not forcibly flexed or widely separated. Unreserved ocular inspection of the parts is absolutely required. In a good many cases I have noticed that rupture occurs at the moment or during the few moments of the last one or two pains, just as the head is being extruded. Normally the head is delivered by extension. The occiput arises over the mons veneris, while forehead, face, etc., successively emerge at the perineal margin. Hence, to retard expulsion, we must retard extension by pressure transmitted through the perineum upon the frontal bone, which indirectly retards expulsion. Extension must occur eventually or the child could not well be born; our purpose is to delay, not prevent it. When the perineum has time to stretch, we permit extension and consequent expulsion to take place. In the manipulation to carry out these purposes both hands are simultaneously used (the woman being either on her side or back—preferably the former) as follows: The right hand is so placed that its fingers rest upon the posterior part of the left labium majus, and the thumb upon the right labium, the web of skin between the thumb and index finger being above the line of the perineum margin. The left hand is passed over the abdomen and mons veneris until its finger tips come in contact with the occiput just beginning to protrude between the labia. During the pains the fingers of the left hand make direct pressure upon the advancing occiput in line with the long diameter of the head, to stop it from coming out, while the fingers and thumb of the right hand gather in perineal tissue from the sides, thus relaxing the central tension, while at the same time, aided by the palm and ulnar border of the hand, they transmit a deeper pressure through the perineum upon the forehead to retard extension. Meanwhile the manipulation unavoidably pushes the entire head toward the pubis, thus utilizing any spare space left between the pubic arch and the back of the child's neck.

During these proceedings the parts should be bathed occasionally with a hot solution of mercury bichloride and the hands of the operator washed in a similar fluid. When it is finally deemed advisable to allow the head to escape, let this occur if possible between the pains. Should the perineum escape rupture during the delivery of the head and neck, it may yet be torn during the passage of the shoulders. This may be prevented by lifting the head and neck up toward the mons veneris so that one shoulder goes back behind the symphisis pubis, while the other escapes at the coccyx. This enables one shoulder to be born at a time and produces less strain upon the perineum than when both are pulled out together, which must be avoided.

Dr. Jesse D. Friedmann, of New Kensington, Pa., writes:

Our aim in preventing this condition should be the close observance of Nature in the normal mechanism of labor and the elimination of the causes producing laceration, such as rapid delivery, forceps, large fetal head, occiput posterior positions, etc. As lacerations occur during the second stage of labor, our attention will be devoted to this period.

The desideratum in the normal mechanism is to secure the smallest possible diameters of the presenting part to emerge through the parturient outlet. In vertex anterior positions, the external occipital protuberance should have passed the subpubic arch before we allow the head to extend, so that the smallest suboccipitobregmatic circumference engages and passes the outlet. Abundance of time must be given to the muscles of the pelvic floor to stretch sufficiently without tearing to permit of the passage of the fetus. I often employ digital stretching of the pelvic floor preliminary to the descent of the presenting part, so that a relaxed condition of the muscles will await the latter when it reaches the pelvic floor. Chloroform or ether to the obstetric degree will also assist in this relaxation when the head is ready to be born.

Our object is to obtain stretching rather than tearing. To do this we prevent too rapid advance of the head; the patient is not to bear down, to breathe rapidly during pains, to cry out during the emergence of the head. We use manual retardation of the head until it is ready to be born, and use chloroform or ether. Partial anesthesia relaxes the tissues and prevents too rapid advance and expulsion. We must remember that our object in protecting the perineum at this stage is more to bring pressure to bear on the head rather than on the perineum. The delivery of the head should be accomplished between pains, the advantage being that we have a relaxed instead of a rigid pelvic floor at this time.

Having considered the preliminary principles and theories, we can now proceed with the actual method of protecting the perineum in childbirth. The posture during the second stage differs with the ideas of the accoucheur, but the principle is the same—control and delay of the advancing head or presenting part of the child by direct manual manipulation to gain the advantage of the elasticity of the perineum. Some use the dorsal posture, others the lateral prone—the left for left positions, the right for right positions of the presenting part.

In the lateral position of the patient, the physician standing to the right of and behind the patient, uses the fingers of the left and right hand in controlling the head; or he may use the left hand for control of the head, the fingers of the right hand embracing the bitemporal diameter of the fetal head from the perineum on either side of the coccyx. In the latter method the presenting part is pushed up close to the subpubic ligament. Here again chloroform or ether (partial anesthesia) is of aid.

In the dorsal posture, the right hand is used for perineal protection. The middle finger flexed on the palm is placed behind the anus (not entering the latter) and in front of the coccyx, thus bringing pressure to bear upon the forehead of the fetus. The thumb over the right and the index finger over the left labium majus grasp the parietal eminences. The fingers of the left hand control the presenting part in the vagina. In this manner the presenting part is under complete control and can be advanced or retarded at will. The pressure over the parietal eminences prevents too sudden advance of the head, while the middle finger of the right hand presses on the forehead. Thus when the pelvic floor has sufficiently relaxed, the head may be extended (only after the external occipital protuberance has passed the subpubic ligament) and shelled out of the vulval orifice.

We often find that after the delivery of the head without a tear, the aftercoming shoulders produce just what we have been trying to prevent—laceration of the pelvic floor. I believe it is just as important closely to observe the mechanism of shoulder delivery to prevent laceration, as it is to manage the birth of the head. Delivery of the shoulder should be delayed until complete rotation of the bisacromial diameter has taken place. The anterior shoulder is best brought behind the symphysis and the posterior shoulder allowed to be born first. This secures the cervicoacromial diameter at the outlet. Some deliver the anterior shoulder first, but our aim in either case should be to get the shortest diameter of the shoulders to pass through the vulva and not to permit the shoulder to press too closely against the perineum, being rather pushed carefully into the pubic arch.

Adhering to the normal mechanism of labor, correcting abnormalities so as to bring about normal mechanism, the use of chloroform or ether to the obstetric degree, and the delivery of the presenting part during perineal relaxation (between pains) while the fingers control the advancing head, is our desideratum and will in the majority of cases be productive of an intact pelvic floor. It will not be amiss here to mention that an empty rectum and bladder facilitate the progress of labor and minimize the possibility of perineal laceration. Where, however, a pelvic laceration must occur (old primipara, large head, etc.), all attempts failing and conditions not permitting further delay, episiotomy properly performed, is preferable to a perineal tear.

Dr. J. Otis Carrington, of Malden, Mass., observes:

A serious laceration of the perineum is usually the result of carelessness or lack of skill. The elasticity of the pelvic floor should be allowed to develop to the utmost, and this can be done if the advance of the presenting head is controlled so that it will be gradual and complete. Furthermore, the advancing head should be delivered in the interval between the pains, and if in the agony of pain efforts become too expulsive, they should be controlled by anesthetics. Control of the advancing head is obtained by directing attention to the rapidity of expulsion. This control is maintained by using anesthesia and external pressure.

We should remember to keep the shortest diameter of the presenting part across the parturient canal. Thus, in a vertex presentation, we keep the head well flexed until the suboccipitobregmatic diameter has passed the pelvic outlet before extension is allowed.

In some cases, however, there will be a laceration, notwithstanding perfect obstetrical technic.

Sometimes no cause can be found. Again, there are conditions in the patient that are responsible for the tear: Edema, excessive deposition of fat, white cell infiltration from syphilis, lack of elasticity from previous operations, age, and constitution. Any such causative condition must be sought for during the latter period of gestation and remedied as far as possible before labor sets in.

Preservation of the perineum is of the greatest importance to the patient as well as to the obstetrician. It ranks in importance next to the preservation of the lives of mother and child. Too frequently it happens that in a normal case of a young, healthy primigravida, a serious laceration occurs because of the haste of the attending obstetrician. Unnecessary haste cannot be too strongly condemned.

We are sometimes justified in delivering rapidly as in a breech presentation and where the child is threatened with asphyxia. In delivering a breech, rotation of the head forward, as it passes through the outlet, will help to prevent tears.

Exit of the head in unfavorable attitudes—as in face, brow, forehead, and posterior rotation of the occiput—will cause a laceration because the most favorable circumferences are not presented to the canal unless such conditions are determined before the onset of labor and correctly managed during delivery. A large child overstretches the pelvic outlet. Labor should not be hastened without positive indication.

There are many good reasons for and against episiotomy. Nevertheless, it has its place. When labor is at its height and the perineum is so tense that it obstructs the completion of labor so that delivery of the head seems impossible without an extensive tear, episiotomy has a limited field of utility. It is much better deliberately to cut the vaginal ring to allow the completion of labor and then suture than to stand helplessly by and watch the perineum tear in an ugly fashion and perhaps deeply into the sphincter ani; or to be rudely awakened several months later to the presence of a submucous laceration that will require a secondary perineorrhaphy.

Forceps should not be indiscreetly applied, but when their use is indicated they are one of the best means of preventing rupture, for the head can be restrained during the height of the pains and the degree of tension regulated.

Dr. S. H. Ensminger, of York, Pa., states:

Prophylaxis depends upon the cause. If there is great disproportion in size or abnormal rigidity of the outlet, abundance of time must be allowed the muscles of the pelvic floor to stretch sufficiently without tearing to permit of the passage of the fetus. Preliminary digital stretching as well as the use of chloroform or ether will assist in the relaxation of these muscles, and if all attempts fail and conditions do not permit of further delay, episiotomy, properly performed and repaired, is preferable to deep rupture. The chief ends in view are: 1. To prevent too rapid expulsion; 2, to preserve the normal mechanism of delivery, or to convert a faulty presentation into a normal one; and, if possible, 3, to effect delivery of the head between the pains.

To protect the perineum, we empty bowel and bladder and place patient in the left lateral prone posture for left position of the presenting part, and the right lateral prone posture for right positions. The lateral posture is most favorable to perineal preservation. In this position the force of violent pains is diminished, since the expulsive power is actually a resultant of two divergent forces. The intraabdominal pressure is also weakened, and the perineum is always under ocular control. In the dorsal posture the weight of the head carries the latter away from the pubic arch and against the perineum; this condition is not favorable to the perineum. While this disadvantage may be offset by the upward pressure of the posterior segment of the perineum toward the symphysis, the former thereby becomes ischemic, thin, and more prone to rupture. In the lateral prone posture care must be taken that the thighs are not too energetically flexed, otherwise the perineum will be put upon a dangerous stretch. After delivery the lateral posture must be quickly changed to the dorsal lest air embolus result.

I always place the patient in the lateral prone posture. In the left lateral posture the right, and in the right posture the left hand is used for perineal protection. In the left lateral posture the physician seated at the beside behind the patient, passes the left hand and forearm over the right thigh of the patient and uses the fingers of this hand to retard the exit of the presenting part, and also to assist to a small extent the normal mechanism of labor until the pelvic floor is sufficiently stretched to allow the passage of the fetus without laceration. At the same time with two or three fingers of the right hand placed upon the protruding head, and without touching any part of the maternal tissues, control of the expulsion and regulation of the head movements can readily be carried out. Both hands are used to control a too rapid advance and conjointly to regulate the head movements, so as to secure the most favorable mechanism of head delivery.

Or we place the fingers of the right hand on each side of the coccyx, over the extremities of the bitemporal diameter of the fetal head. The presenting part is pushed as close to the subpubic ligament as possible, thus making use of all the available space of the pubic arch. Chloroform or ether to the obstetric degree, and delivery of the presenting part during perineal relaxation between pains, by pressure with the fingers on either side of the coccyx, will greatly lessen the danger of rupture.

Or with the patient in the lateral posture, the physician seated alongside the bed facing the woman's vulva, the outspread hand, which can most conveniently be used for the purpose and protected by a hot sterile towel, is applied to the distended perineum so that the thumb and forefinger encircle the posterior commissure of the vulva. This hand helps to flex the head when the occiput is anterior; it restrains the progress of the head, and pushes it forward under the arch of the pubes. The other hand is applied to the fetal head and used as described above.

In the dorsal posture either hand is available. By the natural forces or by pressure upon the fundus the head is made to distend the vulva sufficiently to enable the middle finger of the perineal hand to obtain a point of pressure upon the forehead of the fetus by reaching behind the anus, but without entering the rectum. The thumb of the hand is then placed upon one labium majus and the index finger upon the other over the parietal protuberance of the advancing head, thus drawing the labia inward and backward and preventing undue strain upon the posterior commissure. Pressure of the fingers upon the parietal eminence prevents the too sudden advance of the head, while the middle finger, reaching behind the anus and protected by a sterile towel, exerts pressure upon the forehead, and at the proper moment during relaxation between pains, increases extension of the head and slowly shells it out through the vulvar opening.

Perineum preservation during the delivery of the shoulders is best attained by preserving the normal mechanism of shoulder delivery. Delivery of the shoulders should be delayed, if possible, until nearly complete rotation of the bisacromial diameter has taken place. The head should be held in the hand and gently raised so as to bring the anterior shoulder well up behind the symphysis, thus securing the cervicoacromial diameter of the fetus instead of the bisacromial at the outlet. The posterior shoulder is thus permitted to be delivered first, and should be carefully guided in its passage over the perineum. Shoulder delivery should be accomplished whenever possible by the natural forces, since manual extraction increases the number of perineal lacerations.

Sarwey in Winckel's *Handbuch* (12, 1904) gives some fifteen different methods of supporting the perineum. None insures the woman against injury. The methods enumerated I have found to be the most satisfactory, and with proper care perineal laceration ought to be rare. All are agreed, however, that lacerations should promptly be repaired, since failure to do so is responsible for a large percentage of gynecological cases.

Dr. C. C. Henin, of Springfield, Mass, writes:

Numerous procedures have been proposed for the prevention of perineal injuries during injury, but there is probably no portion of the female anatomy more difficult than the pelvic floor, known as the perineum.

In order to prevent lacerations of the perineum we must promote relaxation of the pelvic floor and lessen the tension to which it is subjected during birth. On the appearance of the slightest danger of laceration, chloroform or ether should be given. By the proper use of the anesthetic the strength and frequency of the pains and the rapidity of expulsion may be regulated at will.

The advance of the head can be controlled by pressure with the thumb and finger held upon the occiput. To keep the tension of the vulva at a minimum the long axis of the cephalic cylinder must be kept at a right angle with the plane of the outlet of the soft parts. All these manipulations are best conducted with the patient in the left lateral position. The patient is placed upon the left side, with the buttocks close to the edge of the bed, as soon as the head has reached the floor of the pelvis. With the finger upon the perineum just behind the posterior vulvar commissure, the occiput can be felt through the soft parts some time before it begins to distend the perineum; the patient lying upon the left side close to the edge of the bed, the operator, sitting behind her, grasps the head with the fingers of the right hand placed just in front of the fourchette, while the left hand, passed over the abdomen and between the thighs of the mother, seizes the occiput.

Next in order of prevention of laceration of perineum comes episiotomy. The instrument required is a blunt pointed tenotomy knife. When laceration seems inevitable, the cordlike ring, which can be felt about half an inch above the tense border of the vulva by examination during a pain, should be divided. The operation is performed on each side. The length of the incision should be about one inch, its depth one quarter inch. Most essential is that the cuts be made parallel with the long axis of the mother's body, not with the vaginal axis. After labor the cuts should be reunited with stitches. The wounds may be closed without waiting for the delivery of the placenta. In conclusion, I would say that precaution must be taken to prevent laceration of the perineum, 1, by making firm backward and upward pressure against the occiput during pains; 2, by restraining voluntary expulsive efforts during pains; 3, by securing expulsion of the head between pains; 4, by giving little chloroform or ether during severe pains; 5th and last, by resort to episiotomy.

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Contemporary Comment

Treatment of Syphilis: A Gift to the London Hospital.—The International Medical Congress of 1913 and the appointment of a Royal Commission to inquire into venereal diseases focused public attention on the treatment of these conditions in a remarkable way, and the issue of a sensible report has confirmed the interest now being manifested. A valuable step toward the better provision of opportunities for treatment was taken in February, 1914, when the Grocers' Company offered to defray the cost of building and equipping a ward at the London Hospital for the treatment of syphilis. It was then determined by the authorities, according to the *Lancet* for May 27th, to add another floor to the existing isolation block of the hospital, and this step, owing to structural difficulties in the work, cost £10,000. The building was delayed on account of the war, but was completed by the end of 1915. Financial stringency led to a decision to delay opening the ward until the end of the war, but owing to the great increase in the number of patients presenting themselves for treatment the house committee found it necessary to open the new department on March 1st last, the ward being worked in connection with the skin department of the London Hospital, as it is intended at first to make special study of the treatment of syphilis in the acute infective stages. The ward, which is admirably constructed, contains eight beds for men and eight for women, all the patients being in separate rooms. A well equipped laboratory for clinical investigation, together with bathrooms and suitable accommodation for nurses, makes the whole building a model for its purpose.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD, DRUGS, AND LONGEVITY.

Some Thoughts on Their Relations,

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The primary desire of the human race is happiness, and the most fundamental requisites for happiness are health and life. Sickness and death, more than all other factors, stand in the way of its attainment. The medical profession, existing avowedly for the curing of disease and the preservation of life, assumes the guardianship of the most valuable property of the human family. The saving of life involves, not only the curing of disease, but more fundamentally its prevention; and so the physician requires, beside knowledge of the best therapeutics, a knowledge of effective prophylaxis, which involves heredity, environment, and food.

Doubtless this thought has often come to every one of us: Since the functions of man's body may be maintained automatically for seventy-five or 100 years, even under adverse conditions and among limitless besetting dangers, why should they not be maintained for 1,000 years, or even everlastingly under ideal conditions?

There appear to be three fundamental factors limiting the life of man. They are: 1. An imperfect organism, including the life principle, if there is such a thing; 2, environment adverse to protoplasmic activity, necessitating a struggle for existence; and, 3, imperfect food. It may be asked, What is meant by "imperfect organism"? Since, to our mind, there exists at present no perfect human organism, we cannot define the imperfect by comparing it with the perfect. Hence it becomes necessary to define a theoretically perfect organism. Such may be conceived to be a body, not only exhibiting all the necessary functions, but also containing them in the harmony or balance required to insure continued existence. Under the present adverse conditions the human body manifests the sufficient functions and possesses them in such balance as to maintain its existence seventy-five to 100 years. We can conceive that a more nearly perfect functioning might enable it to maintain its existence many times longer even under present conditions. Carrying our thought further, the theoretically perfect organism is one capable of preserving its existence forever, provided that its environment and food materials are ideally perfect. An imperfect organism is one that does not meet these requirements. The human body, we believe, is such, and would die, even though the last two factors were perfected.

Moreover, there are in the human body definite evidences of imperfections. Who dares say that vestigial organs, such as, for example, the appendix, are not such evidences? True, the biologist would say that vestigial organs are present as functionless remains of organs whose functions were no longer needed or useful. Yet, is it not as logical to suppose that the organ was lost as a result of some deleterious action on the characters of the germ plasm, causing the organ to be imperfectly developed, and that the animal survives in spite of the loss of that function. Were an organ, like the heart, which is absolutely necessary to life, so poorly developed, it would mean the extinction in one generation of the race, provided that the defect was universal. Who can say that man would not live much longer, if all his vestigial organs were functioning perfectly? It is conceivable, at least from the standpoint of Darwinism, that the functioning of the muscles of the ear would give man a little more advantage in avoiding danger, and that an olfactory organ as perfect as that of the dog would be in many ways an advantage, especially since it has been proved that poisonous food may be associated with odors. We recognize that the lower animals exhibit many of the same functions as we, but much more perfectly. This in itself proves that some of man's functions are not perfect. Our thought is that vestigial organs may just as well represent imperfections, resulting from the impairment of more perfect organs, as that the organs degenerated because their functions were no longer needed or useful.

The problem of determining what would constitute a more perfect organism, and how to obtain it, belongs more particularly to the biologist. It is largely a question of heredity. The physician's problem has mainly to do with the organism as heredity brings it to him, although he stands in position to aid in the production of a more nearly perfect organism. This could undoubtedly be accomplished by artificial selection from families that show great longevity, environment and food conditions being equal. While there is nothing about artificial selection that would remove the defects, known or unknown, which are universal in the race, yet it would remove those which are not universal by propagating the individuals free from them. This improvement in the organism would raise the average length of life nearer to that possessed by the most nearly perfect. Any further increase would necessarily need to come through an amelioration of environment and an improvement in food conditions.

No one will question that environment contains many things that are unfavorable to life; many are being discovered and the results are being applied by the physician. The fruits of sanitation, which is removing many of the injurious elements of environment, are appearing in the form of a rise in the curve of the average length of life. Doubtless the researches of the next century will reveal many more undesirable features in the environment of man. The knowledge of them guarantees their removal in time.

Though the organism should be improved and the environment perfected, still the maximum possibility of health and longevity would not be reached. The body is a complex automatic laboratory, delicately correlated. This correlated automaticity is a most characteristic property of living beings. A fire burns on automatically as long as suitable fuel and oxygen are supplied. But this is nothing compared with the complicated automaticity of living bodies. Not only is there a complex activity in each cell, but millions of various kinds of cells are combined so as to produce a grand unity of activity, which commands the wonder and admiration of all who study it. If new materials are not supplied for the laboratory processes, the activity is interrupted, and finally the correlation is irredeemably destroyed, death ensuing. Hence, while the bodily functions are automatic, they do not violate the immutable law of the conservation of energy by exhibiting that impossible phenomenon of "perpetual motion." But automaticity is a different thing, and there appears to be no reason why it should not be maintained, instead of one hundred, one thousand years, provided that, along with the improvement of the correlation of functions, food materials, a little better adapted to the life processes, were furnished.

It is not unreasonable to suppose that the less ideal the food materials supplied, the quicker will the correlated processes break down and death ensue, and this, despite the fact that this wonderful laboratory exhibits adaptability. It has the power within limits to dispose of unwholesome or unnatural substances thrust upon it, so that little or no immediately apparent harm is done, though, it must be remembered, remote effects may be produced that have not been as yet associated with the diet, which is the real, the primary cause. However, there are certain elements absolutely essential to its functions which must not be omitted from the diet. The effects of a diet lacking or deficient in these materials are manifested in serious pathological changes. Beside such easily recognizable essentials as the proteins and certain salts, other obscure elements may be necessary to perfect function. An example of these is furnished by the vitamines, the most striking instance of their role being presented by the disease, known as beriberi. This recent discovery is enough to lead us to think modestly of our knowledge of the food requirements of the complicated human organism. It is quite possible, therefore, that the best diet known at present may fall short of the optimum supply for the body, and may thus cut the life short of what it would be with a perfect food. Causes which are so slight and which act so slowly as not to produce noticeable effects, might during a lifetime accumulate sufficient action to injure one or more organs and destroy the grand correlation of functions, finally producing death. In other words, death at a hundred years may not be solely the result of an absolute limit determined by heredity, may not be due merely to an adverse environment, nor even entirely to a combination of heredity and environment, but possibly in large measure to imperfect food conditions, although the diet be the nearest ideal that chemistry and physiology can at present prescribe. There are hopes, therefore, that further investigation along the line of dietetics will reveal the fact that some important substances are lacking or are not ideally proportioned.

In support of this idea we would mention Woodruff's (1, 2) work on the paramæcium and Child's (2) experiments with the planaria. The former author found that senesence and decay could be prevented by changing the food occasionally. He also discovered that it was not even necessary to alter the food, but that the same results could be obtained by the use of Liebig's extract of beef. Under these ideal conditions, conjugation, the ordinary method of rejuvenation, was not necessary to prevent senility and death. Child found that he could prevent senesence and fragmentation in the asexual generations of planaria by carefully regulating the kind and quantity of food so that the animals were held at a certain size.

Another line of argument bringing us to the same conclusion may be presented. The question arises, Why does the germplasm live on for thousands of years, while the somatoplasm dies with each generation? Here we have positive knowledge that one type of protoplasm, the germplasm, has maintained its life for thousands of years. Why, then, should not the other type, namely, somatoplasm, which is by cell division the genetic product of the germplasm, live on and on? It is primarily the daughter and secondarily the sister of the germplasm.

If it can be determined why the germplasm exhibits so much greater length of life than the somatoplasm, a suggestion might be given as to how the life of the individual can be lengthened. Of course it might be conceived that the elements conferring the property of longevity—if there is such a specific property—are distributed early in the process of cell division to the cells which constitute the germplasm so that the germplasm inherently possesses the property at the expense of the somatoplasm. Consciousness is exhibited only by the brain cells of the somatoplasm, and therefore our conscious life and interests are intimately bound up with the interests of the somatoplasm. But longevity, the very thing that our happiness demands, especially when we reflect that longevity necessarily means less sickness than we are accustomed to, is exhibited by the germplasm, which cannot enjoy it. This is "vexation of spirit," as the wise man declared concerning life, for says he, "Yea, I hated all my labor which I had labored under the sun: because I should leave it unto the man that shall be after me, and who knoweth whether he shall be a wise man or a fool?", who, we might add, may destroy it in beastly war, as is the present custom. However, the germplasm, at least in higher forms, continues it existence only on condition that it is mixed in each generation with other germplasm from the opposite sex. Hence it is probable that the germplasm does not enjoy longevity at the expense of the somatoplasm. It may not inherently possess any more longevity than somatoplasm. The life of the germ cell, unless it unites with another germ cell from the opposite sex, generally is not continued any longer than that of the individual. It might be argued, therefore, that the soma would live on and on, if there was some means of repeatedly rejuvenating it by incorporating into it other living somatoplasm in such way that both would lose their identity and form a new individual, as in the case of the sex cells. But the somatoplasm can incorporate only dead materials which are taken in as food, while the older the person, the less the tendency to be rejuvenated by food. A similar condition is seen in the protozoa, which exhibit this same tendency. Yet, the only thing necessary to prevent senility and consequent death, is to change their food, or as recent experiments show, provide a more perfect food. Here is a hint that senility and death are closely related to diet, suggesting that senility and death of the somatoplasm in man is not inherent, but is due to a lack of proper food conditions. The germplasm lives on only because it is rejuvenated in a way quite comparable to food rejuvenation in the protozoa. This statement appears more justifiable in view of the facts regarding artificial parthenogenesis in which there is no incorporation of other living germplasm. We mention artificial parthenogenesis here instead of natural parthenogenesis because it serves as a better illustration of the point in question, since it is brought about in germplasm which naturally requires fertilization with male germplasm. In artificial and in natural parthenogenesis we have examples of the germplasm being rejuvenated with conditions other than the incorporation of other living germplasm. And on the other hand, even in the higher plants, indefinite propagation of the somatoplasm may be accomplished. But it might be asserted, in accordance with De Vries's theory of pangenesis, that the reason why the somatoplasm in such cases can be propagated is to be found in the possibility that the somatoplasm and germplasm are not completely differentiated, that the somatoplasm contains germplasm. But in the mammals, where the germplasm may be more completely differentiated from the somatoplasm, Rous and Jones (4) assert that somatoplasm cells may be propagated indefinitely by subculturing them, involving a change of food conditions.

(*To be continued.*)

A Study on Food.—R. J. Wilson and W. L. Rathbun (*Journal A. M. A.*, June 3, 1916), have studied the dietary question as it presents itself in institutions for the care of the sick, more especially those for the treatment of tuberculosis, and publish their findings. Their conclusions are as follows: 1. In all institutions for the care of the tuberculous, food studies, including the caloric content of the dietary and food waste, should be carried on at regular intervals, preferably for one week or more during the various seasons of the year, and these records should be made available for comparative purposes. 2. Special training, though advisable, is not a necessary requisite for the carrying out of a successful dietary study in an institution. It is, of course, essential that the doctor who directs the work should be thoroughly familiar with the problem. It is only necessary that the person or persons who are doing the work should be intelligent, careful, and willing to follow conscientiously the rules of the game. 3. The elimination of meats and eggs from the morning meal and the substitution of milk is a sound and justifiable economy. 4. The dietary of the tuberculous should be high in caloric value, but confined to three daily meals in all but exceptional cases. 5. Males consume more food than females, both in total amount and in number of calories to the pound of body weight, but in spite of this fact, females make much larger gains than males, enough so as to indicate that rapid accumulation of weight is a characteristic of the female sex. 6. The avoidance of frequent repetition of foodstuffs is important. 7. A four weeks' menu, when used as suggested, is of great aid to those controlling the dietary, and tends to do away with repetition. 8. The treatment of small children, in separate units, in institutions with adults, is both feasible and advantageous in that it results in economy of foodstuffs. 9. Small initial servings with as many seconds as may be desired is satisfactory to the patients and prevents much plate waste. 10. The plate waste in institutions for the tuberculous is of necessity higher than in hospitals for the insane or in general hospitals.

Diet in the Treatment of Pulmonary Tuberculosis.—David C. Muthu (*Practitioner*, June, 1916) says that it is time for us to recognize that it is impossible to formulate a standard diet suitable to all tuberculous patients, for they differ in age, temperament, height, and weight, in the conditions of their disease, and in their digestive capacity. A diet constituted upon scientific calculation as efficient and satisfactory does not always work out correctly in every day practice. In theory, the value of food can be estimated in grams and calories, but in practice it depends, among other factors, upon, 1, the physical properties of the food stuffs; 2, the assimilative power of the digestive organs; 3, the condition of the patient. The chemical analysis of food stuffs differs as they are fresh or stale, green or dry, and this applies to fish, milk, eggs, meat, fruit, and vegetables, so that the fresher the food, the more easy and rapid is it of digestion, and the more nutritive its value. The stomach should have four hours of rest between meals, and, generally speaking, no food should be given between breakfast, dinner, and supper, though a cup of tea with one thin slice of bread and butter at four o'clock in the afternoon, is often advisable. Overfeeding is both unscientific and injurious, and is apt to induce dyspepsia and other gastrointestinal disturbances. A furred tongue, a bad taste in the mouth, constipation, headache, with slight pyrexia and sleeplessness are symptoms that the patient is having more to eat than he can digest, and his diet should be cut down. Patients with weak digestion especially should not be overfed, and sometimes it is well to try two meals a day. An exception must be made in patients who have more or less normal powers of digestion, but who are small eaters, who have persuaded themselves that they cannot eat much solid food and so have got into a weak, neurotic condition. The nutritive value of food depends also on the physical and mental condition of the patient. One who takes his food with pleasure will assimilate it easily, while one to whom the food is repulsive will digest it with difficulty and distill toxins from the most nourishing. In arranging diet, the mental condition and temperament of the patient must be taken into account, along with habits of life and idiosyncrasies.

Dietetic Treatment of Diabetes Complicated by Nephritis.—Henry S. Stark (*Med. Record*, June 3, 1916) says that his records show that after the fifth year of diabetes, nephritis occurs in thirty-five to forty per cent. of the patients. One sided diet must not be continued too long, as acidosis or coma may follow a starch free diet, while intestinal intoxication may follow a continuous protein diet. A diabetic who assimilates meat poorly is worse off than one who assimilates starches poorly. Overindulgence in fats may result in emaciation, toxic fatty acids in the urine, and fats in the stools, with intestinal symptoms from faulty fat metabolism. Salts cannot be allowed *ad libitum*, especially when signs of edema appear. Starch free diet is dangerous over long periods, and the degree of carbohydrate tolerance must be found and followed rather than than that the sugar index of the urine should be the sole guide. Karell's diet is of value when edema is marked, with the addition of two or three eggs a day. Allen's starvation method in Stark's hands showed sugar free urine in four to seven days in seven of twelve cases, while the other five resisted the treatment. Overfeeding must be avoided and the renal and cardiac functions require constant watching. The blood pressure curve is a guide to treatment, for when a diabetic is drowsy or has headaches, with increasing blood pressure, accentuated second aortic sound, and increasing albuminuria, the nephritis needs more attention than the glycosuria. If there is no steady rise in blood pressure, however, no cardiac hypertrophy, no evidence of arteriosclerosis, then the glycosuria should be treated, always seeking to avoid ketonuria.

A Diet to Prevent Pellagra.—The diet recommended for the prevention of pellagra will not produce results if followed for a week or ten days only, but if continuously and consistently used, under circumstances similar to its administration in the various institutions where the experimental tests have been performed, it will protect against the disease. Necessarily, a rigid unvaried diet is wholly undesirable and the menu recommended is only to indicate in a general way the character of the food to be prescribed. Frequently the element of poverty, inaccessibility to market supplies, or even personal idiosyncrasy, may require some modification of the diet table, so that strict adherence to its components may not in all respects be practicable. The object of the diet as submitted is to minimize the consumption of the carbohydrate (starchy and sweet) foods and to increase the amount of fresh animal protein and of fresh legumes (peas and beans).

The breakfast, for example, observes the *Medical Summary* for May, 1916, should consist of oatmeal and cream, without sugar, with either ham or breakfast bacon and two eggs. Not more than two thin slices of whole wheat bread should be taken, preferably untoasted. Hot bread or biscuits are inadvisable. A glass of fresh milk is to accompany the breakfast, and either oranges or grape fruit may be the initial course. The dinner should consist of either pea or bean soup, prepared from dried peas or beans, with a meat stock. The meat may be beef, pork, ham, chicken, veal, or mutton, prepared in whatever manner is the most appetizing, preference being given to roasting or broiling rather than frying. Hamburger steak, meat hash, or fish may be substituted to afford variety. Care should be exercised that the meats are not overdone. Of vegetables, Irish potatoes, boiled in the jacket or baked, cabbage, turnip or mustard greens, collards, and lettuce, are to be recommended. For dessert, stewed fresh or dried fruit will prove sufficient. The dinner should be accompanied by not more than two thin slices of whole wheat bread and a glass of buttermilk. The supper should consist of pork and beans, or baked beans properly seasoned, the usual amount of bread, and a glass of buttermilk. If preferred, eggs, scrambled or otherwise prepared, may be substituted for the more substantial ingredient of the meal.

Such a diet is not prohibitive as to cost, at least to but few of the residents of the country, affords a sufficient number of heat units, if taken in reasonable quantity, and will effectually prevent the development of a disease which caused 8,000 deaths in the United States during the past year.

Esthetic Merchandizing. Deficiencies of Artificial Foods.—At a meeting of the National Clean Milk Society, held in London on April 12th, Lord Plunket suggested that firms supplying clean milk should supply it in attractive bottles in Greek designs, instead of the present ugly vessels. Ladies might turn their attention to designing covers such as those used for bringing champagne bottles to table, and thus give an artistic pleasure to a utilitarian beverage.

Sir Thomas Barlow, according to the *Medical Press and Circular* for April 26, 1916, spoke on the failure of the various tests to produce a good imitation of mother's milk during the past twenty-five years, the greater number of infants' foods being deficient in fats. There should be as little tinkering as possible with fluids intended for children. As the sterilization of milk and the use of dried foods spread in upper class nurseries a new form of malnutrition or infantile scurvy, similar to that from which sailors on long sea voyages without fresh food used to suffer, was seen. A speedy recovery was found on giving fresh milk, a little orange juice, and a little gravy. Milk should be pure, even if it was sometimes diluted or modified, but it must not be tinkered with. There must be cleanliness of the byre (cowshed), the cow, the cow's food, the vessels from which it drank, and the hands of the milker.

Dietetic Treatment of Bronchial Asthma.—According to Allan Eustis (*Southern Medical Journal*, May), all animal proteins, with the exception of buttermilk, should be eliminated as much as possible from the dietary in the treatment of cases of paroxysmal dyspnea with prolonged expiratory murmur and great expiratory effort, in which there are sibilant rales over both lungs, called bronchial asthma, whether associated with cardiac disease or not. He considers that most of these cases are due to absorption of proteolytic toxins, which may come from a suppurating accessory sinus, an alveolar abscess, or the intestinal canal, and that the treatment of the intestinal toxemia is as important as the drainage of a fecal infection. Care must be taken not to make the diet too restricted, as in that case symptoms of pellagra may develop.

Editorial Notes and Comments

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INFANTILE PARALYSIS.

A condition approaching panic has been excited in certain parts of the city by the remarkable outbreak of acute anterior poliomyelitis, commonly known as infantile paralysis. As pointed out, however, by at least one temperate lay thinker in the daily press, when we think of the population of the greater city, almost 6,000,000, the number of cases reported lose much of their impressiveness. It is remarkable that although infantile paralysis has been a regular summer visitor to New York for many years, we have learned little or nothing of its etiology or treatment during at least a quarter of a century. In 1890, to our personal knowledge, the slowly interrupted galvanic current was used at the outdoor clinics on the disabled limbs—usually the lower—while parents were instructed to wrap them in cotton batting to secure warmth, and to massage the affected muscles morning and evening. Occasionally strychnine was exhibited. Today little if anything more is done, although the department of health has given excellent advice regarding prophylaxis. We believe that this would be an opportune time to lay stress on the danger of domestic pets acting as carriers.

THE ETIOLOGY OF IRITIS.

A generation ago the etiology of an iritis gave us little concern; if it was not traumatic, secondary to some other inflammation of the eye, or did not occur during the course of some acute infectious disease, we rested content in ascribing it to syphilis or rheumatism, dividing the cases about equally between the two diseases. If the patient had ever been so unfortunate as to acquire syphilis, the fact was enough. If he happened to be rather young and denied that he had ever had the disease, we were inclined to be skeptical, even though we could find no stigmata, unless he had a distinctly rheumatic history. In an elderly patient, indefinite muscular and joint pains, such as few of us have been lucky enough to escape, were held to furnish a sufficient explanation. The same happy go lucky method of differentiation prevails to a great extent today. With many physicians a history of venereal exposure is sufficient, a positive Wassermann ample evidence of the syphilitic nature of the inflammation, and when this is wanting rheumatism continues to bear the blame. This method, however, of arriving at the etiology does not stand the test of careful investigation. Years ago doubt began to be expressed as to the correctness of the diagnosis, and more painstaking studies of the patients were instituted, with results that seem almost revolutionary. Syphilis remains prominent as a factor, but in a greatly reduced proportion of cases, while rheumatism has practically disappeared as a cause. Its place has been taken by a number of focal infections that have been proved to be responsible for a large proportion of the cases of inflammation of the iris, although they were referred to only in a few isolated cases a few years ago. The change that has taken place in the opinions of the best informed concerning the etiology of iritis is exemplified by the paper by Irons and Brown (*Journal A. M. A.*, June 10, 1916).

Careful attention was given to the histories of one hundred patients suffering from iritis, who were then subjected to a thorough physical examination, including Wassermann tests controlled by two laboratories, complement fixation tests, tuberculin tests, cultures of pus from infected tissues, and röntgenographs of teeth, sinuses, and lungs, to detect the presence of syphilis, tuberculosis, gonococcal infection, and infections of the teeth, tonsils, accessory sinuses, prostate, pelvis, and other structures. Measures were then taken to remove all infections so far as possible, and valuable evidence as to the etiology was obtained from the course of the iritis after these procedures. Two or more infections were found in many of the patients, in some of whom the actual etiological factor could be determined, while in others it could not. The cases in which the actual cause was uncertain were included under the head of combined infections.

Sixteen of the patients in whom the iritis was not due to syphilis had nevertheless acquired the disease, a fact which shows how little dependence can be placed on a history of syphilis, and even on a positive Wassermann, in the absence of active symptoms, in determining the etiology. Superficial lesions and suppurations about the teeth and tonsils were not found to be at fault; the foci were deeply situated in every case. So far as we can judge from the results of these careful studies, the principal cause of an iritis seems to be a focal infection somewhere in the body where bacteria live and multiply, whence they enter the blood stream and are carried to the iris. The proportionate number of cases in which the focus may be in any one place obviously cannot be determined from so small a number as one hundred, but the number these writers found situated in the teeth and tonsils is striking. The paper is illuminating.

DIET IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

It is obvious that diet is one of the most important factors in the successful treatment of pulmonary tuberculosis, and it seems that so much has been written concerning this phase of the subject that there is little or nothing to add. While on the main principles of the dietetic treatment of tuberculosis, however, there appears to be unanimity of opinion among authorities, there are certain points which require to be continually emphasized, and other points are now and then brought forward which possess a pleasing air of freshness.

A paper by Dr. David C. Murthu (*Practitioner*, June, 1916) provides an excellent example of the emphasis of salient features in the diet of consumptives and also supplies some useful hints with respect to particular kinds of food and modes of feeding. The writer is in complete accord with the great majority of English speaking physicians who have made a study, practical and theoretical, of the most scientific ways in which the tuberculous may be fed, that overfeeding is a mistake and in most instances is likely to do more harm than good. Forced feeding is not necessary in the early stages of the disease, and is not of much use in the late stages, when the stomach is too enfeebled to digest any food. As Murthu observes, the public are apt to forget that not the quantity of food, but the efficiency of the gastric organs to digest and assimilate, is the real criterion. Judgment as to the condition of a consumptive patient must not be based solely on weight, for the obese, flabby, tuberculous individual may and often is, so far as the progress of his malady is concerned, in a worse condition by far than the emaciated one. Rational feeding should be the motto in the treatment of the tuberculous, and not stuffing, and this is particularly true in the case of weak digestion, a very common failing, by the way, in persons afflicted with this disease. As a matter of fact, the secret of a successful diet depends more upon attention to economy in feeding than by giving way to extravagance. Nevertheless, while forced feeding should be tabooed, as a rule, there is a class of patients who must be induced to eat much more heartily than is their custom. Such persons, usually women, although possessed of normal powers of digestion and fairly good assimilative powers, have persuaded themselves that they cannot eat solid food. They are of a neurotic type and, by habitually denying themselves sufficient sustenance, have sunk into an aggravated neurotic state. It is incumbent in the treatment of such patients to use a certain amount of compulsion. A great lesson has been learned from experiments on foodstuffs, that their physical properties play a more important part in the process of metabolism than their actual chemical properties; the fresher the food the more easy and rapid the digestion, and the more nutritive its value. Murthu believes that milk to be nourishing and digestible should not be boiled, but given in its raw fresh state. This is obviously a matter of opinion regarding which it is impossible to say anything really definite.

Finally, it may be pointed out that worry, mental strain, and stress interfere with the physiological functions of the stomach and healthy metabolism. The consumptive, speaking generally, has a weak digestion, and therefore it is more essential to his well being than to that of the normal subject that he be free from anxiety and possess that contentment of mind which is said to be a continual feast. In arranging the diet of his patients the physician should take into consideration their mental condition and temperament, their habits of life and idiosyncrasies.

THE HEALING OF WOUNDS.

The cellular doctrine of Virchow is not only a beautiful theory, but a vital principle applicable to every day practice If we think of the human body in terms of cells rather than organs, we see at once that any method of treatment which acts injuriously on the component cells will fail to benefit the organ. This is particularly true in the treatment of wounds. The old time antiseptic method applied to wounds interfered with union by first intention because although the germicide destroyed the bacteria, it also injured the cells. This is also true when the dressing is changed frequently and the wound disturbed. The disturbance induces traumatism in the cells and thus interferes with their normal functions. As pointed out by L. I. Omorokoff (*Roussky Vratch*, March 19, 1916) recent experiments on artificial cultivation of tissues demonstrated the interesting fact that when a bit of tissue is placed in plasma there is an initial period during which the cells remain inert. This is due to shock. At the end of that period, the length of which depends on the severity of the shock, the cells begin to grow. Precisely the same phenomenon takes place in wounds. The least shock is produced by a clean sharp instrument; conversely, the severest shock is induced in the case of contused, ragged wounds. The period of latency during which the cells are incapable of growth, will be shorter in the case of clean, incised wounds and longer in the contused and ragged ones. Manipulations of the latter, such as handling, cutting, or sewing, will only augment the shock to the cells, lowering their vitality and resistance to bacterial infections.

Doctor Omorokoff very properly makes the practical suggestion that in such cases the wound is best let alone for twenty-four hours, after the first simple dressing, when such surgical treatment as may be indicated is applied. He also calls attention to the fact that since certain salts or tissue extracts added to the plasma tend to stimulate the artificial growth of cells, it is possible that, by the application of certain solutions to the wounds, healing may be promoted. The beneficial results recently obtained by French surgeons in the treatment of wounds with a solution of magnesium chloride one to 12,000, thus finds a ready explanation.

DONATIONS FOR THE GOOD OF THE SERVICE.

We are pleased to note that many citizens realize their obligations in the present international crisis and have come forward with donations, which will help materially in promoting the efficiency of the military service. One of the most recent donations, that of two Ford touring cars, presented to the State by Mr. Thomas F. Vietor, of New York, for the service of the headquarters of the medical department, is most welcome and will add materially to the resources of this particular department. Mrs. Cornelius Vanderbilt has also presented to the State of New York a motor and seven ambulance trailers, which will be of great assistance to the medical corps. As announced in our last issue, through the liberality of various citizens equipment has been provided for thirteen Red Cross base hospitals, each of which is to be manned by details from hospitals in New York, Boston, Cleveland, Rochester, Baltimore, and Detroit. The Veterans' Association of the Seventh Regiment have contributed $35,000 toward the purchase of motors for the use of that command. Members of the Red Cross Association have ministered to the comfort of the National Guardsmen at various places on their way to the Mexican frontier. All this indicates a disposition on the part of the general public to render all the assistance possible to the Government and to the troops in the present emergency. Surely there is no better use for money than to make such contributions, particularly when intended to increase the efficiency of the medical department.

RURAL SANITATION.

In this day and generation it is no longer possible for a community to lead a life of isolation. No one aggregation of mankind is sufficient unto itself. It cannot exist without some intercourse with the outside world. As methods of transportation improve, one city becomes an actual neighbor of the next, in spite of the many miles that may separate them. We can now go in an hour distances that formerly took a day or longer.

For that reason a city cannot disregard the sanitary conditions that exist in more or less adjacent districts. As Surgeon General Rupert Blue (NEW YORK MEDICAL JOURNAL, June 17, 1916) pointed out in his address to the American Medical Association, rural sanitation is a matter of great importance to us all. Over fifty-three per cent. of the population of the United States dwell in communities of fewer than 2,500 inhabitants, in many instances under most insanitary conditions. In other words, forty-seven million people are affected directly by the health of the other fifty-three million.

One of the most important elements in this interrelation is that of food. City and the town dwellers depend upon the farmer for the greater part of their daily food supply, and as the demand is being made constantly for fresh materials, the transportation service improves and less time than ever intervenes between producer and consumer. This no doubt improves the quality of what we receive, but the very quickness of service makes the menace to health so much more serious. The milk supply of a large city comes long distances, and the only way to insure its purity is to have proper sanitary conditions at the distant farms. One case of typhoid, or of septic sore throat, may start an epidemic among the distant consumers of that particular milk.

The only danger, however, is not from disease transmitted by foods. In the rural districts there is generally much laxity in regard to the quarantining of infectious diseases; the community is a small one, it is easy to avoid coming into contact with the patient, and indeed no one cares very much. To the dweller in the congested areas of a big city this uncontrolled case of smallpox or scarlet fever may be a matter of very serious moment. In the course of an hour or two the patient may have gone a hundred miles from his home and have become a bearer of widespread infection.

It is self evident that our efforts must be directed largely toward improving the sanitary conditions of the rural population. Malaria, typhoid fever, hookworm disease, all can be controlled if the people learn the necessity. Those of us who live in the cities must remember that no matter how good the laws may be, there will be trouble always unless we can remove distant centres of infection. Many a man has gone away for a summer vacation only to return home with typhoid fever or convalescing from it.

Rural sanitation is a distinct necessity for all, rural or urban, and must be sought after diligently in order to help in our constant warfare against disease.

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Special Articles

MEDICAL ASPECTS OF THE MOBILIZATION OF THE NATIONAL GUARD.

The order mobilizing the New York division of the National Guard was promulgated by Major General O'Ryan shortly after midnight on Sunday, June 18th. Within twelve hours the medical officers without a single exception reported for duty as well as nearly the full quota of the enlisted men.

The rank and file of the National Guard has been kept a little above the minimum peace strength prescribed, which is about fifty per cent. of the war strength of the several units. The medical department is the sole exception, as it has been kept at about eighty-five per cent. of the full war strength. The equipment and medical supplies have also been kept at full war strength, with the exception of a few items of personal equipment for the enlisted men, such as clothing and shoes. This made it possible to mobilize the sanitary troops even more rapidly than the other branches of the service.

In addition to the sanitary troops in each regiment, there are attached to the New York division four ambulance companies and three field hospitals. All of these, with the exception of one of the field hospitals, which had only recently been organized, were completely equipped and supplied except for the draft animals. From June 20th to 27th the regiments were held in their respective armories with the exception of a part of the Twenty-second Regiment, the Sixty-ninth, the Third Ambulance Company, and the First Field Hospital, which were sent to Camp Beekman, and some artillery and cavalry commands which went into camp in Van Cortlandt Park.

From the moment the troops were assembled in their respective armories, the medical officers, assisted by members of the hospital corps, were busy day and night making a critical physical examination of every man in the guard, as well as of a large number of new recruits. These examinations were carried out under the supervision of a United States Army medical mustering officer.

On Tuesday, June 20th, at 6 p. m., about sixty hours after the promulgation of the order for mobilization, some 6,000 men had been examined, showing a very small proportion of rejections.

The excellent physical condition of the members of the guard thus shown is due to the more rigid enforcement during the last two years of the regulations regarding the examination for enlistment. Previous to that period there had been some laxity in the conduct of the examinations, which resulted in the admission of recruits who were not up to the physical standard. This situation appears to have been fairly well remedied if we may judge by the excellent showing made up to the present time. As only about one fourth of the National Guard of the State had been examined at that time, it remains to be seen whether the remainder of the organizations will make as good a record as those already passed upon.

The entire mobilization has been carried on without confusion, noise, or disorder. The showing made by the troops has been quite remarkable. This is particularly true of the men and officers of the medical department, upon whom, together with the supply officers, the larger share of the burden has fallen.

The medical department having been kept up to nearly full war strength, there are no vacancies among the commissioned officers of this department, and in fact there appears to be an excess for the particular duties required just now. A few enlisted men will have to be added to bring the sanitary units up to the full war strength, but it will be unnecessary to add untrained commissioned officers.

A depot battalion of sanitary troops has been left in charge of the armory of the First Field Hospital and the Third Field Ambulance to carry on recruiting, just as has been done at the armories of the line regiments which were ordered to the front.

The reports received from the troops en route and from those which have already arrived at the Mexican border, show that the men are in good condition. It remains to be seen how the northern men will stand the excessive heat of Texas.

THE NEW PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION.

Rupert Blue was born in Richmond County, N. C., May 30, 1867; his parents removed during his infancy to Marion, S. C. He was educated in the public and private schools, and attended the University of Virginia in 1889 and 1890; graduated from the University of Maryland with the degree of M. D. in 1892, and received the degree of Doctor of Science from that institution in 1908. He graduated from the London School of Tropical Medicine in 1910, and received the degrees of Doctor of Science from the University of Wisconsin and Doctor of Public Health from the University of Michigan in 1913.

Doctor Blue entered the Marine Hospital Service (now the U. S. Public Health Service) as an intern shortly after his graduation in medicine. In the following year, 1893, he passed the examination and was commissioned assistant surgeon in that service. He was promoted to the grade of passed assistant surgeon in 1897, and to the grade of surgeon in 1909. He was appointed surgeon general of the Public Health Service in January, 1912, and reappointed in January, 1916, and has served as an officer of the service at Cincinnati, Galveston, Charleston, S. C., Portland, Ore., Milwaukee, Genoa, Italy, New York, and Norfolk, Va.

In 1903-04 Doctor Blue was in charge of plague eradicative operations in San Francisco. He served through the epidemic of yellow fever in New Orleans in 1905, and was director of sanitation of the Jamestown Exposition in 1907. In 1910 he represented the Public Health Service at the International Congress on Medicine and Hygiene at Buenos Aires, later making extensive surveys for the Government in South America and Europe.

RUPERT BLUE, M. D.,
Surgeon general, United States Public Health Service; president American Medical Association.

In November, 1911, Doctor Blue was detailed as special sanitary adviser to the Governor and Territorial Board of Health of Hawaii in carrying out a program inaugurated for the improvement of sanitary conditions, with a view to minimizing the possibility of the introduction of yellow fever and plague into that territory after the opening of the Panama Canal. It was while engaged in this duty that he was appointed surgeon general, to succeed the late Walter Wyman.

Doctor Blue is a member of the American Medical Association; Fellow of the London Society of Tropical Medicine; member of the American Society of Tropical Medicine; the Royal Institute of Public Health; American Public Health Association; American Climatological Association; Association of Military Surgeons of the United States; National Committee for Mental Hygiene; National Mouth Hygiene Association; National Economic League; Fellow of the American College of Surgeons; member of the California Academy of Medicine, and the Medical Society of the City and County of San Francisco. He was elected president of the Association of Military Surgeons of the United States in 1915, and president of the American Medical Association in June, 1916.

According to an appreciative editorial article in the *Journal A. M. A.* for July 3, 1915, Doctor Blue was sent to Italy by the President when cholera threatened our shores in 1900. In 1905 he was second in command of measures taken in New Orleans and vicinity to eradicate yellow fever. In 1903 and again in 1907 he was placed in charge of plague eradicative measures in California, and handled a difficult situation with the result, not only that the disease was controlled, but also that all interests in the State were harmonized. The last mentioned is perhaps the most important single work he has performed, and during its conduct he advanced and proved the principle that rat proofing is the essential means necessary to prevent plague in urban communities. As a result of the enforcement of rat proofing, he has demonstrated that the eradication of plague is entirely practicable, and, in consequence, that cities may be kept free from the disease.

Perhaps the most significant achievement of Doctor Blue's career, however, has been the remarkable development of public health work under his direction, especially as relates to scientific research. Public health education by the Federal Government is important, but the conduct of investigations along broad lines, and continuously followed, is by all odds the most important function of the Federal Government in matters affecting the public health. This he has encouraged, as is evidenced by the many lines of new work undertaken in the recent past. Some of this work has been done in cooperation with other branches of the Government, and a cordial system of cooperation seems to be one of the means taken now to advance public health work.

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News Items

Personal.—Dr. Rosalie Slaughter Morton, of New York, will sail for Europe on July 8th, to aid in relief work in Serbia.

The degree of doctor of science was conferred upon Dr. Ludwig Hektoen, director of the Memorial Institute for Infectious Diseases, Chicago, by the University of Wisconsin, at the commencement held on June 21st.

Septic Sore Throat in Bridgeport, Conn.—According to press dispatches more than 200 cases of septic sore throat have been reported in Bridgeport, Conn., during the two weeks ending July 3d, with fifty deaths. It is said that the outbreak is due to infected milk.

Tuberculosis Research at Johns Hopkins Hospital.—Announcement is made of a gift of $95,000 to Johns Hopkins Hospital by Dr. Kenneth Dows, of New York, to be devoted to the investigation of tuberculosis and the better teaching of physicians and students in the recognition and treatment of the disease.

Anonymous Gift to Babies' Hospital in Philadelphia.—The Babies' Hospital of Philadelphia has received a gift of $50,000 to be used for the erection of a new and modern building in Philadelphia. A woman, who refuses to allow her name to be published, has made the gift. Several sites are being considered for the new institution, and as soon as one can be decided upon, the work of construction will be begun.

Kansas Medical Society.—At the annual meeting of the society, held recently in Topeka, Dr. J. W. May, of Kansas City, was elected president, and other officers were elected as follows: Dr. M. T. Sudler, of Lawrence, first vice-presdent; Dr. Alfred O'Donnell, of Ellsworth, second vice-president; Dr. T. A. Jones, of Hutchinson, third vice-president; Dr. Charles S. Huffman, of Columbus, secretary, and Dr. L. H. Munn, of Topeka, treasurer. Next year's meeting will be held in Salina.

The New Queensboro Hospital.—The first of the group of buildings of the new Queensboro Hospital, which is conducted by the department of health, was opened on June 30th. It is said that the new building embodies the most modern ideas regarding the handling of contagious diseases. The hospital is under the supervision of Dr. Robert J. Wilson, director of the Bureau of Hospitals, and Dr. Charles T. Sharp will be resident physician in charge. The hospital has accommodations for eighty patients, and the cost of the building was $76,000.

Training Camps for Doctors.—Major General Leonard Wood, commanding the Eastern Department of the United States Army, announces that two training camps for medical men will be held in connection with the regular Plattsburg military training camp this month. The first camp will open on Wednesday, July 12th, and the second on July 24th. The course of instruction will be the same at both camps, and will emphasize camp sanitation and military hygiene. The camps will be commanded by medical officers of the regular army. Physicians desiring to attend one or both of these camps should communicate immediately with the Military Training Camps Association, 31 Nassau Street, New York, where enlistment blanks will be furnished.

The Collection and Distribution of Military Relief Supplies.—Major General Arthur Murray, U. S. A., acting chairman of the central committee of the American Red Cross Society, has issued supplementary instructions for the collecting and distributing of military relief supplies. Six intermediate depots, where supplies should be sent to be sorted and classified, have been named in the following districts: New York, Cincinnati, Chicago, Kansas City, Denver, and San Francisco. Additional distributing depots, from which final distribution of supplies will be made to the troops at the front, have been designated at Douglas, Ariz., El Paso, Texas, and San Antonio, Texas.

Measures Taken to Protect Up State Children from Infantile Paralysis.—Defensive warfare to protect the thousands of up State children against the epidemic of infantile paralysis now covering greater New York has been undertaken by Commissioner Hermann M. Biggs of the State Department of Health. Health officers of six counties have been warned against the epidemic and personal letters to every physician in the State are to follow. Local health officers are instructed to report by telegraph every suspected case of infantile paralysis and enforce the strictest quarantine of the patient. The health officers are also urged to give the widest possible publicity to the order, and in the case of an epidemic to issue special bulletins so that the people may be informed of the dangers.

The Alumni Association of Jefferson Medical College elected the following officers at the annual meeting held in Philadelphia recently: President, Dr. J. Coles Brick; first vice-president, Dr. E. Q. Thornton; second vice-president, Dr. P. Brooke Bland; treasurer, Dr. Warren B. Davis; secretary, Dr. H. K. Mohler.

Yale University to Have a Board of Health.—It has been decided to establish at Yale University a university board of health which will have charge of the physical and medical examination of all students at the university, the supervision of all men taking part in athletics, the inspection of all dormitories, recitation buildings, assembly halls, etc. This board consists of the following members: Dr. Frederick S. Jones, dean of the college; Dr. Russell H. Chittenden, director of the Sheffield Scientific School; Dr. George A. Blumer, dean of the medical school; the professor of public health, the professor of bacteriology and hygiene, the treasurer of the university, the director of the gymnasium, and the chairman of the athletic association. Dr. James C. Greenway has been appointed university health officer for next year.

A Conference of the Sanitary Supervisors of the State was held in New York last week. Twelve sanitary supervisors, representing the several districts into which New York State is divided for purposes of sanitary work, were at the conference. Three days were devoted to intensive study under the guidance of members of the State department staff and prominent physicians and surgeons of New York city. During the first day they visited a modern pasteurization plant. Several hours were spent at the Rockefeller Institute, and the rest of the day was spent in the research laboratory of the New York department of health. The study of tuberculosis, infant welfare stations, and communicable diseases took up the second day of the conference. The Vanderbilt Clinic was at the disposal of the physicians and some time was also spent at the Willard Parker Hospital. During the last day of the conference the health officials visited the diagnostic laboratory of the city health department and heard lectures on administrative control, supervision of foods and milk, and visiting nursing. The supervisors also inspected the quarantine station at Staten Island and the tuberculosis sanitarium at Otisville. The conference was concluded with lectures at the New York office of the State Health Department.

Infantile Paralysis in New York.—A report issued by the department of health on Wednesday, July 5th, shows that the epidemic of infantile paralysis is still on the increase. In Brooklyn 157 cases were reported during the preceding forty-eight hours, and eighteen new cases in Manhattan during the preceding twenty-four hours. The death toll continues high. There were 22 deaths in the 48 hours from Saturday noon, July 1st, to Monday noon, July 3d. In the 24 hours following, ending July 4th noon, 26 deaths were reported; all but three of these were from Brooklyn. In the past 24 hours 7 deaths had been reported. This makes over 150 deaths in approximately 600 cases thus far reported, a mortality of 25 per cent. This is a much greater mortality than has heretofore been experienced in epidemics of this disease.

The department of health has enlisted the services of two large life insurance companies to aid in the distribution of warning leaflets. A special staff of experts to care for the patients in the Kingston Avenue Hospital has been organized with Dr. Lewis C. Ager as chief. Associated with him are Dr. Eugene F. Dalton, Dr. Murray B. Gordon, Dr. Judson P. Pendleton, Dr. Philip W. T. Moxom, Dr. Robert O. Brockway, a nerve specialist, Dr. Walter Truslow, an orthopedic surgeon, and Dr. Alexander Sophian, a laboratory expert.

The field staff, working under Doctor Blatteiss, consists of thirteen physicians, thirty nurses, and twenty sanitary inspectors; twenty-five men will inspect all places where food is handled or sold. At the request of Commissioner Emerson, the Department of Licenses has notified all motion picture theatres in the city not to admit children under sixteen years of age from July 5th until such time as the board of health declares this health menace at an end.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Department of Biology, Olivet College.

Twenty-seventh Communication.

IPECACUANHA.

Although the hoary custom of "puking" patients has fortunately passed into desuetude, the occasional necessity for provoking emesis makes it desirable to keep at hand some fairly trustworthy drug; and no oral emetic is so satisfactory, in both positive and negative qualities, as ipecac, a drug which acts chiefly on the mucous membrane of the stomach, and which when retained, is absorbed but slowly.

On the central nervous system no direct action is determinable when ipecac is administered to man. In frogs there is produced a central paralysis, through means not clearly understood. In rabbits there seems to be a depression of the motor side of the spinal cord. In man, following large doses, there is produced a feeling of marked lassitude and muscular weakness, due, it is believed, to a reflex exhaustion arising from the prolonged nausea and vomiting rather than to any immediate effects of the drug itself.

The heart is usually somewhat slowed, probably through reflexes from the stomach. Following large doses there is a considerable fall in blood pressure, seemingly due to splanchnic relaxation; but whether the effect is centric or reflex is uncertain, though present opinion favors the latter view. Researches are needed on blood pressure when ipecac is administered for amebiasis.

The mucous membrane of the stomach and bowel is considerably irritated by ipecac, though it is not clear what may be the exact nature of that form of irritation that results in emesis. There is greater activity of both the salivary and gastrointestinal glands, but possibly less from the drug than as the obscure but fairly uniform accompaniments of nausea. The bronchial and pharyngeal glands also show increased activity; this would seem to be due to a local effect following absorption, a view somewhat supported by the fact that in rabbits ipecac sometimes produces a pulmonary edema.

In some cases of nausea, due to a depressed and atonic condition of the mucous membrane of the stomach, a small dose of ipecac (eight mg. of the powder) often affords complete relief, probably by bringing the tissues up to a more nearly normal condition. Somewhat larger doses (sixty mg. of the powder, or one c. c. of the syrup) seem to be mildly expectorant, except in some sensitive subjects who may become nauseated. The emetic dose for an adult is fifteen c. c. of the syrup, often best administered in a large quantity of tepid water. Emesis is often greatly facilitated by this drug, while the addition of water tends to make the process more efficient; and if vomiting is inevitable, the patient profoundly wishes such a degree of expulsive efficiency as to insure a speedy and complete consummation.

Ipecac is inimical to some protozoan forms of life, and to this end has been used with gratifying results in amebic dysentery. In this treatment large doses are essential (two to four grams of the powder), and must be so administered as not to induce emesis. Formerly this result was obtained by depressing the patient's reflexes with laudanum, but now the drug is usually administered in capsules or casings soluble in the alkaline secretions of the duodenum, but not in the acid secretions of the stomach. How much systemic reaction occurs in this treatment does not appear, few analytical investigations having been made; absorbability may be so slow as to give but indefinite reactions.

One of the active principles of ipecacuanha, emetine, has lately been successfully employed in the local treatment of pyorrhœa alveolaris, but the experimental work is not yet sufficiently advanced to justify conclusive statements.

Ether-Oil Anesthesia.—A. K. Evropin (*Rousky Vratch,* March 19, 1916) employed Gwathmey's method of ether-oil rectal anesthesia in a number of operations performed on soldiers in the war zone. He found the method simple, not to require a trained anesthetist, and at the same time efficacious. That the anesthetic can be administered to the patient in bed, before he is brought into the operating room, not only allays the anxiety of the patient, but enables the surgeon to perform a larger number of operations. The dose of ether by this method is more exact than is the case with inhalation, and much safer. In operations on the face or respiratory passages this method is indispensable. The ether was detected in the breath three to four minutes after the injection, and in ten minutes anesthesia began, reaching its height in thirty to thirty-five minutes. The sleep was natural, lasted about three hours, and was followed by awakening, which was not accompanied by headache, nausea, vomiting, or any of the usual disturbances.—O. A. Revidtsova and La. B. Dombrovska also publish their results. In their experience a stage of excitement, particularly marked in alcoholics, developed in ten to twenty minutes. This they diminished to a minimum by administering fifteen to twenty c. c. of ether by inhalation as soon as excitement appeared. Narcosis appeared in forty to fifty minutes and lasted for two to four hours. Vomiting during the operation was observed in three cases, and in fifteen per cent. when the patients came out of the anesthetic. The authors note the advantages of this method in operations on the head and face, in pulmonary complications, and in the absence of an experienced anesthetist. On the other hand, the introduction of a considerable amount of ether at one time presents the grave danger of individual intolerance. Should such a condition present itself, the anesthetic cannot be withdrawn. Deaths from this method have been reported. Moreover, while the method itself is simple enough, the washing out of the remaining ether-oil from the rectum is bothersome and requires extra help. The authors urge caution.—G. A. Garnak contributes a paper on the subject, reviewing historical data and giving his own experience. It appears that the method of introducing ether vapor through the rectum was first suggested by the Russian surgeon, Pirogoff, in 1887, and was then taken up by other surgeons who, however, found it unsatisfactory, owing to the irritation of the intestinal mucosa produced by the ether. The Gwathmey technic eliminates this objection. The author employed this method in hospital practice with most satisfactory results. By lowering the vessel containing the ether-oil, when needed, he not only relieves the distention of the colon with ether vapor, but is also in a position to allow the anesthetic to flow back into the container should it become necessary for any reason to stop the anesthesia. The only objection was the prolonged narcosis after the operation, lasting four hours. The advantages are the absence of fear on the part of the patient, the more complete muscular relaxation, and the ease with which anesthesia can be regulated.

Treatment of Chancroid.—F. Balzer (*Paris médical,* May 6, 1916) states that the application of water at a temperature of 45° C. or above, or prolonged irrigations with hot 0.25 to one in 1,000 potassium permanganate solution often give excellent results in chancroids. The same is true of the use of the thermocautery. These methods are all inferior, however, to the use of a stream of heated air, supplied by one of the various forms of apparatus adapted to the purpose. Vaccines prepared from the Ducrey organism have not as yet given convincing results. Various pyogenic organisms are often present in combination with it and in chronic chancroids and buboes with a phagedenic tendency the polyvalent serum of Leclainche and Vallée may be used externally with advantage. Balzer employed it recently in a case of multiple lesions of the glands and prepuce, with markedly beneficial effects in four days. Further treatment consists in cauterization two or three times with ten per cent. zinc chloride solution, with ten per cent. phenol solution in alcohol, or with calcium carbide. The latter should be applied in a thin layer after careful cleansing of the chancroid with water, and covered with a little absorbent cotton. At the next dressing the carbide is replaced with iodoform, europhen, or aristol, which may be renewed several times daily. Sometimes it removes the virulence of the lesion after a single application; if not, it should be used again after forty-eight hours. As a result of its action the lesion loses its yellowish color and irregular base and becomes reddish and healthy in appearance. The carbide is advantageous in that its action is more easily limited, though no less certain, than that of zinc chloride. It may also be used in lupus. As a substitute for the malodorous iodoform, Balzer recommends the use of a freshly prepared zinc-silver paste, made by mixing 100 grams of zinc filings with twenty c. c. of one per cent. silver nitrate solution. Nitrate of zinc and reduced silver are formed, which act strongly on the soft chancre and remove its virulence after a few applications. If dried at 30° to 50° C. the paste yields a powder which can be kept in a tightly closed container and later used as required. After the virulence of the lesion has been destroyed, the zinc-silver paste further completes its disinfection. Where the caustic action persists a double amount of zinc filings may be used, or the preparation may be abandoned and replaced with aristol or by the following ointment, which is especially useful when the already sterilized chancroid has begun to granulate:

℞ Argenti nitratis,	1 gram;
Balsami peruviani, } Adipis lanæ hydrosi, }	āā 10 grams;
Petrolati albi,	q. s. ad 100 grams.

Fiat unguentum.

This ointment should be used continuously until repair is complete.

Prophylactic Inoculation against Typhoid and Cholera.—Ferdinand Hueppe (*Berlin. klin. Woch.,* December 13, 1915) has encountered failures in both typhoid and cholera inoculations and suggests some explanations for these occurrences. Among the more important are that there are many different strains of each of these organisms and it is possible that immunity to one strain may not include immunity to another; or that a strain may be encountered which is sufficiently virulent to overcome an artificially induced partial immunity. When inoculation has to be practised on a large scale the preparation of the vaccines is often careless and rough methods are employed for estimating their bacterial contents, so that the doses given may be too small in many cases. Finally, the subcutaneous method of administration may not lead to an efficient local immunity in the tissues which constitute the usual portals of entry for the infection.

Materials Available for Thyroid Feeding.—John Rogers (*N. Y. State Jour. Med.,* May, 1916) remarks that owing to variability in activity of the commercial thyroid preparations and their crudity, experiments were begun several years ago to determine more accurately something definite about the materials of therapeutic value which could be obtained from the thyroid gland. It was found that the active substances present were soluble in water and could readily be extracted from the gland by maceration of the fresh, hashed tissue in saline and expression. Since autolysis was found to alter or more or less destroy the active substance, fresh glands only should be used. By a process described in detail it was possible to separate two chief portions of the extract—the one containing the nucleoproteins, some of the coagulable proteins and the globulins, the other a noncoagulable soluble residue. Both portions were found to have physiological actions. The first portion could be dried and made into tablet triturates with lactose, the second may be used in the form of an aqueous solution. The tablet preparation of the proteins was found to yield most satisfactory results in cases of myxedema, often proving effective where the previous feeding of the whole gland had been without influence. The second portion of the extract when given intravenously to dogs was found to cause marked fall of blood pressure, deepened respiration, but no increase in the heart rate, and to be extremely active in these respects, although large doses failed to kill the animals. The preparation was used in man in doses of three to twenty drops from two to five times daily, alone or in combination with the thyroid proteins, and often proved markedly beneficial in the mixed cases of hypothyroidism and hyperthyroidism, in true hyperthyroidism and in some cases of hypothyroidism when given with the proteins. Case histories illustrate the results obtained from the use of these two new thyroid extracts.

Gerontal Constipation and Its Treatment.—W. Ainslie Hollis (*Brit. Med. Jour.*, May 13, 1916) states that the general causes of this form of constipation include pressure by an enlarged prostate, dryness of the intestinal mucosa and contents, overeating and dietetic indiscretions. Drugs can be no more than palliative in the treatment of this condition, but serve a useful end in preventing colic blocking. The most satisfactory remedy is the aromatic fluidextract of cascara, given in full doses whenever there is a diminution in the quantity or change in the consistence of the intestinal evacuations. The circulation should be looked after and small doses of the tincture of strophanthus, given in water with a few grains of sodium bicarbonate, fill this need admirably. The reduction of meats, thorough mastication of all food, and the free use of fruits are the only needed dietetic modifications. Lastly hemorrhoids, anal fissures, rectal prolapse, etc., must be cured before a satisfactory result can be obtained.

Etiology and Treatment of Arthritis.—Estill D. Holland (*Southern Medical Journal*, June, 1916), finds that sixty-five per cent. of the cases of arthritis deformans give a history of prior susceptibility to the ordinary pus organisms, such as streptococcus and staphylococcus, or have suffered from some acute infection, such as a cold, grippe, or infected teeth or gums shortly before the attack of arthritis. Such cases he treats with a mixed vaccine consisting of streptococci, 200,000,000, staphylococci, 800,000,000, and Micrococcus catarrhalis, 100,000,000 to the c. c., which is a full dose. This he gives at varying intervals, depending on the susceptibility of the patient, as shown by the reaction. He asserts that the results obtained where they are used are usually better and more permanent than in cases where they are not used.—In the discussion of this paper J. W. Torbett called attention to the fact that other methods of treatment should not be stopped. Diet is an important factor, and so is increase of elimination and the proper use of hot and cold applications. An ingrowing toenail is one source of infection, and the alimentary tract may be another requiring treatment.—E. H. Martin said that he had seen some good results in Doctor Holland's cases, but had failed to get them in his own. He has obtained some results from assisting elimination by means of high frequency currents applied to the spine and the multiplex over the abdomen, and by high colonic flushing, using from two to four gallons of water, following this up with an enema of quinine solution. Another measure that gave relief was faradic gymnastics and artificial exercise, which induce a heavy sweat and aid elimination.

Influenza.—A. R. Bond (*Journal Florida Medical Association*, May, 1916) states that owing to the infectious nature of this disease the measures for the prevention of its spread are very important. The same precautions should be adopted with regard to coughing, spitting and sneezing as are used in tuberculosis. In addition the nose and pharynx should be cleansed frequently by sprays and gargles of equal parts of peroxide and water, a ten to twenty-five per cent. solution of alcohol or Dobell's solution. The treatment is symptomatic and hygienic, the latter including enforced, prolonged rest in bed until convalescence has been well established and the provision of a suitable liquid diet. The acute stage should be cared for by the administration of six to eight quarter grain doses of calomel and soda at half hour intervals, followed by a saline. Ice caps, cold applications to the head and alcohol rubs are comforting and the following prescription should be given every three hours for two to three days:

℞ Acetphenetidini, ...grs. ij;
Phenylis salicylatis, ...grs. ij;
Pulveris ipecacuhanæ et opii, }
Caffeine citratis, ... } ....āā gr. j.

Tonics and stimulants, in the form specially of strychnine and quinine in small doses should always be given as soon as depression begins to be evident. The use of alcohol, except for patients long accustomed to their frequent daily drinks, is absolutely contraindicated.

Ulcer of the Stomach.—D. J. Hyman (*Medical Review of Reviews*, June, 1916) believes that many gastric ulcers may be cured without operation, and that every ulcer should be treated medically first, but if this treatment proves unsuccessful the patient should be handed over to the surgeon, on account of frequent transformation into carcinoma. Duodenal ulcers are not so prone to malignant degeneration, and watchful waiting may be practised a little longer, although one should bear in mind always the dangers of perforation, hemorrhage and adhesions. Treatment of ulcers demands a thorough knowledge of the pathology of the lesion, its location and complications, as well as a proper appreciation of the value, indications and limitations of drugs. The most useful are sodium bicarbonate, the bismuth salts, magnesium salts, Carlsbad salts, Saratoga water, olive oil, liquid petrolatum, extract of belladonna and atropine, which are used to neutralize or inhibit the secretion of hydrochloric acid, or to act as a protective coating to the ulcer. The most striking and immediate symptomatic improvement follows the administration of large doses of bicarbonate of sodium. Twenty to 100 grains may be given three or four times a day, from one to four hours after meals. Excellent results are obtained also from the bismuth salts, but the great objection to them is their obstinate constipating effect. Alkaline waters are especially useful at the spas. As regards diet each case must be studied individually, and care must be taken that no coarse or indigestible food is given. In some it may be largely carbohydrate, in another rather liberally albuminous. If medical treatment has failed after a fair trial surgical treatment should be instituted.

Treatment of Chronic Colon Pyelitis by Pelvic Lavage.—Herman Louis Kretschmer and Fred W. Gaarde (*Journal A. M. A.*, June 24, 1916) report that this chronic form of pyelitis is notoriously resistant to treatment by medical measures, but excellent results have been obtained by the authors with a combination of internal medication and local lavage. First a week is devoted to the administration of one teaspoonful of sodium bicarbonate three times daily to alkalinize the urine. This is then stopped and for one week acid sodium phosphate given to acidify the urine. During this week from thirty to seventy grains daily of hexamethylenamine are administered. These weekly periods are alternated as often as needed. Simultaneously the infected renal pelvis is irrigated through a small ureteral catheter with a one per cent. silver nitrate solution. Treatment should be continued until repeated cultures of ureteral specimens of urine are sterile. Recurrence was probable if treatment was not also directed to bladder infection, if present, or to infection in any portion of the pelvis which might lead to reinfection of the renal pelvis. In a few instances a single ureteral irrigation sufficed, but in others several were required. A total of about five to ten c. c. of the solution was used for each irrigation and was introduced very slowly and under low pressure. The irrigations were repeated at intervals of five to six days.

Peripheral Neuritis in Jamaica.—C. R. Edwards in the *Journal of Tropical Medicine and Hygiene* for March 1, 1916, describes this condition as very common among the native population of the island. It occurs oftenest in young adults. It is of slow progress, terminating fatally in some instances in about twelve years, while in others it lasts until old age. In some cases the victim wakes up one morning to find that he has lost the use of both legs; or again the symptoms come on gradually. Sight and hearing are greatly affected, and severe girdling and lightning pains are always experienced. Wasting, a parchmentlike skin, and symptoms identical with those of tabes dorsalis, but without abolition of the pupillary light reflex, are also typical manifestations. The treatment consists in feeding up and relieving the pains by rubbing the muscles with liniments. Drugs are useless. Under the feeding up treatment, motor power may be quickly regained in the young, but in old cases results are much less satisfactory. In all cases the conditions of life were bad, and the food was often scanty and deficient in nitrogen. At autopsy, degeneration of nerve cells in the posterior and lateral columns of the spinal cord was present, and in some isolated patches in the cerebellum and the optic and auditory nuclei. No causative microorganism was found, and the condition is believed to be probably a food disease. It is held to be quite distinct from beriberi or pellagra.

Therapeutic Possibilities of Antitetanus Serum.—H. E. Robertson (*American Journal of the Medical Sciences*, June, 1916), proposes that every case in which symptoms of tetanus appear should be treated at once with an intravenous injection of 3,000 units of antitetanus serum. He emphasizes particularly the "at once." Even the saving of minutes of time may mean the difference between life and death. He does not believe that the lives of all, or even of a large proportion of the patients with tetanus can be saved in this or in any other way, but that this is the best available means to save them. The size of the dose is relatively unimportant, and repeated injections are of little or no value.

Treatment of Ecthyma and Other Local, Superficial Suppurative Lesions in Military Practice.—L. Chastanet (*Presse médicale*, May 11, 1916) refers to the sores met with frequently on the lower limbs of soldiers engaged in trench warfare, which have proved refractory to ordinary therapeutic measures. The author first removes the crusts with sterile moist cotton pledgets, cauterizes the lesion deeply with silver nitrate, and applies a sterile wet dressing. Cauterization is continued until the previously blackish tissues become reddish, when, after a last cauterization of the entire lesion, including its margins, one in ten tincture of iodine is freely applied. The surface is then tamponed with slightly moistened cotton and a dry sterile compress is applied. If the lesion is not dry the next day, the procedure is repeated. After it has dried, no further dressing is required, healing taking place under the adherent coating formed by the drugs.

Effect of Mineral Alkalies and Other Drugs on the Uric Acid Solvent Power of the Urine.—H. D. Haskins (*Archives of Internal Medicine*, March, 1916) reports an investigation of the uric acid solvent power of piperazin, lysidin, and various alkalies, conducted in human subjects. The solvent power was estimated by determining the amount of uric acid taken up when the urine from subjects to whom the various drugs had been administered was shaken with pure uric acid for twenty minutes. It was found that piperazin in one to four gram doses can cause the urine to dissolve an increased amount of uric acid; this effect is most marked if sodium citrate or bicarbonate is also given and if diuresis is avoided. Lysidin, though it can also act as a uric acid solvent, is not of practical value because of the large doses necessary. Lithium carbonate was likewise effective, but proved unsafe, causing toxic symptoms in moderate doses. Sodium citrate and bicarbonate, on the other hand, proved to be safe as well as trustworthy urid acid solvents when given in such doses as to maintain an alkaline reaction of the urine. The doses of bicarbonate and citrate ranged from two to four grams. The greatest total solvent action would probably be secured by combining diuresis from copious water drinking with alkalinization of the urine by sodium bicarbonate or citrate. Whenever normal urine becomes alkaline and contains many metal ions as a result of the diet, it likewise shows a marked uric acid solvent action.

Medical Treatment of Gastric and Duodenal Ulcer.—Fenton B. Turck (*Medical Record*, June 24, 1916) requires rest in bed for two or preferably three weeks with a preliminary fast of three days when only water is allowed. On the fourth day 800 c. c. of cornstarch gruel is given in one meal and afterwards two meals daily are given with increasing amounts of rice, steamed vegetables and hydrolyzed meat. When meat is given early in the second week it is soaked in cold water for twelve hours and the juice is expressed and discarded to avoid hyperchlorhydria; the meat pulp is placed in boiling water and steamed for one or two hours until jellied. Turck also uses continuous drainage of fluid from the stomach by a tube filter devised by him in 1894. Gastric lavage encourages atony, although washing with silver nitrate is useful where there is high acidity. Vaccines are of service and blood serum checks hemorrhage. As to drugs, atropine is useful to control hypersecretion, while bismuth, bran, slippery elm, Irish moss, kaolin and other materials are used to mechanically remove microorganisms from the mucous membrane of the stomach.

X Rays and Radium in Enlarged Lymphatic Glands.—Robert Knox (*Archives of Radiology and Electrotherapy*, June, 1916) states that the principal type of radiation employed in these cases has been a moderately hard x ray, and when radium was used the gamma ray with a filtration of three or four mm. of lead or one or two mm. of platinum when applied over the skin surface. Enlarged glands respond to radiation in the following order: Simple inflammatory glands are quickly influenced by a few exposures; the treatment is not applicable to enlarged glands where pus formation has commenced; 2, lymphadenomatous glands are less quickly acted upon, but almost invariably diminished in size soon after a number of exposures of hard radiations; 3, tuberculous glands are not readily affected: they require a large number of exposures at short intervals to induce retrogressive changes, but ultimately these also slowly respond to radiation treatment; 4, malignant glands are also influenced; sarcomata respond much more readily than carcinomata. They may disappear but are apt to recur. Carcinomatous glands rarely disappear under treatment, but they may diminish much in size. In enlarged glands due to a mixed infection the response to treatment may be irregular, some glands subsiding rapidly while others respond slowly. The x ray becomes of value as a means of diagnosis if its effect on the glands is noted. In order to render the method practical it would be necessary to standardize the exposure. In estimating the reaction to radiations the biological factor is of some importance, and as this is not constant, varying in different individuals and in the same individual at different times, it is a disturbing element in estimations. Drugs such as iron, arsenic and mercury also affect the response to radiations. When a group of enlarged glands has been reduced to a moderate or small size the expediency of operation should be raised. It is probably better to remove the glands thoroughly and, in a number of cases, postoperative treatment is advisable. In malignant enlargement of the lymphatic glands no case should be treated unless a surgeon has deemed it unwise to operate.

Treatment of Gas Gangrene.—G. Campora (*Gazzetta degli ospedali e delle cliniche*, May 28, 1916) advises destruction of the primary focus, free incision of the wound, disinfection with hydrogen peroxide, permanganate of potassium or iodoform and ether, followed by a pursuit of the infection along its paths of diffusion and reaction and free incisions combined with irrigations of peroxide and drainage with gauze moistened therewith.

Treatment of Septic Wounds with Salicylic Acid.—Anderson, Chambers, and Lacey (*Lancet*, June 3, 1916) report on 1,000 cases in most of which salicylic acid irrigations were used. A saturated solution of the acid was made in alcohol, and of this two to three drams were added to a pint of saline used as an irrigation, thus depositing the crystals over every part of the wound. A paste made with one gram of acid to nine c. c. saline solution was frequently used for cut surfaces of long bones in septic amputations. Where it was desired to use a weaker preparation over a long period two to four per cent. salicylic acid in gelatin was used. Salicylic acid seemed to save cases where other methods failed.

Parasites in Stools of 1,305 Dysenteric Patients.—H. B. Eantham (*Lancet*, June 10, 1916), without examining for bacteria, reports that these cases showed 471 with Lamblia intestinalis infection, 211 with Entamœba coli, and 198 with Blastomyces enterocola.

Treatment of Sacroiliac Arthritis.—W. H. Deaderick (*Lancet Clinic*, May 6, 1916) points out that, like most other forms of arthritis, sacroiliac disturbance is usually secondary to a source of infection elsewhere in the body, e. g., the prostate, or the gums. The first aim in the treatment should be, therefore, to locate and, if possible, remove the primary focus. Vaccines or prostatic massage may be necessary or, as in a case the author reports, the administration of emetine for alveolar pyorrhea. In the case referred to, that of a man of thirty-four years, chills and fever had been experienced almost every summer, about a year before the beginning of the treatment he began to have "rheumatism" of the right hip, with backache and pain referred down the leg, worse at night, headache, and "cold shakes." Marked sacroiliac tenderness was noted, together with pronounced pyorrhea. The patient was given one half grain of emetine by injection daily for six days, with wine of ipecac as a mouth wash, baths in radioactive water, and hot wet packs to the back and legs. In nine days he was able to walk with but one crutch, a week later with a stick alone, and soon after was at work. Strapping the joint with wide strips of zinc oxide adhesive plaster is often indicated, especially where the joint is relaxed as well as inflamed. Massage is grateful to some patients after acute symptoms have disappeared.

Miscellany from Home and Foreign Journals

Radiography in the Diagnosis of Diseases of the Accessory Nasal Sinuses.—H. Martin Berry (*Archives of Radiology and Electrotherapy,* June, 1916) finds that in most cases all the desired information can be obtained from two plates—one taken anteroposteriorly, and the other laterally. For a lateral view the patient may either sit upright or lie on the side. The plate should be at right angles to the central ray, which should traverse the head in a strictly transverse plane. The extent of the frontal sinuses and their anteroposterior depth can be determined by combining the information obtained from the anteroposterior and lateral views. The variations in the frontal sinuses are noteworthy. They develop as extensions of the anterior ethmoid cells. A normal frontal sinus has been defined as extending to about the junction of the inner and middle thirds of the supraciliary ridge, rising vertically about twenty to twenty-two mm. above the nasion. A point to be noted in frontal sinuses is the presence or absence of septa, complete or incomplete, causing loculation of the cavity. The depth of the sinus is of importance only if an operation for its obliteration is contemplated.

Variations in Glycuronuria in Liver Affections.—H. Roger (*Presse médicale,* May 18, 1916) calls attention to the importance of glycuronic acid in the system in the detoxication of various alcohols, aldehydes, phenols, ketones, anilin, acetanilide, naphthol, camphor, etc., and points to the diagnostic and prognostic value of determinations of this acid in the urine in various hepatic and other disease conditions. He has devised the following test for glycuronic acid: In a centrifuge tube are placed five c. c. of urine, 0 2 gram of ammonia, two c. c. of commercial lead subacetate solution, and enough distilled water containing one per cent. of ammonia to fill the tube. The resulting heavy precipitate is centrifugated and washed with the dilute ammonia three times, then mixed with five c. c. of distilled water in a test tube, and 0.5 c. c. of a one per cent. alcoholic solution of naphthoresorcin. To remove all the precipitate remaining in the centrifuge tube five c. c. of pure hydrochloric acid are used. The product is then heated on a water bath at boiling temperature for fifteen minutes, cooled under a stream of cold water and shaken up with five c. c. of ether. When the urine contains no glycuronic acid a yellow or sightly reddish solution is seen; when it does, a violet color. Normal urine contains 0.04 gram per litre of glycuronic acid, combined with phenol, indol, and, perhaps, skatol. Variations in the glycuronic content of the urine yield precise information on the function of the liver and its content of glycogen. Fasting or a milk diet reduces the glycuronuria. In case of doubt administration of 0.5 gram of camphor in a cachet, together with some starchy or sugar bearing food, will yield a strongly positive reaction if the hepatic functions are unimpaired. In numerous cases of hepatic cirrhosis Roger found the test becoming less and less strongly positive as the disease process advanced, and completely negative shortly before death. In obstructive jaundice, on the other hand, the test was always more strongly positive than normal, owing to increase of putrefactive products in the intestine requiring detoxication. In catarrhal jaundice the test was at first normal or hypernormal, but showed a marked diminution in the posticteric period. The test has been applied also in the study of pneumonia cases, cases of pregnancy, and in athrepsic newborn infants, and is available wherever the hepatic functions are in question.

An Easy and Rapid Method for the Widal Test.—Alfred C. Coles (*Brit. Med. Jour.,* May 13. 1916). With a grease pencil or some wax two ordinary slides should be divided across their centres by a heavy line. On one end of each spread a thin film of the suspected blood and on the other ends a film of normal blood, from one who neither has had typhoid, nor has been prophylactically inoculated. Allow the films to dry. With a platinum loop spread a drop of an emulsion of typhoid culture evenly over each half of both slides, sterilizing the loop before passing from one to the other half in each case. Fit cover glasses to each half of one slide so that they do not touch at the waxed line, and examine both halves under the moderately low power. Leave the remaining slide, without cover glasses, under a Petri dish on a piece of moistened blotting paper for fifteen minutes, then dry carefully over a flame and stain with Leishman's or Giemsa's stain. A positive Widal will be shown by more or less marked clumping of the organisms overlying the suspected films with evenly spread organisms over the control halves. The stained slide may be used to make a differential leucocyte count. The method is very simple and rapid and if the result be positive a quantitative Widal test can then be made for greater accuracy. It is equally applicable to the detection of the paratyphoids.

Localized Tetanus.—Bazy (*Bulletin de l'Académie de médecine,* May 16, 1916) reports a case of shell wound of the left leg in which amputation at the upper third of the leg was performed on the next day and an injection of antitetanic serum administered six days after the injury. Meanwhile one subcutaneous injection of one mgm of strychnine had been given on five successive days owing to the patient's enfeebled state. The wound suppurated and failed to heal. A markedly hypersensitive whitish spot, apparently over the posterior tibial nerve, was noted, and dressing the wound gave rise to much pain and spasmodic contractions of the stump. In spite of free local spraying with one in 200 novocaine solution and a fresh injection of tetanus antitoxin these spasms increased until practically continuous. Sweats took place and the patient felt oppressed and lost the power to whistle, but neither trismus, dysphagia, nor sardonic grin appeared. Tonic convulsions extended from the injured limb to the opposite leg and to the arms and trunk, so painful as to cause the patient to cry out.

In accord with Babinski, Bazy made a diagnosis of tetanus and began the administration of large doses of chloral hydrate and smaller amounts of acetylsalicylic acid, with resulting almost immediate and permanent arrest of the convulsions. Careful bacteriological studies and guineapig inoculations failed to reveal the tetanus organism in this case. Although such failure is not regarded as definitely proving the absence of tetanus, Bazy is led to warn against concluding, in cases of more or less widespread muscular spasm attending a particularly painful suppurating wound, that the condition present is tetanus.

Summer Diarrhea.—E. Marx (*Berlin. klin. Woch.*, Dec. 13, 1915) states that the epidemic occurrence of summer diarrhea, its appearance in restricted localities, its disappearance when infected groups of persons are removed to other districts, and the absence from the stools of dysentery bacilli all suggest some other unrecognized cause. The author suggests that dietetic disturbances may so alter the nutrient factors in the gut that normally innocuous organisms may give rise to pathogenic varieties and that these may cause summer diarrhea. It is well known that changes in the nutrition may lead to the development of atypical variants of common organisms which differ from type by alterations in their fermentation and other chemical reactions. Further study along the suggested lines is much needed and should prove fruitful.

Frequency of Unsuspected Syphilis.—James S. McLester (*Journal A. M. A.*, June 24, 1916) says that by means of the Wassermann reaction syphilis was discovered in nearly nineteen per cent. of 300 cases seen in routine private practice. The cases were chiefly those which had been referred to the author on account of obscurity in diagnosis and so represented the less definite medical conditions. In sixty-one per cent. of the positive syphilitic cases no history, definite or suggestive, of syphilis could be obtained. The most striking feature of the findings, however, was that about half of all of the syphilitic cases came under the classification of neurasthenia in the common acceptation of the term. From these findings there seems to be indicated a more or less close connection with the symptoms of neurasthenia and syphilitic infection,—possibly the existence of a mild form of cerebrospinal syphilis as the cause of the neurasthenic symptoms.

Garibaldi's Wound and Pirogoff.—When the famous Italian patriot and soldier Garibaldi was shot in the right leg and captured in the battle of Aspramonte, the entire civilized world was interested in the fate of the popular hero. The gunshot wound, which refused to heal, was treated by a number of the best known surgeons of the day, Italian, French and English. At that time the great Russian surgeon, N. I. Pirogoff, resided in Heidelberg and was prevailed upon by the Russian students in that famed university town to offer his services to Garibaldi. This he did, refusing a fee of 1,000 francs offered by the students. In a letter written by Pirogoff after his visit to Garibaldi, quoted by S. Ia. Schtraich (*Roussky Vratch,* March 5, 1916), the Russian surgeon describes minutely the general's wound, throwing considerable light on the surgical methods employed in those days. It seems that the wound in the ankle joint was probed several times in attempting to discover the bullet, but the attempts failed. The wound was suppurating when Pirogoff saw it. It is interesting that as early as 1862 this great surgeon strongly advised against further probing or otherwise meddling with the wound, arguing that so long as the bullet was impacted and the joint still free from infection any attempt to dislodge and remove it might produce severe traumatism and result in irreparable injury. So long as a foreign body caused little disturbance by its presence it should be let alone until the time when its removal was distinctly indicated. He advised fresh air, removal to a dry climate, and watchful waiting. This was at a time when such famous surgeons as Nelaton, who was in attendance on Garibaldi, insisted that the bullet should be extracted at all hazards.

Typhus Fever in Serbia.—R. O. Moon (*Lancet*, May 27, 1916) states that the disease broke out when Serbia had been at war with Austria for five months and that the epidemic appeared to have originated among the Austrian prisoners, with its starting point in Valjevo near the Bosnian frontier. The infection was carried home by soldiers and by peasants wandering about and traveling clad in filthy clothes on crowded trains. The main circumstances favoring an outbreak of typhus were overcrowding, physical exhaustion and ill nourishment. When war was declared Serbia had only 400 physicians, and by July, 1915, so many had died that only 230 remained. Twelve British hospital units with 420 nurses and doctors by that month had the epidemic well under control. Scarcity of clothing to replace verminous garments while they were being disinfected was a great handicap, as was the lack of both warmth and food. Lack of fuel caused crowding and huddling for warmth and so spread disease.

An Improved Flexible Esophageal Bougie.—Dr. Robert C. Kemp, at a recent meeting of the Medical Association of the Greater City of New York, recalled that he had frequently directed attention to the fact that instrumental examination of the esophagus with the bougie was by no means always a safe procedure, and that the safest method was by the use of soft rubber stomach tubes of various calibres. This was particularly true for the novice. There were numerous esophageal bougies, and his own instrument most nearly resembled that of Lerche. The bougie had a small stem, about the diameter of a No. 11 French, made of round flexible wire, hollow, and covered with rubber, to which olives of various sizes could be threaded on a silk guide, if such were required. Slight or beginning stricture could be more readily determined by flexible bougies of various calibres. The flexibility apparently increased the delicacy of the touch, and rendered more ready appreciation of any irregularity or narrowing of the canal, even though slight, and small ulceration points could be more readily detected. Local anesthesia was rarely necessary for the introduction of the flexible instrument, which could be inserted with the patient's head in the natural position (i. e., without extension) and with little disturbance. There were three stylets of different calibre, made of piano wire, furnished with each instrument. After the sound had entered the esophagus and passed to the point of stricture, if it was desired to stiffen the instrument in order to pass the stricture or to calibrate it, a stylet could be inserted with the head still in the natural position. Three degrees of stiffening could be secured. Complete protection to the stylet wires was afforded by bulbous tips, so that they could not possibly penetrate the wire tubing forming the shaft of the instrument. The rubber tube covering the shaft had upon it markings at one inch intervals, starting from the point of attachment of the olive so that the distance of the stricture from the teeth could be estimated. The ingestion of sweet oil previous to the passage of the bougie was an excellent procedure. It was always wise to make a digital examination of the lower pharynx, to determine whether adenoid tissue, vertebral deformity, a new growth, or other obstruction was present to interfere with the passage of the instrument. This bougie was believed to be safe for the examination of children.

Lead in the Urine in Trench Nephritis.—Charles Powell White (*Lancet,* May 13, 1916) reports that the urines from four cases of typical trench nephritis were examined for the metals which cause renal irritation and in all of the specimens notable traces of lead were found. That this occurrence was not an accident was shown by the fact that repeated examinations of the urines, taken at different times during the course of the illness, always revealed traces of the metal. Investigation showed that the lead might have been derived from the use of canned foods which had taken up some of the lead from the solder used in closing the tins. Boiling a solution of sodium chloride for ten minutes in a can containing a small piece of solder caused the solution of an appreciable amount of lead, thus confirming the possible contamination of tinned foods with that metal.

Early Diagnosis of Intussusception in Children under Three Years of Age.—Dr. A. W. Abbott, of Minneapolis, at a recent meeting of the Western Medical Association, said as children under three years of age had too little intelligence to describe their symptoms, a knowledge of their clinical behavior was most important. Twelve children, three years of age or under, were observed, and the following conclusions reached: 1. A sudden violent abdominal pain, accompanied by a regurgitation of its stomach contents, in a child otherwise well, initiated the attack in 100 per cent. of the cases. 2. Recurring pains, varying in intensity, but regular in periodicity, accompanied by the assumption of peculiar positions, generally the prone, in those strong enough to move about, occurred in 100 per cent. of those noted. In cases beginning in collapse, twenty-five per cent., these periodical pains were often indicated only by regularly repeated moans and drawing up of the limbs. 3. An abdominal tumor could be made out somewhere in the course of the colon in ninety-two per cent. 4. The stools did not contain feces in ninety-one per cent. 5. Mucous stools are recorded in eighty-three per cent. 6. The foregoing indications should strongly suggest intussusception within forty-eight hours of the attack. 7. Blood in the stools added to this certainty of diagnosis, but it might be absent in seventy-seven per cent. until after the second day. 8. Instead of distention, they might expect a flaccid, scaphoid abdomen. 9. Recurring vomiting was not usually one of the earliest symptoms, being absent in eighty-one per cent. until the second day, or later in their cases, and in exceptional cases there was no vomiting. 10. Positive identification of the intussusception by the finger in the rectum was pathognomonic, but might be demonstrable in only fifty-five per cent. 11. The virulence of the disease and its mortality depended not so much upon the time elapsed before operation as upon the intensity of the strangulation of the mesenteric circulation. These observations were supported by the following mortality account: Of the twelve cases, eight ended in recovery, four being fatal. Of the noncollapsing cases, eight ended well, and one was fatal. Of those beginning in collapse, one terminated in recovery, and three were fatal. To protect all cases, the earliest possible diagnosis and operation were imperative.

Causes and Prevention of Trench Foot.—Basil Hughes (*British Medical Journal,* May 25. 1916) divides trench foot into three stages, of which the first is edema of the plantar surface of the foot spreading to the dorsum, accompanied by tenderness on deep plantar pressure; the second stage is that of numbness with swelling and sluggish circulation, while the third stage is that of gangrene. The causes are fatigue and exhaustion as predisposing factors, with mechanical nervous stagnation from sitting on the firing steps of trenches with the feet hanging down, thus producing exudation of serum into the feet.

Pleurisy and Bronchoalveolitis — Secondary to Tuberculosis of the Tonsil of the Same Side.—The case reported (*Riforma medica,* May 22, 1916) was in a boy of fourteen years who was attacked in 1910 by acute tonsillitis which, after a week of apparent cure, recurred with mild fever of long duration and general weakness. This tonsillar condition was followed by an apical pleurisy with bronchoalveolitis which resolved completely in two months. One year later a second attack of catarrhal angina occurred, lasting fifty-two days. The case came up for tonsillectomy and, after removal, the left tonsil showed tuberculosis. Undoubtedly there was a relationship between the tuberculous process of the tonsil and that of the apex, otherwise it is impossible to explain the coincidence twice in one year of pleuropulmonary manifestations on the left side corresponding to the tonsillar focus of tuberculosis. The question of possibility of the tonsillar tuberculosis being secondary to that in the lung is excluded by the fact that ordinarily such secondary infection occurs from sputum, which at no time was present in this case, even cough being absent.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16, 17, and 18, 1916.

The President, Dr. W. Stanton Gleason, of Newburgh, in the Chair.

Medical Examination of School Children.—Dr. F. Parke Lewis, of Buffalo, spoke on the vision of the school child and stated that the extraordinary conditions which had arisen during the past year in connection with the world war had compelled them to look upon some of their social problems from a new angle. They had been forced to believe that principles upon which the republic was founded, far from being absolutely established, were still on trial, that democracy was still an experiment, and that its success was wholly dependent upon the character of those who constituted the electorate. They had been made to believe that the stream of immigrants that had poured into this country during the past decades had brought with it vast numbers who had been barely able to support themselves and their numerous progeny, and many of these were of low grade physically, and that others had in their bodies the seeds of disease or of infirmities which they transmitted to their offspring. The necessity which was now being so forcibly emphasized of internal preparedness required that the child of today should have remedied every defect which limited its potentialities. It became then a matter of self preservation on the part of the State to protect its own future by using every possible effort to make each child as capable of higher responsibilities of citizenship as its conditions and circumstances would permit. This was happily being met in some measure by the medical examinations in the schools. In this brief consideration of the subject, it was intended to emphasize the following propositions: First, that in order that they might know how much importance to attach to the defects of the eyes, they must have exact data as to their incidence, their character, their corrigibility and their influence in retarding the normal progress of a large number of scholars. Second, in order that they might acquire these facts, standardized methods must be devised applicable to the entire school population. Third, measures must be considered for the analysis of the material so gathered, that practical and facile methods might be employed in each case. In order that they might realize how inadequate were their present methods, it was necessary only to refer to any of the reports of the eye examinations of large numbers of children.

Careful work had been done in Pennsylvania; in the report of 1914-15, in the fourth class districts, the number of pupils inspected amounted to 469,199: among these with visual defects were found 83.748, or 17.8 per cent. Pupils having other eye defects numbered 5,512. It became necessary very clearly to discriminate between the various conditions that were classified in bulk as defects of the eyes. Until such discriminations were made, the records would show that vast numbers reported as having defective sight remain uncorrected and were reported as unfinished cases. In many cases this was inevitable.

What disposition should be made of such pupils in the classification and arrangement of the school? They could not see adequately to maintain their position in the classes with those whose eyes were good; therefore, some other method must be devised by which they might be relegated to special classes or other provision made for their instruction. The teacher, with not more than fifty children in her class, had opportunities for observation superior to those of any outside investigator who came temporarily into the examining room. The methods employed in the correction of eye defects were not always the best; when the work was done for a poor child, the patient was usually referred either to a public dispensary or to an optician. The refractive work provided in public dispensaries was too frequently done in a hurried and careless way. If the poor child was sent to an optician, the work was even more slightingly done. The small amount paid for the lenses by those who were poor was often a burden. Since the State concerned itself with the welfare of the child to such a degree as to insist upon the child being examined and geting spectacles, it should go still further to see that the examinations were made under right conditions and that suitable and well fitting glasses were provided at a minimum cost. When the parents were too poor to pay, glasses should be supplied by the school authorities gratuitously, just as books were provided for study. This could not be done when the school child was sent where examinations were made perfunctorily.

Through the efforts which had been made by the State medical inspector of schools, Dr. William A. Howe, a large number of careful ophthalmologists had offered their services for the gratuitous examination, at specified times and places, of such necessitous cases as might be referred to them. This was an excellent beginning. But the problem was too big to be met in this way. The importance of the municipality establishing its own clinic for refraction, and supplying the poor pupils with glasses, was emphasized in a paper read at the Fourth International Congress on School Hygiene by Dr. Louis C. Wessels, in which he pointed out that from an economic standpoint it was a saving to see that the children in the public schools had such eye equipment as would enable them adequately to do the work that was required of them. Such a clinic had been established in Philadelphia. There were very few children who knew how the eyes should be used, and it was suggested by a committee chosen by the National Educational Association, and later by a committee of women school principals in New York, that the child, when he began to use books, be taught how they should be used, and the following simple recommendations be printed on the first blank page of every school book:

1. Take care of your sight; upon it depends much of your safety and success in life. 2. Always hold your head up when you read. 3. Hold your book fourteen inches from your face. 4. Be sure that the light is clear and good. 5. Never read in the twilight, in a moving car, or in a reclining position. 6. Never read with the sun shining directly on the book. 7. Never face the light in reading. 8. Let the light come from behind you or over the left shoulder. 9. Avoid books or papers printed indistinctly or in small type. 10. Rest your eyes frequently by looking away from the book. 11. Cleanse the eyes morning and night with pure water. 12. Never rub the eyes with your hands or an unclean towel, handkerchief or cloth.

Another reason why permanent records should be made of all school children's eyes was found in the Workman's Compensation Act, which had recently been put upon the statutes of the State. It was constantly becoming more evident that with the assumption of responsibility on the part of the employer for injuries received by the employee in the performance of his duties, that there must be an assurance of the existence of a normal physical condition on the part of the workman who was thus protected, but if there was an abnormal condition present this must be recognized and known in order that the extent of the injury might be ascertained. It must be evident that if the examination of the eyes of all school children of the State were so standardized as to make it a part of the routine work, if these records were permanent and available, they would serve, not only as a basis for the immediate relief of difficulties limiting the child's possibilities of usefulness, but would constitute an essential feature in their preparedness program in giving them the important and necessary data.

Practical Experiences in Medical Inspections in Rural Sections.—Dr. William A. Howe, of Albany, stated that during the first year of the administration of the medical inspection law, many impressive and varied experiences had arisen throughout the State. Many grateful parents had written the department thanking it for the wonderful relief extended to their children. Thousands of children had been placed on a higher plane of physical fitness, thus enabling them to make more normal progress in school. While most of these cases, as might be expected, belonged to those commonly seen, many had been more impressive. Two children had come under his observation with congenital cataract whose vision amounted to practically nothing. They had been successfully operated on, restored to vision and placed in school, where satisfactory progress was now being made. In one family three were found with so little vision as to render regular school work impossible. The two of school age had recently been placed in the New York State School for the Blind at Batavia, where they would receive an academic education, taught some vocation, and be made self sustaining citizens. Another child with a badly disabled foot from infantile paralysis had been successfully treated by tendon transplantation. In two instances where pupils were incorrigible, impertinent, backward, and unmanageable in school, they improved promptly after the removal of septic tonsils and obstructing adenoids. Several cases of tuberculosis had been found among teachers, while in one district this disease had existed among the pupils for nearly fourteen years. Many pupils throughout the State, either in the pretuberculous or incipient stage of the disease, had been recognized and greatly benefited by sanitary or institutional treatment. The fact that tuberculosis increased so rapidly among children during their first years of life in school should demand the serious consideration of not only health workers but educators as well. Their joint energies should be directed to determine the factors entering into these alarming conditions, so that the proper preventive measures might be speedily administered. Increasing interest was being manifested in medical inspection in the rural sections of the State. This was indicated not only in a general demand for more efficient services at the hands of the inspector, but in systematic efforts to extend relief to children needing attention. A few days ago one of the village districts reported fifty cases of obstructed breathing among children of foreign parentage or from dependent families. During the next few weeks these would be referred to specialists in Rochester who had generously designated free services to deserving children. In another village in western New York, certain school rooms were being utilized as a temporary hospital, where, under the supervision of an experienced nurse, physicians and surgeons were administering relief to local children. Again, in Schenectady, seven rural schools had united in the employment of a school nurse, who was devoting her entire time to inspecting the children and to the improvement of school and home conditions. This nurse, though employed only for the past three months, had already accomplished such splendid results as fully to demonstrate the practical value of such services. In another section of the State he found a rural teacher referring many of her children to specialists in Buffalo, where embarrassing physical defects had been relieved, thus insuring to pupils far greater progress in school.

Only physicians interested or willing to take an interest in the work should become medical inspectors; the utmost care should be exercised in all examinations, and definite care should be shown in giving information to parents as to the defects found; physicians should receive a fee commensurate with the services rendered, which on all occasions should be his best; physician, teacher, parent, pupil, and nurse should cooperate in the entire system of school inspection; the real success of school inspection should be measured by the thoroughness with which the examinations were made and the results accomplished.

The Neuropathic Child.—Dr. Edward B. Angell, of Rochester, thought the best description of the neuropathic child was that given by Dr. Francis Warner, of London, who had examined 100,000 school children. He described the characteristic manifestations of the neuropathic condition as headache, difficulty in getting to sleep, grinding of the teeth, delicate physical condition without actual disease, lack of appetite, and tendency to be easily fatigued. These children were generally well made in body and had good heads, they had well cut features and fine skins and usually light complexions. There was a weakness and an overspontaneity. There were uncontrolled movements without coordination. Later impressionability and imitativeness showed that the child's mind was impressed by what it saw. With growth development there was power to arrest the motor concept and to modify or even deny its inhibition. Thus they acquired a control over the senses, by which the mind gradually acquired desire and volition, the relative value of sensory impressions and motor action. Another quality developed was retentiveness and coordinating action which was the result of many past impressions, desires, and resulting movements. The normally constructed brain of the healthy child in its motor action presented well balanced muscular movements. The relationship between the muscle activity and the brain activity was very direct. Basing his test on these facts Doctor Warner had found that requiring the child to raise his arms and hold them out straight in front in a horizontal position was a test of the nervous condition and the degree of fatigue. If the latter was present the child did not hold both arms parallel, or dropped one arm, or one hand, or in the very neurotic the knuckles were pointed directly backward.

Self control could not be too thoroughly established for the growing child, since without it there was an unstable equilibrium which later gave rise to the vagaries of neurasthenia and hysteria. If they studied the nervous child they would find that his position might be one of erectness, of assurance, or defiance, or it might be drooping and self conscious, or one of weariness, or fatigue, the latter being common in girls.

Another habit easily acquired by the nervous child was that of introspection, and this led later to unstable equilibrium and self consciousness to the detriment of efficient mental activity. Doctor Angell had observed seventy-five or eighty cases of typical nervous children and had found that alcoholism and insanity had entered in as factors in about one third of the cases, while the arthritic diathesis was present in about thirty per cent. In only one case did he find tuberculosis in the family, but tuberculosis probably played a more important part than this indicated in the transmission of an unstable nervous constitution. In about twenty-five per cent. of these cases the condition could be traced to abnormalities in pregnancy or delivery. Faulty metabolism, such as constipation, headache, mental depression, irritability, and a poor circulation were characteristic evidences of disturbed nutrition. There was defective nutrition in about two thirds of the cases, and nearly one third were the victims of night terrors. He believed that protein entered too much into the diet. Fresh air was a most important factor in the treatment of this type of child. The Boy Scout movement was an excellent thing in developing the correlation of muscular and physical activities, teaching the boy self control and how to adjust himself to life.

The Effect of Malformation and Infection of the Oral Cavity of the Child upon Its Future Health.—STEPHEN PALMORE, D. D. S., of Poughkeepsie, by invitation, said that the fact that a man belonging to the dental profession had been asked to address this society was significant of the change that had come to pass; he quoted from the writings of Dr. Victor C. Vaughan to show the relations between mouth infections and various constitutional conditions. These made it evident that nothing was more important than hygiene of the mouth of boys and girls, for upon it depended the health of the men and women of tomorrow. Evidence in support of this statement might be brought forward from many authorities. Medicine today recognized the importance of prophylaxis, and in dentistry it found the prophylaxis of many conditions that had been puzzling to the physician. Malformations were of the utmost importance and were so common that they rarely saw normal mouths and teeth. This he attributed to the mixing of the races and the fact that enough time had not elapsed to evolve a definite type. To the proper moulding of the human face a full complement of teeth was requisite. Where there was malformation there was malocclusion, and this was the rule rather than the exception. The anatomy of the mouth and teeth was such that the loss of one tooth ultimately disturbed the balance of the whole. Therefore, one cause of dental deformity was the loss of one tooth. Thumb, lip, and tongue sucking was another cause of deformity, causing malocclusion and a narrowing of the palatal arch and basal construction. It was, therefore, important for the rhinologist to work with the dental surgeon when it came to the treatment of mouth deformities involving the palatal arch, for such deformities retarded the function of the tongue, lips, and nasal passages.

Mayo and Hunter had emphasized the importance of oral sepsis as a source of infection. In the demonstration of alveolar abscesses the x ray had been a great help to the dentist as it had to the physician. The value of oral prophylaxis had been amply proved by the establishment of dental dispensaries; in every city and town there should be a dental clinic. Pyorrhœa alveolaris was not a disease of childhood, and with proper prophylaxis and the correction of malocclusions it could be prevented. They might put it down as an axiom that a clean tooth never decayed, that teeth in good occlusion were easy to keep clean, and therefore teeth in good occlusion never decayed. The value of oral prophylaxis had been amply demonstrated in the German army. Attention had been given to this matter among the school children of Germany and as a consequence few of the German soldiers required dental care, while, on the other hand, such prophylactic work had not been carried on to the same extent in England, and there was a great deal of dental work to be done among the soldiers of the English army.

In September, there would be a legalization of dental hygienists, which would make it possible to have a trained corps of dental assistants to bring the importance of dental hygiene before the public. By the concerted action of physicians and dentists, the coming generation would be healthier than the present one.

Dr. John L. Heffron, of Syracuse, said it might be of interest to know how they were taking care of refraction work in their town. The work was done by a volunteer staff of dispensary doctors. This year the department of education of the city had undertaken to employ doctors from the dispensary at the nominal salary of part time medical inspectors to care for the eyes of the school children. These men had had good training in the dispensary and as a consequence the school board got good service.

Dr. Moss Keschner, of New York, was glad that Doctor Angell had called attention to the neuropathic child. As a rule, the general practitioner gave this type of child scant attention. Then the mother brought such a child to him, complaining of night terrors, bed wetting, and nervous symptoms, he usually prescribed bromides and Fowler's solution and let it go at that. In this class of children they often had a greater problem to solve than in actual organic disease. The many details of environment and economics must be taken into consideration. These were the children that later filled the asylums, homes for epileptics, and reformatories, and their treatment should be regarded as an important and serious problem.

Dr. B. W. Whitbeck, of New York, with reference to the examination of children, would like to bring out the influence of flat foot upon the general condition of the child. The records of the New York schools showed that about sixty per cent. of the children presented a condition of weak or flat feet, and it was his opinion that seventy-five per cent. would be more nearly correct. He had inquired at Washington as to the disabling effects of flat foot in the United States army and navy, and had found that they were throwing out many candidates on account of this defect. Children with this defect were often backward in school, tired, would not play or eat. He had had such a case in which a boy had been treated with tonics, sent to an oculist who prescribed glasses for the relief of headache but all without avail. The boy finally went to his family physician who found that he had a hollow back and flat feet. This boy was treated with proper orthopedic appliances, and in a short time his general condition improved and he took off his glasses. He believed that flat foot was one of the conditions incident to civilization, and probably standing with the toes out had something to do with it. Some children never had good feet; they were flat footed from babyhood, but the condition was frequently not noticed until the child grew older and suffered pain. It was not merely a question of whether the foot was flat, but of whether it was functioning. It was not so much a question whether the feet were flat, as whether they were weak. Many persons had flat feet and yet went through life without symptoms; it all depended upon whether the foot functioned or not.

Dr. Frank Overton, of Patchogue, had been interested in the references to instances in which private physicians failed to detect the defects of school children. In his town there was efficient cooperation between the private physicians and the school inspectors. This was true in many towns, but he understood that there were places where there was not this cooperation. It was one of the functions of this medical society to bring about such cooperation and he believed it was doing this more and more.

Dr. Edward B. Angell, of Rochester, wished to go on record as being in accord with what Doctor Keschner had said. They should call the attention of the general practitioner to such cases. There were many conditions that he had not referred to in his paper. He had not referred to dementia præcox. It was sometimes difficult to tell whether they were dealing with a neurasthenia or a dementia præcox. He had had a case of dyspituitarism in a boy who presented feminine characteristics and an utter lack of any sense of responsibility. In this case treatment with pituitary extract had brought about great improvement both physically and mentally. Such cases showed that something could be done by a careful study of these cases in youth. The points brought out as to the relation between flat foot and hollow back and their effect on the general health were very important. Doctor Warner, of London, to whom reference was made in the speaker's paper, had stated that he had found many cases of hollow back and had observed that it bore some relation to flat foot, but he had not attempted to explain it.

(To be continued.)

Letters to the Editors.

ADRENALINE PER OS?

St. Louis, Mo., *June 24, 1916.*

To the Editors:

Having suffered with an abscess of the transverse colon, three weeks ago, it was suggested to me after twenty-four hours of excruciating abdominal pain, by Dr. George Richter, of St. Louis, that I try fifteen drops of adrenaline in one tablespoonful of water as often as required, for the relief of this pain.

Fearing to take morphine because of its muscular fixation powers and its aftereffects, I gladly welcomed the suggestion, as adrenaline had been used in Vienna in the surgical wards with splendid results, the patients themselves asking for the "good drops," on the approach of abdominal pain.

At the suggestion of Dr. C. A. L. Reed, of Cincinnati, I told Doctor Andrews, chairman of the surgical section; he requested me to take two minutes of the afternoon session, which was held conjointly with the internal medical section, Wednesday afternoon, at the Detroit meeting of the A. M. A.

I have suggested it in a gallstone case and used it in kidney colic, in both of which cases it gave splendid relief.

I consider it a panacea in all cases of abdominal pain.

In fifteen drop doses in a tablespoonful of water it can be given as often as required internally, its action being different when administered hypodermically.

I believe adrenaline could be used as a substitute for twilight sleep. Leland Boogher, M. D.

[This letter is doubly interesting, first, on account of the announcement of the discovery of analgesic properties in adrenaline, and, second, because the product has always been considered inert when administered *per os*. Even the manufacturers insist that suprarenal preparations must be given hypodermically in order to produce either a physiological or a therapeutic effect.—Eds.]

Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Formulaire des Médications Nouvelles et des Traitements Nouveaux Pour 1916. Par Le Dr. H. Gillet, ancien interne des Hôpitaux de Paris, Chef de Service à la Policlinique de Paris. Dixième Edition Entièrement Refondue. Paris: Librairie J. B. Baillère et Fils, 1916. Pp. xx-324.

The author has presented in a very convenient form which can be readily slipped into the pocket a clear and concise statement of all that needs to be known by the practitioner of medicine of the newer forms of medication. The matter is arranged alphabetically under the therapeutic indications, which makes for convenience in reference. The information is tabulated and presented in the most terse manner consistent with clarity. As a result of the condensation a really surprising amount of information is crowded into this small handbook. The newer vaccines, serums, and opotherapeutic preparations, as well as the newer uses of the standard drugs and chemicals are given, making the revised edition a valuable book of reference.

Pellagra. Part I. A New Contribution to the Etiology and Pathogenesis of Pellagra. By Professors Giulio Alessandrini and Alberto Scala, of the Institute of Experimental Hygiene of the University of Rome. Illustrated with the Original Plates, and Drawings made by the Translator. Translated from the Italian by E. M. Perdue, A. M., M. D., D. P. H. *Part II. Pellagra in the United States.* By E. M. Perdue, A. M., M. D., D. P. H., Professor of Preventive and Tropical Medicine, Eclectic Medical University, Director Johnson's Pathological Laboratory for Cancer Research, Kansas City, Mo.; President, American Association of Progressive Medicine. Kansas City, Mo.: Burton Publishing Co., 1916. Pp. 362. (Price, $3.)

The opening remarks in the preface are sufficient proof of the antagonistic attitude of the mind of the translator to proved facts and methods of investigation. That which he approves of is correct, all else is incorrect.

Interesting as are the contributions of Alessandrini and Scala concerning the cause of pellagra, their contentions are not supported by clinical results. According to them, "pellagra is the effect of a chronic intoxication which is caused by silica in colloidal solution in water of determinate composition, and therefore may be defined as a disease caused by colloidal minerals."

The recent report by Jobling and Petersen of the epidemiology of pellagra in Nashville, Tennessee, is a much more rational presentation and explanation than the foregoing.

Interclinical Notes

Here is some interesting history from *Commerce and Finance* for June 7, 1916, written apropos of the death of Clements R. Markham: "Clements R. Markham, who died recently, must be considered the conqueror of India. Markham had been a traveler and explorer and visited Peru in 1859, where he saw that the cinchona trees, from whose bark quinine is extracted, were being destroyed so rapidly that the world's supply of this valuable remedy for malarial fevers would soon be gone. He induced the English government to plant the tree in India, and its culture there lowered the cost of quinine so greatly that it became a popular remedy. Only the rich had been able to afford it previous to Markham's cinchona culture in India. In 1914 the United States imported nearly 4,000,000 pounds of cinchona bark and nearly 3,000,000 ounces of quinine alkaloids, showing the wide use of quinine in this country. Markham died at the age of eighty-six years from burns caused by upsetting a candle he had used while reading in bed. Strange it is that such a progressive man should have met his end from the use of that now decorative illuminant—the candle!"

An unusual story, by a beginner, we believe, is A Little Folding of the Hands, in the July *Century.* Hannah Abert is the authoress. It shows great promise and has one or two really professional touches. One is the omission of the name of the doctor who opens the story with a gloomy prognosis concerning the illness of the elderly but delightful heroine.

* * *

Contemplation of the full page picture in the *Outlook* for June 21st of the impressive looking building of the Massachusetts Institute of Technology, makes us think that concrete would be a good material out of which to build hospitals. This building is free from tremors, is absolutely fireproof and otherwise indestructible, while the possibilities of concrete in other directions are limited only by the talents of the architect.

* * *

The *Medical Press and Circular* for May 17th remarks that Sydney Smith never said that an operation was necessary to get a joke into a Scotchman's skull. The true story, it says, is told by Lady Holland, in her biography, which is thus quoted by Walter Jerrold: "William Chambers, in conversation with Sydney Smith, very justly alleged for the Scotch that they had, after all, a considerable fund of humor. 'Oh, by all means,' agreed the witty clergyman, 'you are an immensely funny people, but you need a little operating upon to let the fun out. I know of no instrument so effectual for the purpose as a corkscrew.' Sydney Smith described real wit 'in midwife's phrase, as a quick conception and easy delivery.' "

* * *

We believe that it was Max Nordau who, in 1896 or thereabouts, introduced the unconscious or subconscious mind to the public. After a long period of quiet, the theory seems to be enjoying a renascence. We are reading everywhere of the astonishing effects of the subconscious mind on digestion and other functions. We used to think that dyspepsia caused the most terrible gloom, but it appears that we had the cart before the horse—it is the gloom that gives rise to the dyspepsia. Instead of bismuth and the alkalies, or a course of the mineral acids, we must now give the patient cheering suggestions, with a preliminary hypnotic nap if necessary. The number of quacks, male and female, working along these lines in New York city alone, is astonishing—and we omit the followers of the big cults.

* * *

Peccavimus, cries *Collier's* for June 3, 1916, and continues: Henry La Fontaine, for twenty-two years a member of the Belgian Senate, has for more than a year past been a visitor in America. In an article written for the New York *World,* Senator La Fontaine discusses our American civilization with a great deal of sympathy, but he expresses disappointment in our newspapers and magazines—as witness the following sentence: "Daily into many millions of human brains the American press imprints *facts* which are generally of so little importance that in thirty days they are forgotten, and it never tries to sow *ideas* which would bear lasting fruit." This is a brief statement of a fault which has pervaded American journalism. Are we doing anything to correct it?

Medical journals, we think, try to sow ideas, and there are in this country several periodicals with which the doctor would be sorry to part for that very reason.

* * *

The *Survey* for May 20th gave a couple of pages to the discussion of the new dispensaries to be conducted with the idea of exacting a fee from those able to pay. We understand that men with an income of $1,200 will be expected to pay. Those who criticize the plan because the physician is not taken into consideration have, we believe, the wrong viewpoint. The medical profession seeks constantly to eliminate itself. As soon as it has discovered the origin of all diseases and instructed the laity in prophylaxis and hygiene, it will finally lay down the prescription and the lancet. Meanwhile it must take into account problems not its own, and one of these is the pauperization of the moderately well to do. Many visitors to outdoor clinics are willing to pay and it is well that they should pay, at the same time securing the best available advice. Later on, treatment will be free to all, and the emoluments are to come from the State. It is thus that we interpret the symptoms; our approval is neither here nor there.

Official News

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States for the week ending June 24, 1916:

Abeken, F. G., Surgeon. Ordered to Naval Hospital, Great Lakes, Ill.

Bloedorn, W. A., Passed Assistant Surgeon. Detached from the Navy Yard, Washington, D. C.

Biello, J. A., Passed Assistant Surgeon. Detached from the *Kentucky* and ordered home to await orders.

Conner, W. H., Passed Assistant Surgeon. Detached from the *Fulton* and ordered to the *Kansas.*

Dessez, P. T., Passed Assistant Surgeon. Ordered to the Navy Yard, Washington, D. C.

Grieve, C. C., Surgeon. Detached from the Naval Hospital, Great Lakes, June 26, and ordered to the *Utah.*

Hayward, A. B., Passed Assistant Surgeon. Ordered to the *New Orleans.*

Thomas, C. G., Passed Assistant Surgeon. Detached from the Naval Station, Guam, and ordered to the *Fulton.*

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the United States Public Health Service for the seven days ending June 28, 1916:

Boggess, John S., Surgeon. Directed to proceed to Seattle, Wash., to take temporary charge of the Service during the absence of Surgeon Lloyd; leave of absence for twenty-five days from July 10, 1916, granted by bureau letter of June 10, 1916, revoked.

Cox, O. H., Assistant Surgeon. Ordered to report to the commanding officer of the Coast Guard cutter *Apache,* Baltimore, Md., for physical examinations of Coast Guard men; leave of absence for fourteen days from July 1, 1916, granted by bureau letter dated June 3, 1916, revoked.

Foster, M. H., Surgeon. Leave of absence for one month from July 5, 1916, granted by bureau letter dated May 23, 1916, revoked.

Gwyn, M. K., Surgeon. Detailed as a member of board convened at the marine hospital, Stapleton, N. Y., June 26, 1916, for the examination of applicants for cadetship, U. S. Coast Guard, vice Passed Assistant Surgeon C. P. Knight, relieved.

Lloyd, B. J., Surgeon. Directed to proceed to El Paso, Texas, for special temporary duty along the border in the work of preventing the introduction of typhus fever from Mexico.

Marshall, E. R., Passed Assistant Surgeon. Directed to proceed when necessary to Warren and Newport, R. I., and other places in the Customs District of Providence, to make quarantine inspections of arriving vessels.

Myers, C. N., Organic Chemist. At the request of the commissioners of Internal Revenue, directed to proceed to New York to attend the trial of a suit in regard to the proper classification of novocaine.

Porter, J. Y., Quarantine Inspector. Directed to make inspections of the quarantine stations on the coast of Florida.

Robinson, D. E., Surgeon. Leave of absence for one month from July 1, 1916, granted by bureau letter dated June 5, 1916, revoked.

Roth, G. B., Technical Assistant. At the request of the commissioner of Internal Revenue, directed to proceed to New York, to attend the trial of a suit in regard to the proper classification of novocaine.

Stimson, A. M., Surgeon. Leave of absence for one month from July 1, 1916, granted by bureau letter dated June 10, 1916, revoked.

Sweet, E. A., Passed Assistant Surgeon. Detailed to deliver an address on public health, June 29, 1916, at a meeting of the American Institute of Homeopathy, Baltimore, Md.

Warren, B. S., Surgeon. Directed to proceed to New York, N. Y., about June 27, 1916, for investigation of health insurance.

Williams, L. L., Jr., Assistant Surgeon. Granted three days' leave of absence from June 21, 1916.

Boards Convened.

Board of medical officers convened at Detroit, Mich., for the reexamination of alien. Detail for the board: Senior Surgeon H. W. Austin, chairman; Surgeon H. W. Wickes, member; Acting Assistant Surgeon K. L. Weber, recorder.

Boards of commissioned medical officers convened July 10, 1916, for the examination of candidates for appointment as assistant surgeons, as follows: Marine Hospital, San Francisco: Detail for the board. Senior Surgeon L. L. Williams, chairman; Assistant Surgeon D. S. Baughman, recorder. Marine Hospital, Chicago, Ill.; Detail for the board, Surgeon J. O. Cobb, chairman; Assistant Surgeon R. R. Spencer, recorder.

◆

Births, Marriages, and Deaths

Born.

Aronson.—In New York, on Saturday, June 17th, to Dr. and Mrs. Louis Aronson, a son.

Married.

Bull-Fulwider.—In Denver, Colo., on Saturday, June 17th, Dr. Heman R. Bull and Miss Ruth B. Fulwider.

Carpenter-Dechert.—In Schuylkill Haven, Pa., on Friday, June 23rd, Dr. J. Stratton Carpenter, of Pottsville, Pa., and Miss Claire Beck Dechert.

Hardinger-Calkins.—In Cincinnati, Ohio, on Saturday, June 17th, Dr. Ralph W. Hardinger and Miss Helen M. Calkins.

Ryder-McWeeny.—In Bellows Falls, Vt., on Tuesday, June 20th, Dr. Walter R. Ryder, of Boston, Mass., and Dr. Bernadette McWeeny.

Schurtz-Bliss.—In Streator, Ill., on Wednesday, June 14th, Dr. Carl Schurtz and Miss Alta Bliss.

Schade-McClain.—In Dubuque, Iowa, on Thursday, June 15th, Dr. William J. Schade, of Lancaster, Wis., and Dr. Grace McClain.

Williams-Mulvanity.—In Boston, Mass., on Monday, June 26th, Dr. David L. Williams and Dr. Sadie A. Mulvanity.

Williams-Elliott.—In Stanford, Cal., on Thursday, June 22d, Dr. J. Harold Williams and Miss Christabel Elliott.

Died.

Alpers.—In Rantoul, Ill., on Sunday, June 18th, Dr. J. H. Alpers, aged eighty years.

Ashby.—In Baltimore, Md., on Friday, June 26th, Dr. Thomas Ashby, aged sixty-eight years.

Bell.—In Atlanta, Ga., on Monday, June 19th, Dr. W. Jay Bell, aged forty-seven years.

Brown.—In Norridgewock, Me., on Friday, June 16th, Dr. Llewellyn F. Brown, aged eighty-one years.

Cook.—In Cincinnati, Ohio, on Saturday, June 17th, Dr. Henry J. Cook, aged fifty years.

Corbett.—In Washington, D. C., on Monday, June 5th, Dr. Elizabeth J. Corbett, aged eighty years.

Courtright.—In Newark, N. J., on Wednesday, June 28th, Dr Everett P. Courtright, aged forty-eight years.

Donnelly.—In Troy, N. Y., on Thursday, June 22d, Dr. James M. Donnelly, aged sixty-eight years.

Gardner.—In Atlanta, Ga., on Monday, June 19th, Dr. Grafton W. Gardner, aged eighty-nine years.

Glass.—In Booneville, Ky., on Wednesday, June 21st, Dr. A. M. Glass, aged fifty-three years.

Koontz.—In Independence, Va., on Tuesday, June 20th, Dr. Andrew J. Koontz, aged fifty-seven years.

McDermith.—In Denver, Colo., on Thursday, June 15th, Dr. Sampel T. McDermith, aged sixty-eight years.

Orr.—In Belmont, N. C., on Wednesday, June 21st, Dr. Nathaniel A. Orr, aged thirty-nine years.

Paquin.—In Kansas City, Mo., on Friday, June 23rd, Dr. Paul Paquin, aged fifty-six years.

Purinton.—In Kenduskeag, Me., on Tuesday, June 20th, Dr. Andrew M. Purinton, aged seventy-eight years.

Smith.—In New London, Conn., on Tuesday, June 20th, Dr. John O. Smith, of Canterbury, Conn., aged seventy-six years.

Young.—In Fredericksburg, Va., on Sunday, June 18th, Dr. Thomas S. Young, aged eighty-six years.

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Original Communications

SYPHILIS OF THE NERVOUS SYSTEM.*

By EUGENE D. BONDURANT, M. D.,
Mobile.

One in five of the inhabitants of the United States has the taint of syphilis in his blood. One in five of those who contract syphilis receives some material injury to the nervous system therefrom. One in five of the patients in our State insane hospitals is placed there by syphilis, this disease now ranking first as a cause of insanity. Most of the organic nervous disease met with in practice is a result of syphilis. The already enormous and steadily increasing amount of syphilitic disease, and the disastrous results of its all too frequent involvement of the nervous system, introduce one of the most serious of the medical, economic, and sociological problems which human civilization is now called upon to face.

Syphilis produces pathological changes in the organs of the nervous system in all respects similar to those caused in other parts of the human body; i. e., the productive inflammatory process which characterizes syphilis involves the meninges, the nerve sheaths, and the intrinsic connective tissues of the central nervous organs and peripheral nerves, causing thickening and proliferative overgrowth with sometimes granulomatous infiltration or tumor formation. The walls of the bloodvessels become diseased, leading to circulatory disturbances, occlusions, hemorrhages, and softenings. The damage to the nerve cells from syphilis is usually a secondary result of the inflammatory and other changes brought about in the connective tissues, bloodvessels, and meninges, although the directly toxic effect of the poison of syphilis upon the neurons contributes somewhat to the pathological process.

The clinical symptoms and disease syndromes caused by the action of the syphilitic poison upon the nervous system are merely perversions of, or qualitative, alterations in normal nerve cell function. The clinical picture of any syphilitic nervous disease is determined by the distribution and severity of the lesions, and by the functions of the cell masses which become involved.

Among these diseases and syndromes we note acute and chronic forms of peripheral neuritis, acute and chronic myelitis, specific poliomyelitic inflammation and degeneration in the gray matter of the cord and cranial nerve nuclei; optic nerve atrophy and other cranial nerve palsies; headaches, neuralgias, spasmodic neuroses, organic epilepsies, and acute psychoses; apoplexies, both thrombotic and hemorrhagic; granulation tumors of brain and cord; bony exostoses and fibrous thickenings causing pressure; Jacksonian epilepsies; meningitis and syphilitic dementia. In infancy, as a result of hereditary or intrauterine infection we see meningitis, convulsions, Little's disease and other forms of spastic paralysis; hydrocephalus, idiocy, imbecility, and other grades of mental defect, loss or injury to one or more of the special senses, and general arrest of development of the nervous system. In the post-tertiary period, from long continued activity of a low grade syphilitic process, the characteristic lesions are the so called parasyphilitic system degenerations illustrated by locomotor ataxia, spastic paralysis, the forms of combined sclerosis, together with general paresis, early senile dementia, and a large group of involutional psychoses which eventually help to fill our insane hospitals.

A long indictment, is it not? And it may all be summed up by repeating that almost all organic nervous disease is caused by syphilis.

I wish to insist now and always that these so called "nervous diseases," due to syphilis, are in essential character not nervous diseases at all—they are just syphilis. They should be recognized as syphilis, studied and discussed as syphilis, treated as syphilis; and they should, above all things, be divested of the mystery which seems inseparable from nervous diseases, leading us to regard them as peculiar or of special character, tempting us to group them in a class apart from the more material bodily ailments, and endowing them with some occult quality which requires special neurological skill for their elucidation, and demands the attention of a nerve specialist—and which likewise enables us to shift the blame for their unfavorable outcome upon neurology and the neurologists.

I am here reminded of the remark made some years ago by a more or less distinguished member of the medical profession who facetiously decried the specialty of neurology because all it could do was to "give iodides and an unfavorable prognosis."

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*Read as a part of the symposium on syphilis, held at the meeting of the Medical Association of the State of Alabama, Mobile, April 18-21, 1916.

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His personal experience doubtless justified the opinion expressed, for he never in his life called a neurological consultant until he was sure that the case was incurable.

In behalf of the neurologists I refuse to be held accountable for the hopelessly unfavorable end results of the uncured and sometimes undiagnosed syphilis which, on its way to the undertaker, passes through the neurologists' hands.

We general practitioners, surgeons, genitourinary and other specialists always treat syphilis ourselves, even though the nervous system is involved, just so long as we think the patient has a chance to get well. Should we become convinced that the case is incurable and the patient permanently paralyzed, insane, or going to die, we tell him that we now suspect that he is suffering from a nervous disease, that we have never been interested in nervous diseases, know nothing about them, etc., and advise him to see a nerve specialist, or we tell his family to send him to an insane asylum.

The neurologists sign the death certificates of some of these, and the insane hospital cemeteries receive the mortal remains of many others. But the fault lies at the door of neither neurology nor psychiatry. The fault rests upon the fact that we have not yet learned to cure syphilis.

When we cure syphilis in its early and curable stage, we will at one stroke wipe out the entire long and pitiful array of syphilitic nervous diseases. In no other way and at no other time can these diseases be cured. The entire subject should be dealt with as a public health problem—in no other way can it be effectively solved.

Let us face the situation as it is and make our patients and the public generally face it with us. Let us teach that these "nervous diseases" are simply syphilis and should no longer be buried and forgotten in hospitals for the insane and in neurological sanatoriums. Let us see that these diseases are brought into the light of day, stripped of the polite covering given them by the nomenclature employed in the textbooks, and made to stand forth naked as syphilis, because they are syphilis.

Let us teach our patients and the public also that, while they are, after the stage of full development is reached, as hopelessly incurable as any class of diseases known, they are all curable in their early stages and all absolutely preventable. As a class they represent merely the unfortunate residue, the unfavorable end results of imperfectly treated or of unrecognized syphilis.

Having once attained this point of view regarding syphilis of the nervous system in general, and regarding the parasyphilitic system degenerations in particular, to some extent we lose our active interest in the question of whether salvarsan is better than the iodides in spastic paralysis; whether the Ogilvie or Swift-Ellis procedure is to be preferred in locomotor ataxia; whether the injection of salvarsanized serum into the lateral ventricles through a trephine opening is justifiable in general paresis, and in the problem of whether mercury is best introduced with the hypodermic needle, swallowed, or rubbed on, for all of these methods of treatment, used after the nerve cells have been damaged beyond repair, eventuate in the same unfavorable outcome.

We read and hear and participate in long dissertations and discussions of them and of their relative desirability as therapeutic measures, and we feel greater or less interest in trying out and proving them. But when the kernel of truth is extracted from its shell of optimistic words, how many instances of real cure of any of the parasyphilitic degenerative diseases remain? None. Which leads me to say again that the time to treat and to cure syphilis of the nervous system is in its incipient stages before, not after the poison has irretrievably damaged the neurons. This introduces the one other point which I would emphasize, and that is the great importance of making an early diagnosis.

Now it is fortunately true that oncoming nervous disease of syphilitic etiology casts its shadow before—a long shadow of premonitory signs and symptoms, recognizable by one who will take the trouble to look, which, in turn, suggests that our more familiar methods of physical examination should, as a matter of routine, be supplemented by the simpler procedures of neurodiagnosis. The discovery of any departure from the normal in motility, sensibility, the reflexes, the trophic, vasomotor, or mental functions should insure repeated and more comprehensive examination, with possibly a Wassermann test of the blood or spinal fluid. The habit of attention to the condition of the nervous system is a good one for a diagnostician to acquire and brings its frequent reward in the discovery of uncured or even unsuspected syphilis.

Even in the group of parasyphilitic degenerations so often referred to as hopelessly incurable in their typical and late stages, we should remember that the development of the characteristic clinical picture is a matter of slow growth, and preceded by a distinct prodromal period of long duration, during which symptoms of nervous syphilis are present, together with a positive Wassermann. The proper time to diagnose locomotor ataxia, for instance, is not after the patient becomes a typical case for demonstration to a class of medical students, but during the preataxic stage of fugitive rheumatoid pains, inconspicuous sensory dulling, and early disorder of the pupillary reflex. The best time to diagnose general paresis is during the preparetic stage of psychasthenia, which is so often present for months or years before the patient becomes a fit subject for the insane hospital. It will simplify the whole matter if we assume that any symptom of organic disease of the nervous system is evidence of an antecedent syphilitic infection until the contrary is proved.

As a contribution toward facilitating the recognition of involvement of the nervous system in the syphilitic process in its early as well as late stages, I would remind my readers of the following:

1. The neurasthenia syndrome is often present as the earliest evidence of cerebral or meningeal syphilis involving the convexity.

2. The psychasthenia syndrome likewise gives early warning of a diffuse syphilis cerebri affecting the vertex. The occurrence of either of these forms of neurosis in one who has had syphilis indicates danger of subsequent general paresis.

3. Ptosis and other oculomotor palsies are usually diagnostic of meningeal syphilis of the base.
4. Most atrophy of the optic nerve is syphilitic in etiology.
5. Many headaches and neuralgias are caused by syphilis.
6. Most of the pupillary light reflex abnormalities seen are of syphilitic etiology.
7. Chronic neuritis of sensory type is usually syphilitic.
8. Symptoms of spinal sensory root irritation—stabbing pains, anesthesia, disorder of position sense, delay in rate of transmission of nervous impulses, etc., are usually symptoms of syphilitic disease.
9. The onset of epilepsy after the age of thirty-five years means a syphilitic infection.
10. The occurrence of arteriosclerosis, cerebral hemorrhage, softening, etc., before the age of thirty-five years, is seen only in those previously infected by syphilis.
11. Nearly all spastic paralysis is syphilitic in origin.
12. Nearly all disturbances in gait are due to syphilis.
13. Most aphasia and other speech defects in adults are due to syphilis.
14. Most of the abnormalities of the deep reflexes, with the exception of those seen in acute nonspecific infectious diseases, are evidences of syphilis.
15. A large percentage of the cases of acute and chronic mental diseases are primarily syphilitic in causation.

In short, and to repeat still another time, practically all organic nervous disease is due to syphilis, and all symptoms of organic nervous disease are symptoms of syphilis. Let me say again that some of these symptoms are present and discoverable upon examination weeks, months, and years before the typical clinical picture of any form of "nervous disease" is produced. The nerve cells endure toxemic irritation for a long time before they give up the fight, degenerate, and die—and during this irritative, prodromal, preataxic, preparetic, preparalytic, prearteriosclerotic period nervous syphilis is curable. It is at this time that the Swift-Ellis, Ogilvie, and other salvarsanized serum injections should be used. It is at this period that mercurialized serum may do good. It is at this stage that mercury in any form, and even the much abused iodides, are useful and may be given with a favorable prognosis.

In closing I sum up this paper in three sentences:

1. Syphilis of the nervous system is syphilis and not a nervous disease.
2. Syphilis of the nervous system is recognizable by examination in its early stages.
3. Syphilis of the nervous system is, during its early stages, curable by any and all measures which will cure syphilis. In its later stages, after the death of the nerve cells, it is incurable by any means whatsoever.

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Fermented Milk in Infant Feeding.—Albert E. Mucklow (*Medical Record*, June 24, 1916) is enthusiastic over feeding with certified milk modified and fermented with Bulgarian bacilli.

VERTIGO AND SEASICKNESS.

Their Relation to the Ear,

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Perhaps in the whole domain of medicine there is no subject which seems so vague and chaotic as that of vertigo. Doctors repeatedly speak in a general and indefinite way of "intestinal" or "stomach" vertigo, of vertigo from Bright's disease, dizzy spells from refractive errors, from indigestion, or neurasthenia, etc., without thinking even for a moment of the real mechanism of its production.

The most recent work on the ear makes it clear that vertigo is not some general manifestation accompanying disorders in this, that, or other organ, but that it is a peculiar and definite disturbance perceived within the brain itself just as sight and hearing are perceived in the brain, and that the vertigo impulses are transmitted thereto through the vestibular portion of the ear and its associated paths. Since the ear and its nerve paths are responsible for the production of vertigo, it might be profitable to refer briefly to a few absolutely essential facts relative to the physiology and anatomy of the internal ear or labyrinth.

The inner ear consists of two distinct organs, both housed in the same cavity: 1. A cochlear portion which attends to the function of hearing; 2, a vestibular or static portion with *equilibration* for its function. The static labyrinth consists of a saccule, utricle, and three semicircular canals. The saccule presides over linear movements in a lateral direction, the utricle recognizes linear movement in an anteroposterior direction, and the semicircular canals control rotary or turning movements in all conceivable planes. It is particularly important that the relation of the three semicircular canals to these planes be borne in mind in a discussion of vertigo. The semicircular canals have each a bulbous swelling on one end in which is placed a group of sensitive hair cells, capable of excitation. The eighth cranial nerve or "auditory" nerve, so called, conveys impulses from the whole labyrinth, and consists of two distinct parts—the cochlear which carries fibres of audition, and another distinct vestibular portion which carries fibres of equilibration. When this combined bundle, or eighth nerve, reaches the brain stem, it breaks up into its two component parts, the cochlear portion going one way and the vestibular going another.

The normal human organism depends in a great measure upon certain special senses, such as sight, taste, hearing, olfaction, etc. Among those is one, not generally known as a distinct special sense, but yet existing and of the utmost importance, namely, the static sense, i. e., a special sense whereby we are enabled to maintain our proper position in space. To those unfamiliar with this fact, we might point out the following:

Every "special sense" consists of three distinct elemental portions: 1, An "end organ" for perceiving external stimuli; 2, a brain centre for interpreting those stimuli, and, 3, nerve paths connecting the two. Now this static sense is constructed on the same plan. It has an "end organ," the static labyrinth, in which are situated the hair cells capable of excitation. It also has a brain centre, postulated by Mills to be situated in the posterior portion of the temporal lobes. It likewise has nerve paths connecting the labyrinth with these centres. These paths are many in number and are most intimately associated with the cerebellum, the other special sense centres, and in fact with the whole central nervous system.

Perfect equilibration is accomplished through a harmonious cooperation of several special senses, chiefly the static sense, sight, and muscle sense. Disturbance of any one of them will result in partial or complete loss of equilibrium; but the point to remember is, that the static labyrinth, unlike the others, has equilibration for its *sole* function, and is the most important organ for the maintenance of balance and of orientation. *Any disturbance of the mechanism of equilibration induces vertigo.*

By vertigo we mean a subjective sensation of a disturbed relationship of one's own body to surrounding objects in space. That the labyrinth was a factor in maintaining the equilibrium of the body was suspected by numerous observers for many years. But it was not until 1860 that this relationship was established as a clinical entity. In that year Menière, of Paris, published his epoch making paper, in which he described that train of symptoms always referred to thereafter as Menière's disease. Many others followed him and made contributions to the subject, but no work has equaled the recent brilliant efforts of Dr. Robert Barany, of Vienna. That his work upon the physiology of the labyrinth was of more than passing interest was attested to by his receiving recently the Nobel Prize, awarded annually for research work in medicine. He has established, beyond doubt, that the static labyrinth constitutes the chief organ of equilibration. It accomplishes this by being most intimately connected through the central nervous system with nearly every portion of the human organism. The nerves connecting this vestibular portion of the labyrinth with the rest of the body may be spoken of as the vestibular paths or tracts. Stimulation, or irritation, or destruction of the labyrinth, or of any portion of the vestibular tracts, induces vertigo or dizziness with associated loss of equilibration. We must not be misunderstood as meaning that irritation of the ear itself is the sole and only way of producing vertigo. We all know that various visual disturbances, cardiovascular affections, gastric or alimentary disorders, etc., may exhibit vertigo as a symptom. What we do wish to impress, is that in the latter instances it is their direct action on the *vestibular apparatus* that is responsible for the induction of the vertigo. The stomach of itself, or the kidneys, or the heart, etc., can no more produce vertigo, than they can produce sensations of flashes of light, hallucinations of sound, or obsessions of smell. It is generally known and admitted, as a matter of course, that the light, sound, and smell sensations in these instances are produced by irritation or stimulation of the visual, auditory, or olfactory apparatus as the case may be. Just in the same way, when disease in any of the organs just mentioned is accompanied by vertigo, it is due to a direct effect on the static organ or its distribution. Should the same pathological states for one reason or another fail to irritate the vestibular tracts, *there will be no vertigo.*

Vertigo produced by inflammatory or other conditions of the ear itself can be differentiated from other kinds of vertigo by an examination of the ear. By this we have come to mean, not only the study of the hearing function, but a careful investigation of the static portion of the labyrinth as well. When attempting to determine the origin and nature of vertiginous attacks, so that an intelligent prognosis can be given and proper treatment instituted, it is absolutely essential to determine the functional activity of *every* portion of the inner ear. The acoustic labyrinth is therefore carefully tested by means of tuning forks, while the static labyrinth is examined most scrupulously by the new labyrinthine tests. These tests enable us to determine the functional value of the various portions of the inner ear, and also to demonstrate any affection or interference with the vestibular paths connecting the labyrinths with the central nervous system. Many of these vestibular paths are well known and definitely located. Clinically this knowledge is of the greatest interest and importance as we are enabled by means of these tests to locate with a good deal of accuracy lesions within the cranium, particularly so if they happen to involve those paths themselves. The importance of it has been recognized to the extent that at a number of our local leading teaching institutions, beginning with the University of Pennsylvania and followed by the Medico-Chirurgical College, special subdivisions of their respective ear departments were created, where all patients complaining of vertigo or suspected of an intracranial lesion are carefully tested out in this way with a view of determining the integrity of the labyrinths and the associated paths. These vertiginous cases are sent to the ear dispensaries from *all* the departments, chiefly the medical and nervous, to which many of the patients first apply for relief.

As these labyrinthine tests are new we might say a few words about them. The principle underlying them all is this: Movement of the endolymph in the semicircular canals in a given direction, stimulates the sensitive hair cells in these canals, and produces definite phenomena. These phenomena are: 1, A twitching of the eyes or nystagmus of a certain type; 2, vertigo; 3, so called "past pointing"; 4, falling reactions. In a person to be examined this endolymph is artificially set in motion, either by turning the subject in a smoothly revolving chair, or by douching the ear with cold or hot water. The reactions following are carefully observed. With a knowledge of what these reactions should be *in the normal*, and knowing furthermore that in a normal individual they are remarkably uniform and constantly present, we are able to recognize that any deviation from the normal, or a complete absence of some or all of the reactions, is significant of a disturbance either in the labyrinth or somewhere along the vestibular tracts. In this paper we will speak only of that reaction which is immediately under discussion, namely, vertigo.

If a person is turned toward the right, with the head in the upright position, with the eyes closed, his first sensation is that of turning toward the right. This is due to the lagging behind of the endolymph in the horizontal semicircular canals. As the turning is continued the endolymph catches up to the movement of the body, and the subject no longer feels that he is turning, although actually he *is* turning. On stopping the chair the endolymph continues to move and the person has the sensation of turning in the opposite direction, namely, to the left, although as a matter of fact he is sitting absolutely quiet in the chair. This induced vertigo, or what we may call experimental vertigo, is obviously produced by setting in motion the endolymph in the labyrinth.

Experimental or vestibular vertigo manifests itself in certain definite planes.

1. Sensation of turning in a horizontal plane, either from the right to left or from the left to the right.
2. Sensation of turning in the frontal plane or rather the sensation of *falling* to the right or falling to the left.
3. Sensation of turning in the sagittal plane, or rather the sensation of pitching forward or backward.

Sensation of movement in the horizontal plane is produced by horizontal canal or canals only. This is experienced by the subject when he is turned with the head in an upright position.

The sensation of turning in the frontal plane is produced only when the vertical canals are influenced in that plane. This can be produced in a subject by turning him with the head placed forward or backward, in which position the plane of the head is frontal. If, after such turning, the head is permitted to remain in the forward or backward position, the sensation that the subject experiences is one of turning in the frontal plane, which in this position of the head is parallel to the floor. The sensation is therefore the same he experienced after being turned with the head upright, namely, a movement about his own axis, either to the right or to the left. As it is a sensation of turning in a plane parallel to the floor, or the horizontal, it is not unpleasant. If, however, the head is then raised to the upright position, the frontal plane now assumes a position at right angles to the floor, and the subject has a sensation of falling either to the right or to the left, which is therefore unpleasant.

The sensation of turning in the sagittal plane is produced only when the vertical canals are influenced in that plane. If a subject is placed in a chair with the head inclined well over toward the shoulder, his head is then in the sagittal plane. If he is turned now with the head in that position, the resulting subjective sensation is one of turning in that same sagittal plane, which, however (in this position of the head), is parallel to the floor. The sensation is therefore the same as that experienced after being turned with the head upright, namely, a movement about one's own axis either to the right or to the left. As it is a sensation of turning in a plane parallel to the floor, it is not unpleasant. If, however, after such turning, the head is raised to the upright position, the sagittal plane assumes a position at right angles to the floor, and the sensation is that of falling in the sagittal plane, namely, pitching forward or backward. This is unpleasant.

In connection with unpleasantness from these turning sensations, we may consider seasickness. *Mal de mer* is unquestionably an *ear* phenomenon. As Barany[1] has stated, the reason that this is not generally recognized is that the phenomena of the labyrinth and the vestibular apparatus are not generally understood. In 1881, Champeaux first showed the close similarity between Menière's disease and seasickness. In both conditions there is an aura consisting of a sensation of flashes of color before the eyes, and a breaking out of sweat; there is vomiting of a projectile type, which occurs very easily and produces only temporary relief. In both instances the sufferer feels worse on attempting to stand or move about and shows distinct ataxia; lying down and closing the eyes usually results in some relief. Headache is present in both instances and occasionally there is a nervous diarrhea after the vomiting.

Deaf and dumb people do not become seasick. This was first brought out by W. James. Similar proof of the relation of the ear to seasickness was proved experimentally by Kreidl. He constructed a floor on which he rocked animals, indicating the movement of a ship at sea. He was able to make the animals sick in this way. He then operated on the animals and severed both *eighth nerves.* When they recovered he conducted the same experiment and found that they could not be made seasick again.

Trotsenberg makes the observation that in very small children seasickness is uncommon, bringing out the fact at the same time that douching the ear with cold water in children similarly fails to produce nausea. This could be explained by the fact that the vestibular apparatus of small children, not yet being highly developed, shows but little response either to the movement of the ship or to experimental stimulation of the ear by douching.

Ruttin had the same idea as to the causation of *mal de mer,* and to prove it he performed the following experiment on himself. He went out to sea purposely to make himself seasick, and when in that condition he had a colleague of his, Doctor Beck, douche cold water in both of his ears simultaneously with an apparatus which he had devised. This produced a decided lessening of his seasickness. Unfortunately for therapeutic purposes the relief lasted only so long as the douching was kept up.

Barany has shown that persons who show no response to stimulation of their ears experimentally cannot be made seasick. This is substantiated by our own experience with patients who have "dead" or nonreacting labyrinths. Barany also brings out the following interesting facts: Persons who by stimulation of the ears become easily nauseated also become seasick easily. Neurasthenics are sensitive to being turned in a chair or having their ears douched, and they also become seasick easily. Persons who become seasick from certain movements of the boat, also become seasick by the very same kind of vestibular stimulation. The manner of onset and the persistency of the nausea are the same in seasickness as in experimental vestibular stimulation. Furthermore, the sensations after seasickness are the same that we have after being nauseated by violent vestibular stimulation. Any means which would help against seasickness, such as altering the position of the head, helps as much against the unpleasant sensations experienced when one is being turned in a chair. After getting back to land the seasick person quickly becomes perfectly normal again; in the same way nausea produced by violent vestibular tests quickly disappears.

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[1] Seekrankkeit. *Handbuch der Neurologie,* 1912. This paragraph is largely based on this article.

Seasickness is therefore an ear phenomenon, by which we mean that the end organ of equilibrium, namely, the static labyrinth, is disturbed by the unaccustomed movement of the boat or ship. The tossing of a ship may be analyzed as movements in the following planes:

1. *The horizontal plane* from right to left and from left to right. This movement, however, is usually very slight, and unfortunately, as we have already shown, it is the only plane of movement that is not unpleasant.

2. *The frontal plane,* namely the rolling of the ship from side to side. If the subject is standing facing the bow of the ship, such a movement will influence the vertical semicircular canals in the frontal plane. Such stimulation is unpleasant. If, therefore, the subject *lies down* with his head toward the bow or stern, the rolling movement would then affect the *horizontal* canals and the unpleasantness would disappear.

3. *The sagittal plane,* namely, a pitching of the ship fore and aft. If the subject is standing facing the bow of the ship, such a movement affects the vertical semicircular canals in the sagittal plane. The resulting sensation is extremely unpleasant. If, however, the subject lies down with the line of the body extending across the ship from starboard to port, then the pitching movement affects the horizontal canals instead of the vertical and the unpleasantness disappears.

The up and down movement of the ship, that is, the rising and the sinking, in a similar way affects the vertical semicircular canals when the subject is in an upright position. The resulting unpleasantness is again relieved by the subject lying down, since then the up and down movements affect the horizontal canals instead of the vertical, the stimulation of which is so much less unpleasant. Unfortunately the movement of the ship seldom takes place *in one plane only.* It is the *combination* of the various planes which plays havoc with the semicircular canals.

In consideration of these facts, to speak of the role that the ear and the ultimate tracts play in the production of vertigo, is like speaking of the role the heart plays in the production of cardiac murmurs. A normal static labyrinth and vestibular mechanism see to it that we have no vertigo. They accomplish this by keeping the central nervous system continuously informed of our position in space with relation to objects around us. In the presence, however, of some pathological condition in the labyrinth or along any of its paths, the perfect performance of this function is no longer possible. Objects around us do not appear as they should. They either move or dance before us. Our own bodies feel no longer stable and secure upon the ground—in other words, we are *dizzy* or are experiencing sensations of vertigo which, if serious enough, result in our inability to move about or stand upright.

Summing up, then, all vertigo of whatever cause, be it from stomach, kidneys, eyes, or what not, is directly due to a disturbance along some part of the vestibular paths. The pathological conditions that may affect the labyrinth itself are of course legion and cannot be discussed in a paper of this character. For our purposes it is best to limit ourselves to certain general principles. Among the things to bear in mind is this, namely, that the static labyrinths always act in unison. They continuously keep sending out an equal flow of tonic impulses to the whole body, the right labyrinth as much as the left, and the left labyrinth as much as the right. When, however, a pathological process impairs or exaggerates the action of one of the labyrinths, there results a definite disturbance of this nicely adjusted mechanism with vertigo as a symptom. Impairment or stimulation of both sides to exactly the same extent produces no vertigo whatever. Diseased conditions within the ear itself may produce vertigo in the following ways: 1. By an actual impairment or destruction of the static end organ in the labyrinth itself; 2, by affecting the circulation and pressure in and about the labyrinth, resulting in an abnormal stimulation of the labyrinth hair cells.

Inflammatory conditions of the middle ear, for instance acute otitis media, or mild inflammations of the inner ear itself, produce only irritative effects, if any, so that the patients suffer from more or less vertigo as long as the acute stage of the congestion lasts, the vertigo vanishing with the disappearance of the inflammation. On the other hand, slow degenerative changes of the labyrinth, or sudden destruction of the whole or part of one labyrinth, are accompanied by *marked vertigo,* nausea and vomiting, and loss of equilibration. Such slow degenerative changes are seen in syphilis, diabetes, gout, lead poisoning, and other systemic affections.

Sudden destruction of the whole or part of the labyrinth may be produced rarely by trauma, but usually by hemorrhage or serous effusion into it, and may occur in diabetes, Bright's disease, or in any condition where the vascular system becomes affected. It is this class of cases that exhibit the so called Menière's symptom complex. The hearing in these patients is usually markedly affected if not altogether gone, and the condition is characterized by repeated attacks, with a suddenness of onset, the violence of the symptoms quickly reaching a climax and then gradually subsiding, and all of it disappearing when the brain centres have learned to compensate.

In conclusion we should like to emphasize the following:

1. Vertigo from whatever cause is a disturbance of the vestibular apparatus.

2. Disturbance of the vestibular apparatus can be definitely analyzed by means of the new ear tests.

3. Cases of vertigo, therefore, need no longer be regarded as vague or mysterious, but should be cleared up by means of the ear tests.

BONE SETTING AND ITS MODERN REVIVAL.*

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There is probably no practice having to do with the healing art which has been more neglected by the profession, and more opposed by it for lack of understanding, than the olden art of so called bone setting. It has been from its inception a practice based mainly on experience rather than research, and therefore empiric. So far as available references show, no effort has been made to record its interesting history, and at the same time to trace its evolution and its development into the present day practices of manual therapy.

It is the purpose of this paper briefly to review the bibliography of this practice, to prove by deduction that the old empiric practice of bone setting and the present day practice of manual therapy, known as osteopathy, are one and the same as to their basic principles, and finally to draw some conclusions. So far as may be determined, no previous attempt has been made to prove this proposition, with the exception of a brief suggestion as to the analogy, by Bryce (1) in the *British Medical Journal* a few years ago. Within the scope of this paper will be considered seriatim the available essays here and in England, to point out the analogy of bone setting to its present day revivals in osteopathy and chiropractic, to propose the correct status of these latter practices by promoting a better understanding of their evolution, and finally to comment on the fact that manual therapy may in time find its rightful place as a legitimate specialty in the broad field of therapeutics. The literature of bone setting is by no means replete, and much more of moment has been written by the regular profession abroad regarding it than has appeared in the medical journals of this country.

BONE SETTING IN AMERICA.

The old practice of bone setting in America has been closely associated with the family of Sweet for more than two hundred and fifty years. Among the apparently few biographers of the Sweet family are Comstock (2) and Wilder (3, 4). It is recorded that James Sweet emigrated from Wales and settled in Rhode Island in the year 1650. All his descendants appear to have been endowed with, or to have attained in greater or less degree his same peculiar and unusual ability in the treatment of many difficult cases. A number of these are recorded; though the articles of these writers are mainly biographical in character, and little of technical value may be adduced from them. To quote from Wilder: "Whether they (the Sweets) alone possessed the peculiar skill, it is too much to say. Doctor Kittredge, of New Hampshire, exhibited similar talent and appears to have been in many respects like them. Their mode of procedure has been learned by others who did not scruple to proclaim it as their own discovery."

One of the few notable cases recorded in our medical journals, and one the pathology and treatment of which served as a topic of considerable discussion at the time, is reviewed by Ziegler (5). The case was one of a supposed dislocation of the hip joint of more than twenty years' standing, which condition was corrected in a manual operation by an Italian bone setter, Dal Cin. Though Ziegler did not witness the operation, his article is valuable because it presents an interesting academic discussion, based on the details of the case as they were known to him.

ABSTRACTS OF ENGLISH CONTRIBUTIONS.

Probably the first authoritative essay on this subject, whereby the attention of the profession in England was directed to it, was that of Sir James Paget (6) in a clinical lecture at St. Bartholomew's Hospital, London, in 866. In this lecture, supplementing his course on the injuries of bones and joints, Paget considered the conditions which may be amenable to treatment by bone setters; though he asserted that "the surgeon with his discernment of appropriate cases, and guided by a better diagnosis than the bone setter can ever make, may treat these cases more safely and as successfully with comparative gentleness." The analysis of cases usually treated by bone setters is apparently the first systematic effort to define the practice, and forms at least a partial basis of the work of Hood, next to be reviewed, and for which due credit was given.

About four years after Paget's lecture there appeared what is probably the first authoritative monograph by one of the medical profession, based on a working knowledge of this practice. Prompted by an interest in the subject, and with a desire to report his conclusions to the profession, Hood (7) studied and later applied in many cases the methods used by Mr. Hutton, of Watford, one of the best known bone setters of that time. The practice was defined by Hood as "the art of overcoming by sudden flexion or extension, any impediments to the free motion of joints that may be left behind after the subsidence of the early symptoms of disease or injury; perhaps more frequently of the latter than the former."

The class of cases which he concluded to be amenable to treatment may be summarized as follows: 1, Stiffness of joints following fracture; 2, sprains, whether recent or old, which had been treated by enforced rest; 3, joints which had been kept at rest after intraarticular or extraarticular injury or disease; 4, rheumatic or gouty joints; 5, displaced cartilages; 6, ganglionic swellings about the carpus; 7, subluxations of bones of the carpus and tarsus; 8, displaced tendons; and, 9, hysterical joints. The cases most successfully treated were those "in which some restraint of movement, due either to an injury or the rest consequent upon it, or to both together, and which painfully checks the motion of the joint, admits of being at once overcome by manipulation."

Although broadened surgical experience has added much to the knowledge of bone and joint pathology since that earlier epoch, Hood gave an interesting explanation of tissue changes in the conditions treated by these methods. Among the joint changes described in intraarticular inflammation were the formation of adventitious bands and adhesions between apposed surfaces, due to a synovitis of the reflected folds of membrane. The results of extraarticular changes were described as adventitious bands and adhesions from effusions following sprains and injuries, suppurations of bursæ and of deep fasciæ, rigid or adherent ligaments and shortened muscles as sequelæ or coincidents, and lastly, to the lessened joint secretions due to continued rest and an absence of the normal stimulation of joint movement, both in the articulations and in the tendon sheaths. The technic of manipulation was applied not only to the long bones of the extremities, but to the vertebræ as well. "The first step is to feel all around the affected joint for a spot that is painful on pressure, . . . the force is applied suddenly and in a perfectly definite way, for the attainment of a definite end, and ceases as soon as that end is arrived at." This much is a summary of the salient points of Hood's monograph.

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FURTHER OBSERVATIONS OF ENGLISH SURGEONS.

Marsh (8) later reviewed in detail a series of joint cases treated by manipulation under general anesthesia, and also recorded a number of cases treated by bone setters which had come to his attention. Like his two confrères already quoted, he based his conclusions on a sound bone and joint pathology, and rejected the principle of the bone which is "out." To quote from this writer, ". . . the loud snap which is often heard when a joint which has long been stiff or at rest is suddenly moved is a phenomenon to which bone setters point as a plain demonstration that a bone was out and had been put in. . . . These snaps, however, are not produced by the concussion of two joint surfaces as they come suddenly into contact, but, on the contrary, are due to the sudden separation of two surfaces which have been stuck together by a too viscid and tenacious fluid." Further: "They (the surgeons) look with little favor on the practice of wrenching; and if after using it they find the patient though benefited yet not cured, they are so lukewarm in the matter as not to repeat the proceeding, but instead rest and are thankful that no harm has followed the first venture; while, under similar circumstances, the bone setter, who is nothing if not manipulative, and who asserts that the bone is so badly out that it must be "put in twice," goes boldly on and cures the patient. . . . We cannot look with indifference on either their successes or their failures, for their successes prove that we have been remiss, while for their failures . . . we are in no small degree responsible, if by neglecting the manipulative treatment we encourage or even compel patients to seek their help." A further series of cases of bone setting was later presented by Marsh (9) before the Clinical Society of London, and the report of the extended discussion is an earnest of the interest taken in the subject at that time.

Bruce-Clark (10), during his service at St. Bartholomew's Hospital, applied this mode of treatment in many cases, some of which he reported before the Abernethian Society. Details are given of two specimens examined after amputation, in which the joints were healthy, but between the tendons and tendon sheaths of which were numerous bands of adhesions, so that their motion was exceedingly limited. This he attributed to organized effusion, much the same as the effusion in pleurisy. In the treatment of his cases he concluded that by forcible movement, tension on the adhesions and contiguous tissues was increased and pain was thereby induced. Further, that the pain was relieved with the rupture of the adhesions, this latter giving rise to the usual cracking sound. In conclusion, he alluded to cricks of the neck and other conditions affecting the vertebral column which come so often under the hands of the bone setter.

The first time the subject of bone setting was presented before the British Medical Association was in a paper contributed by Fox (11), in 1882. The author at that time was associated in the surgical practice of Mr. James Taylor, of Whitford, in Lancashire, the latter the last descendant of a family, each one of which was a qualified surgeon, who had practised bone setting in Lancashire for more than two hundred years. The class of cases which Fox concluded to be amenable to treatment were: 1. Joints which had become stiff through enforced rest or chronic disease; 2, joints stiff from injury to the bones entering into their formation; and, 3, joints stiff and weak from sprains. He attributed at least some of the indisputable success of the bone setters to the carelessness or indifference of the general body of practitioners in overlooking minor joint injuries.

A later contribution is that of Mansell-Moullin (12), who, like each of his surgeon confrères, discussed the subject with a desirable knowledge of applied anatomy and of sound surgical principles. His paper is of interest as supplementing the earlier essays which have been reviewed.

The writings of these English surgeons have been abstracted to show, not only the evolution of present day practices in America, but as well to point out the interest manifested in the subject of bone setting in England. In their contributions they desired to present to the profession the results of their own application of the principles of bone setting in selected cases, and at the same time they attempted to define the limitations of the practice.

SWEET, THE BONE SETTER, AND STILL, THE OSTEOPATH.

While the monograph of Hood is probably the most complete essay written by a member of the medical profession, the most comprehensive work from the standpoint of the bone setter himself is the autobiography of Mr. Waterman Sweet (13), published in 1844. It is evidently a little known work, as no reference to it has been found in a review of writings on this subject. The apparent aim of Sweet's work was to leave something of record for those who might succeed him, in order that "it might enable them to be useful to their fellow creatures throughout time." His attitude toward the regular profession, despite the fact that many times he had been roundly opposed, was one of kindliness rather than antipathy; nor did he wish to speak against medical aid.

The purpose of reference to this work of Sweet's is to point out an analogy, of interest because it serves to promote a better understanding by the profession as to the status of at least one of the modern adaptations of bone setting. W. Sweet, the bone setter, began his career in Rhode Island about 1790, and published his autobiography in 1844; A. T. Still (14), the first exponent of osteopathy, began his work in Missouri in 1874, and published his autobiography in 1897. There is a striking similarity in the context of the works of Sweet and Still; though it is not unusual that two men, widely separate as to time and distance, should arrive at conclusions so nearly identical as the following excerpts from their respective writings disclose:

SWEET	STILL.
. . . to sustain my claims to eminence in the sciences of intuitive and self taught surgery and anatomy.	I suppose I am the oldest osteopath now on earth. I also think I have given more attention to the study of the principles of this science than all persons now living combined.
. . . from an early day . . . I had a predilection for the study of anatomy . . . I have made anatomy, or bone setting, my constant study and practice for fifty years.	The bones . . . was always a study to me, long before I learned (their) names. . . . When I commenced this study I took the human bones and handled them for twelve months.
It (the human body) is so complicated a machine.	. . . osteopathy is a science built upon the principle that man is a machine.
. . . to notice the actions of all the parts which constitute the human body in its different bearings and circulations, and the difficulties that obstruct the fluids, depress the circulation, and cause pain, soreness, debility, and diseases of limbs.	This year (1874) I began a more extended study of the drive wheels, pinions, cups, arms, and shafts of life, with their forces and supplies, framework, attachments, muscles, . . . blood supply to and from the heart, . . . voluntary and involuntary nerves . . . in the obstructing parts . . . through which they passed . . . to perform their part in the function of life.
. . . practice of . . . cases of almost every description.	. . . treating many kinds of diseases.
. . . no book ever published has ever given me the least knowledge of anatomy in bone setting.	Before I ever studied anatomy from books I had almost perfected the knowledge from the great book of nature.
. . . it (bone setting) is not . . . from books . . . but obtained by practice and observation.	Osteopathy cannot be imparted by books. . . . a treatise . . . would be worse than useless to every person who had not been carefully drilled in our clinics.
As the blood is the life, it is the principle of the (human) system. . . . a want of blood or its circulations, occasions in any part or limb, a drying up of the fluids and decline of the flesh in the part affected.	In the year 1874 I proclaimed that a disturbed artery marked the beginning to an hour when disease began to sow its seed of destruction in the human body. . . . I have been for fifty years fully established in the belief that the artery is the father of the river of life, health, and ease, and its muddy or impure water is first in all disease.
In cases of dislocation by accident, it brings a pressure or loosening of the nerves, which gives pain and soreness, or weakness, and debility .together with the disorganized state of the joints, blood, muscles, and tendons.	The cause (of disease) can be found and does exist in the limited and excited action of the nerves only which control the fluids of parts or the whole of the body.
The muscles, to which the ligaments are attached, . . . in some degree are all affected either in contractions or by being too slack, . . . until, by an operation, all the joints affected are replaced, and then all the fluids begin to flow and a natural conformity of all the parts takes place soon in new cases, and but slow in cases of long standing.	. . . normal does not mean simply to place bones in a normal position (but) that muscles and ligaments may play in their allotted places and can act with freedom at all times.

THE STATUS OF OSTEOPATHY.

The foregoing analogy has been carried out only to the extent of showing the concept of Sweet and Still to be practically identical; but it is no part of the purpose of this article to suggest that Still was familiar with the writings of Sweet. In fact, Still would seem to deny any knowledge of them. "I do not claim to be the author of this science of osteopathy. . . . I discovered it." (14). It may be questioned, however, if there could be an absolute discovery in a field of this nature, except by one totally unfamiliar with applied anatomy and therapeutic practice in connection with it; it has been said that "all the men who are now called discoverers in every matter ruled by thought, have been men versed in the minds of their predecessors, and learned in what had been before them. There is not one exception" (15).

It is a little known or a forgotten fact that the first school of osteopathy in its application for charter, which was granted by the State of Missouri, indicated the purposes of teaching the subjects usually taught in medical colleges, and of granting the degree usually conferred by them. This school has not included in the course a comprehensive training in materia medica and therapeutics, nor granted the medical degree. So far as the writer is informed, only one osteopathic school includes materia medica in its courses, and none of the schools confers the medical degree. The osteopathic schools continue as separate entities, not because lectures on the principles of bone setting and massage may not appropriately be included in the curriculum of medical colleges, but owing primarily to the inertia which customs and traditions of the medical profession induce—inertia rendered all the more fixed by the radical stand assumed by the first sponsor of osteopathy, and the extreme terms in which he stated his claims and principles of practice. He said: "If osteopathy is not complete within itself, it is nothing"; and he also referred to allopathy, homeopathy, and eclecticism as "fading sciences of antiquity," with which osteopathy must not be belittled by association. This writer also asserted that "there is no such disease as fever, flux, diphtheria, typhus, typhoid, lung fever, or any other fever," and that "rheumatism, sciatica, gout, liver diseases, . . . on to the end of the list. . . . do not exist as diseases." He is thus one of the few to deny the existence of disease as such since Asclepiades, more than two thousand years ago, advanced as a premise the principle of constricted and relaxed, tonic and atonic, sthenic and asthenic states of the body (16).

The traditions of this modern adaptation of bone setting, as well as the etiology and treatment, remain much the same as when Still reported his work and asserted: "The philosophy (of osteopathy) is eternally the same"(14). The dictum of this writer to "find it, fix it, and let it alone," referring to the subluxation or lesion, or the bone which is "out," bears another analogy to the technic of manipulation, to which previous reference was made from Hood's work. While osteopathy has always disdained any comparison to massage, the essentials of the osteopathic "soft tissue adjustment" may readily be found in an authoritative monograph on treatment by physical methods such as that of Dowse (17)—incidentally a work more comprehensive of the massage branch of manual therapy than any osteopathic text which has as yet appeared.

The regular profession during the last quarter century has witnessed the steady development of manual therapy, and in many States its regulation by legislative enactment; and during this time no constructive program has been successfully carried out to place it in its rightful position as a part of general medical practice, or rather as a specialty. There is nothing mystical about the principles and practice of mechanotherapy, and the statement made by Paget (6) fifty years ago, that appropriate cases may be treated as successfully by the regular practitioner applies with equal truth today. More recently Schreiber (18) advances this opinion: "The time was when reputable physicians scrupled to busy themselves with mechanical treatment; or, if they did, hesitated to commit to paper their ideas on the subject, or to contribute, by clinical observations, their mite toward spreading this now no longer new method of cure. That day happily is past, . . . and today the most eminent physicians do not for a moment hesitate personally to treat disease by manipulations."

CHIROPRACTIC BRIEFLY CONSIDERED.

There has been in this country, so far as I am aware, but one other adaptation of the general principles of practice underlying bone setting. It is believed that the ancient Bohemian empiric practice called napravit (to thrust) was the basis of the "discovery" in 1895 by Mr. Palmer, of Davenport, Iowa, out of which has been exploited the cult of chiropractic. Palmer was a man of no medical education, but this did not deter him, for, as an admirer unhesitatingly asserts, he succeeded in "wrenching from nature her secret"—the cause of all disease and the way to remove that cause. That he and his followers are not likely to attain this latter ambitious project may be deduced from the principles of this practice, thus defined in an official organ of the cult: "Chiropractic is a philosophy of biology, theology, health, disease, death, the cause of disease, and art of adjusting the relations between them to harmonious quantities and qualities, by hand, thus correcting all subluxations of the three hundred articulations of the human skeletal frame, more especially those of the spinal column, for the purpose of reestablishing the normal current through impinged nerves as they emanate through intervertebral foramina, which were formerly excessive or lacking, named disease. All movements, whether normal or abnormal, of, or in the body (including blood circulation) are but the personification of mental equivalents—mental functions guided by Innate Intelligence, creating physical expression. An ache or pain is but the Intellectual Inherent interpretation placed upon impressions received from the periphery, proving the abnormal physical conditions."

If further interest may be taken in this cult or in the school situated in its birthplace, wherein many of the exponents receive an elementary training, reference may be made to the reports of the inspector of the Pennsylvania Bureau of Medical Education and Licensure, and to the comments of Duhigg (19) on these reports.

CONCLUSIONS.

1. There is no reason why the general practitioner should not avail himself of such manipulative treatment as is of proved efficacy and success. Indeed, orthopedic practice has given an increasing dignity to the hand as a therapeutic agent in certain bone and joint conditions; the osteopath has made it popular as applied to all conditions, whether appropriate or not. The profession of medicine has neglected an opportunity, and the public has been the arbiter. Though I hesitate to advance an *ex cathedra* forecast, I believe the next decade will witness one of two conditions, perhaps both: the osteopathic school will become in reality a college of medicine and surgery, or the regular medical college will include mechanotherapy in its curriculum.

2. Within recent years renewed interest has been taken in the correlation of structural asymmetry to disturbances, not only of visceral function, but as well to the derangements of the joints composing the bony framework. The restoring of structural symmetry in the adult, and the acquiring of it in the child and adolescent, is a problem of body statics. The solution of this problem is a study of the mechanics of the entire structure, not of the individual joint or joints, unless there is, in the surgical sense, a local lesion.

3. Excluding gross dislocations, recent fractures, or pathological bone or joint changes, when the centre of motion of a joint or a number of joints is determined to be continuously altered, a knowledge and application of body statics is essential to restoring a joint or joints to a state of normal function. Whether the change is from extremes as varied as acute strain to fixed scoliosis, the problem is one of mass rather than the bony segment, and of the tractive forces rather than of the bones themselves.

4. Provided that consideration is given to all joints, the motion of which is directly or remotely affected, manipulative measures toward this end supply a desirable and necessary stimulus to the kinesthetic (muscle joint) sense, to the joint tissues, and

to the tissues on which the motion of the joint is dependent.

5. Bone is inert, and in movable joints has no inherent power to maintain normal motion, nor to resume it if this motion is altered. Hence, improvement both in the kinesthetic sense and sense of voluntary control, is the end toward which any measure of normalizing the joint is directed. Again excluding pathological bone and joint changes, manipulations directed toward restoring correct statics, supplemented by the direction of specific voluntary efforts on the part of the patient, have proved of definite value in many cases in which visceral function has not been corrected by remedies, and in joint function for which apparatus, retention, or operative measures are not indicated.

6. To the practitioner who specializes in manual therapy, or who uses manipulative measures in his practice, the field is a broad one for original work, provided that he avails himself of any and all helpful measures based on collateral experience.

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TUBAL STERILIZATION.

Pregnancy Following Bilateral Salpingectomy, A Report of Two Cases and a Complete Review of the Literature,

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It is not the intention of this paper to discuss the sociological, moral, or legal aspect of the problem of tubal sterilization, but the surgical phase only. The purpose of so doing is to emphasize the necessity for the selection of the surest and least objectionable method of producing sterility in the female, when once it has been decided that such a procedure is desirable. My interest in this subject was aroused by the occurrence of pregnancy in two patients in whom I performed bilateral salpingectomy for the relief of chronic inflammation. This unexpected sequel emphasized the fact that, if sterility had been the object sought, the operations would have had to be classed as failures. Pregnancy has unexpectedly occurred in many patients after operations upon the Fallopian tubes performed for the express purpose of producing sterility; and in others who were subjected to bilateral salpingectomy for the relief of tubal disease. The study of the operative methods employed in all reported instances of failure; a review of other methods proposed for tubal sterilization; and the consideration of the animal experimentation, should assist us in the selection of that method which promises the surest result. After a complete review of the literature, it has seemed to me that the following classification would be helpful.

Group I comprises all cases in which operations upon the Fallopian tubes failed to produce sterility. It includes those cases in which sterilization was the object sought and others in which, from the nature of the operation, sterility was to have been expected.

Group II includes cases in which a second operation upon the same patient demonstrated the failure of the first operation to occlude the tubes. In these cases no pregnancy had resulted, although there was no hindrance to its occurrence.

Group III includes cases in which operative methods, different from those used in Groups I and II, were employed for the production of sterility, but in which neither failure nor definite success was reported.

Group IV consists of the review of the experiments done upon animals to determine the value of several methods.

In the first group there are recorded twenty-five failures to produce sterility by the following procedures: A. Ten failures after simple ligation of both tubes. B. Three failures after double ligation and section or resection of the tube between the ligatures. C. One failure after crushing and ligation of both tubes. D. Eight failures after bilateral salpingectomy with ligation of the uterine stumps of the tubes. E. Three failures after bilateral salpingectomy with cuneiform resection of the uterine cornua.

Ligation of the tubes. With the exception of the three cases reported by Gordon (1) and Sutton (2), the reported failures which occurred before 1897 followed simple ligation of the tubes. The uncertainty of this method is attested by the following reports: In sixteen cases of vaginal fixation of the uterus performed by Arendt (3) in 1897 he ligated both tubes with silk or formalin catgut. In one case pregnancy soon followed. Fritsch (4) in 1897, during a laparotomy, ligated both tubes with silk. The patient became pregnant three years later. As a result of this experience he recommended double ligation with section of the tube, but found this to be no more effective. During a Cæsarean section, Pissemsky (5) in 1897 ligated both tubes with silk. The patient became pregnant again and was subjected to a second Cæsarean operation, during which both tubes were removed. He found one tube patulous, the other closed and the silk sutures *in situ*. Vecchi (6) in 1905 had an almost identical experience with that of Pissemsky. At a second Cæsarean section in the same patient he also removed the tubes which had been securely ligated during the first operation. The ligatures had cut completely through the tubes. The divided ends of the left tube had reunited and the tubal canal had been reestablished. The ends of the right tube were occluded and separated by peritoneum. Kossman (7) in 1898 reports a failure after ligation with catgut. Lambach (8), reported by Littig (9) in 1912, ligated both tubes with silk, incidental to an operation for retroversion; term pregnancy occurred three years later. Taylor (10) in 1904 had a rare experience, which demonstrates conclusively the untrustworthiness of tubal ligation. During two successive Cæsarean sections in a rhachitic dwarf, he ligated both tubes; the patient, nevertheless, became pregnant again and was subjected to a third Cæsarean section, at which operation bilateral salpingectomy with cuneiform resection of the uterine cornua was done.

The uncertainty of simple tubal ligation has apparently not been duly appreciated by American gynecologists. Leonard (11) reports two failures from the gynecological clinic of Johns Hopkins Hospital in patients operated upon as late as 1909. These failures occurred in a series of twenty-three patients, in whom sterilization was attempted. He could trace only fourteen of these patients at the time of his report. Five of the fourteen were over forty years of age at the time of operation.

In the two cases of failure the tubes had been doubly ligated with silk. The first patient who was operated upon in 1908 was delivered of a full term child one year later; and the second (operation, 1908) suffered three miscarriages within a period of four years after the operation.

Morris (12), in 1904, in an article, Artificial Sterility, recommended: "Tie a silk thread about each oviduct near the fimbriated extremity; the ligature will become encapsulated and close the oviduct." As late as 1911 Werner (13) asserts that double ligation of the tube and resection of two or three cm. may be relied upon to prevent conception.

Failures after division or resection of the tube between two ligatures. Recognizing that no reliance could be placed upon simple tubal ligation for the production of sterility, Kehrer (14), in 1897, recommended double ligation of the tube near the uterus and section between the ligatures. His first operation was done through an anterior colpotomy. He apparently was not familiar with three cases reported the previous year by Gordon and Sutton, in which removal of the tubes and ligation of the uterine stump had resulted in failure. Priority in advocating double ligation and section is alleged by Kossman in a pamphlet in 1896. Later he proposed division of the tube with the actual cautery between ligatures, and cauterization of the mucous membrane and muscularis if they protrude beyond the serous coat of the divided end. A similar method to that of Kehrer was proposed a year later by Spinelli (15). Two years after the appearance of Kehrer's paper, Abel (16) reported having done double ligation and division of both tubes in 1894 at the time of a second Cæsarean section in a patient. She became pregnant again and was delivered by a third Cæsarean section three years later. Abel found that both tubes in this patient had reunited, but that in only one was the canal patulous throughout. Three other failures are reported by Belser (17). Two of the three women became pregnant in the stump of the ligated and divided tube. A modification of this method suggested by Braun-Fernwald (18) and Rühl (19) consists in burying the proximal portion of the ligated and resected tube beneath the peritoneum of the broad ligament. That this modification cannot be relied upon is pointed out by Reiferscheid (20), who reports a failure after its employment; as follows: At a second Cæsarean section in a woman with a markedly contracted pelvis, two cm. of each tube were resected and the uterine stump buried within the broad ligament. She became pregnant again in one year. After a similar operation done by Smythe (21) the patient became pregnant in seven months. While the technic of subperitoneal concealment of the proximal end of the divided tube proposed by Asch (22) is simpler than some others, it cannot be more efficient. He operates usually through a posterior sagittal colpotomy, sometimes through an anterior colpotomy. Findley (23), following the teaching of Selheim (24), fails to appreciate the uncertainty of ligation and resection of the tube when in a recent article he proposes it as part of a "combined operation for the interruption of pregnancy and sterilization."

Crushing of the tubes, even if followed by ligation in the groove as suggested by Friedmann (25), is no surer than simple ligation or resection. Cassalis (26) reports one failure in ten operations in which both tubes were crushed by a powerful forceps through a colpotomy opening. The patient became pregnant six months after the operation.

Bilateral salpingectomy with ligation of the uterine stumps of the tubes does not appear to render sterility any more certain than do the foregoing methods. Most of the reported failures occurred after operations in which removal of the tubes formed only a part of the operative measures instituted for the relief of pelvic inflammatory disease. Gordon (1896) reports pregnancy occurring in two patients from whom both tubes and ovaries were thought to have been removed and the stumps of the tubes ligated. The first patient menstruated irregularly after the operation and became pregnant three years later. The second patient menstruated regularly, beginning three months after the operation, and became pregnant after fourteen months. At the time of a double ovariotomy, Sutton (1896) ligated both tubes near the uterus and divided the right one with a cautery, the left with a scissors. The patient underwent two subsequent pregnancies, with normal labors, twenty and forty months respectively after the operation. In a case of chronic pelvic inflammation, Schmidt (27) removed the left ovary and both tubes, ligating the stumps with silk. Pregnancy occurred four years later. Polak (28) and Leonard each report the rupture of an interstitial pregnancy occurring in the small remaining portion of a tube after bilateral salpingectomy and ligature of the stumps. Polak's case is of particular interest for the reason that the patient "had been married seventeen years, and had not previously been pregnant owing to a gonorrhea which she had contracted from her husband shortly after marriage." Freeman (29) attended a patient who had a normal labor 400 days after ligature and removal of both tubes, one ovary, and part of the other. During a Cæsarean section Brodhead (30) removed (?) both ovaries because of multilocular cystic change, and excised the tubes after ligation about one inch from the uterus. The patient menstruated irregularly after the operation and became pregnant within two years.

To these failures after bilateral salpingectomy and ligature of the stump I wish to add two which occurred in my own practice.

CASE I. H. K., aged twenty-one years, consulted me in February, 1913. She had been suffering for two months with pain in the right iliac region, intermittent in character and aggravated by exercise. There had been no nausea or other symptoms referable to the stomach or intestines. Bladder symptoms were also absent. Menstruation had been established at twelve years; it was regular (twenty-eight day type) painless, and from two to three days' duration. The last period had occurred two weeks previous to the consultation. She had been married three years, and had been pregnant three times, each pregnancy having been terminated at about the third month by induced abortion. Bimanual examination disclosed an irregular inflammatory mass in each tuboovarian region, larger on the right side. At operation, three days later, both Fallopian tubes and the right ovary and vermiform appendix were removed. The left ovary was adherent to the inflamed tube, but was not so badly diseased as to necessitate removal. The tubes were ligated near the uterus with chromic catgut and the portion distal to the ligatures was excised. The patient made an eventful recovery. She became pregnant thirty months later and suffered no inconvenience as the result of the operation.

CASE II. R. F., aged twenty-five years, married, consulted me in July, 1909, suffering from uterine hemorrhage. She had been well until the previous month, when she aborted in the fourth week of gestation. The bleeding which began with the abortion continued in slight amount and was not associated with pain or other discomfort. She had been married four years and had been delivered with forceps two and a half years before. On examination the uterus was found to be retroverted, and its mobility impaired. A mass on either side was diagnosed as consisting of diseased tubes and ovaries.

At operation, August 17, 1909, the uterus was curetted. Through a median suprapubic incision the uterus was liberated from adhesions to the prolapsed and inflamed tubes and ovaries. Both tubes were occluded and both ovaries cystic. The tubes and right ovary were excised, and the uterine stump of the tubes was ligated. The left ovary was resected. The round ligaments were shortened by the method of Montgomery. The patient made an uneventful recovery and, twenty months later, gave birth to a living child.

Bilateral salpingectomy with cuneiform resection of the uterine cornua is considered to be the surest method of producing sterility through operation upon the tubes. It was first proposed by Neumann (31), in 1898, and shortly afterward received favorable commendation from Rose (32). Günther (33) reported five successes after its adoption. All the writers upon the subject agree that in performing the operation great care should be exercised to make the wedge shaped section of the uterine cornu deep enough to remove all of the interstitial portion of the tube and to close the opening in the uterus with two layers of sutures; the deep sutures to approximate accurately the cut surfaces of the uterine muscle, the superficial ones to bring together the cut edges of the peritoneum of the broad ligament over the repaired muscle. Notwithstanding the observance of all such precautions, failures are reported by Küstner (34), Polak, and Häberlin (35). Küstner observed failures in two patients in whom during the performance of vaginal fixation of the uterus he removed a wedge shaped section of both uterine cornua and about three cm. of each tube. Severe hemorrhage occurred in both cases during the operation and pregnancy followed a few years later. Because of the hemorrhage, the difficulties to be overcome, and the uncertainty of success when the operation is done through vaginal section, Küstner advocates the abdominal route. The most conclusive evidence of the value as well as the possibility of the failure of cornual resection is to be found in the experience of Häberlin. He resected the tubes and uterine cornua in forty-one patients for the purpose of rendering them sterile, and was successful in forty of them. In some of the patients the operation was done through a colpotomy, and the others through abdominal section. He expresses a preference for the latter method.

In Group II of this classification are recorded several cases in which a subsequent operation in the same patient revealed the failure of the previous operation to produce a permanent occlusion of the tubal canal. While no pregnancy had occurred in any of them, there was found an unobstructed passage between the uterine and peritoneal cavities, and pregnancy might have occurred. Rühl performed bilateral salpingo-oophorectomy, ligating the uterine stumps of the tubes with silk. Two years later he reopened the abdomen and found one tube patulous. As a result of this experience, he suggested that the ligated tubal stump be buried beneath the peritoneum of the broad ligament. Ries (36) reports three similar cases which came under his observation. In the first patient bilateral salpingo-oophorectomy with ligature of the stump was done. At a subsequent abdominal section he found one tube open. The second patient had both tubes and the right ovary removed, and at second operation presented a uteroperitoneal fistula at each cornu. Vaginal hysterectomy, performed in the third patient some months after a bilateral salpingectomy, demonstrated an unobstructed canal in the remaining stump of each tube. Similar experiences are reported by Bovee (37) and Fränkel (38).

Group III of this classification includes methods some of which are modifications of the foregoing and some others which present elements of novelty. While apparently satisfactory results have followed their application, the number of cases in which each method was used is not sufficient to stamp it with unqualified approval. In commenting upon Kehrer's paper, Beuttner (39) proposed resection of a portion of the muscularis and mucous coat of the tube after an incision through its serous coat. The cut ends of the muscularis are then to be occluded by suture, covered with serous membrane, and attached to each other. He recommended abdominal instead of vaginal incision. The method of Kirschoff (40) is similar. It consists in subserous resection of three or four cm. of the tube through a small incision in its peritoneal covering parallel to its long axis. He asserts that sutures are not necessary, as adhesion of the inner surfaces of the tubal peritoneum produces a fibrous cord which occludes and permanently separates the divided ends. Van Meter (41) makes the same resection, but sutures the muscularis first to occlude the lumen of the tube. When Cæsarean section is performed through a transverse incision in the fundus, the method of sterilization used by Halban (42) should be as effective as cornual resection. He excises the interstitial portion and three cm. of the tubes by extending the incision well into each cornu. In closing he first introduces a musculomuscular suture and covers the repaired muscle by suturing the peritoneum over it. Taussig (43) also combines cornual resection with removal of about two cm. of the uterine end of the tube, but goes further. After closing the opening in the cornu, he ligates the proximal end of the remaining portion of the tube and buries it deeply within the broad ligament. He then draws a loop of round ligament over the repaired cornu and attaches it to the upper posterior surface of the uterine fundus. His method does not appear to offer the degree of surety of salpingectomy and careful cornual resection.

Rissmann (44) proposed wedge shaped resection of the cornua, but to leave the rest of the tube undisturbed so that the tube might be repaired and its canal restored if the patient subsequently desired to become pregnant. With the same purpose in view Selheim buries the entire tube beneath the peritoneum of the broad ligament so that if desired it may later be restored to its former peritoneal position without injury to itself. It is difficult to imagine the tube remaining within the broad ligament for any length of time, without undergoing changes which would render it unserviceable for further transmission of spermatozoa. To accomplish temporary sterilization Holzapfel (45) divides the tube at the junction of the middle and outer third; resects about two cm. of the uterine portion after carefully dissecting off its peritoneal coat. The end is then ligated with fine catgut, covered with the dissected peritoneum, and buried within the broad ligament. The cut end of the outer portion is ligated and allowed to remain within the peritoneal cavity. This operation presents the same uncertainty as do all others in which the uterine cornu is not resected and sutured. If restoration of the tubouterine canal at a later date is to be considered in the production of sterilization the operation of De Tarnowsky (46) appears to be the most satisfactory. The steps are as follows: "Amputate the tubes on either side one fourth inch from the uterine cornua. With a fine rat toothed forceps or a probe invaginate the distal half of each stump and close the lumen with two catgut sutures. This produces a seroserous adhesion which will effectively close the canals. On the posterior uterine wall make two parallel vertical incisions one inch long and one half inch apart. These incisions should not be over one fourth or one fifth inch deep. With a curved forceps burrow between these incisions, creating a canal of sufficient size to contain the two tubes. With the same curved forceps remaining in the new canal, grasp the opposite tube and draw it through the canal so that it emerges on the opposite side. Reintroduce the forceps from the opposite side and repeat the same procedure with the remaining tube. In the new canal the tubes should be parallel to each other, one lying above the other, the cut extremity of each tube emerging on the opposite side of the new canal. Make a small cuff by everting the tubal mucosa (it is sometimes necessary to make two small incisions before being able to evert satisfactorily) and secure the cuffs to the margins of the new canal by fine catgut stitches which may be present. Test the patency of both tuber by means of a fine probe." Rockey's (47) operation differs from this, in that he does not draw the ends of the tubes through incisions in the posterior wall of the uterus, but simply attaches them to the surface of the uterus with sutures. The operation of Menge and Kroenig as described by Blietz (48) presents some points of difference from the others. In correcting retroversion and prolapse of the uterus by the Alexander-Adams operation, they opened into the peritoneal cavity by two inguinal incisions, removed the outer half of each tube, and attached the remaining portion to the aponeurosis of the external oblique. Unaware of this report, Stettin (49) proposed practically the same procedure.

In Group IV the results of experiments carried out upon animals with the object of determining the most positive method of tubal sterilization, with but few exceptions, corroborated the clinical experience in the human being. The early workers in this field were Kossman, Landau (50), Woskressensky (51), Josephon (52), and Ratschinsky (53). The more recent contributions to the subject are those of Fränkel, Ronsse (54), Friedmann, and McIlroy (55). Kossman's experiments, performed in 1875, consisted in ligating the Fallopian tubes of young pullets with heavy silk ligatures. In six weeks they began to lay. Examination of the tubes at autopsy revealed that the ligatures had broken as the result of swelling of the tissues and had become incrusted with lime salts. Fränkel experimented upon twenty-six rabbits, on which he performed thirty-three operations upon the tubes and twenty-nine upon the uterine cornu in his attempts to obliterate the tubal canal. Only two successes followed the thirty-three operations upon the tubes, while the operations upon the cornu all resulted in failure. The character of the failures following the several methods is interesting. 1. After single or double ligation with silk, catgut, or rubber, he found that the tube had been cut through by the ligature and the ends had either reunited or had reopened and formed a tuboabdominal fistula. 2. After section of the tube with or without ligation the canal in each end was found to be patulous or the ends had reunited and the continuity of the canal had been restored. 3. Resection of one to 2.5 cm. of the tube between ligatures was frequently followed by tuboabdominal fistula. 4. Cauterization of the interstitial portion of the tube resulted in failure in every instance. He concluded that the only certain method of tubal sterilization consists in total extirpation of the tube, including the interstitial portion in the uterine cornu, and careful closure of the cornual defect. The results in Friedmann's experiments in twenty-two animals corroborate those of Fränkel. He operated upon rabbits, cats, and bitches, chiefly by crushing the tubes and ligating in the furrow with catgut or silk sutures. Seventeen of the animals became pregnant after the operation. Autopsies performed six weeks after the operation in the five remaining animals (rabbits) disclosed patulous tubal canals in four of them, and complete obliteration in only one. Ronsse's conclusions differ from those of Kossman, Fränkel, and Friedmann. He experimented upon the tubes and uterine cornua of rabbits by performing simple ligation; simple division; division or resection between ligatures. All the animals were subjected to autopsy shortly after the operation. He found complete occlusion of the tube in all. In addition to the occlusion in cases in which operation upon the cornua had been done, there developed a cyst lateral to the point of ligation or division. Those whose tubes were doubly ligated presented a hydrosalpinx between the ligatures. Because of the occlusion and the cyst formation, he concludes that the passage of ova and spermatozoa would have been permanently prevented. He believed that the fluid which accumulated in the tube was a normal secretion, rather than the result of inflammation or disturbed circulation. Since the animals were all killed, however, before the swelling incident to the trauma could possibly have subsided, his results cannot be considered as convincing.

From this résumé of the clinical and experimental experience with tubal sterilization, I believe that we may fairly arrive at the following conclusions:

1. There is no method of tubal sterilization which affords absolute security against conception.

2. Simple ligation of the Fallopian tubes with either single or double ligatures has been followed by the largest number of reported failures.

3. Excision of a wedge shaped section from each cornu of the uterus, followed by careful closure of the opening with musculomuscular and seroserous sutures has yielded better results than any other method.

4. In the light of our present knowledge it seems unwise to advocate any other method than cornual resection. These conclusions are in accord with those arrived at in previous reviews of this subject by Charles (56), Geissler (57), Günther (58), Mironow (59), Offergeld (60), Perdrizet (61), Pestalozza (62), and Sarwey (63).

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1642 PINE STREET.

MILITARY PREPAREDNESS AND THE SURGEON.

An Experience as Post Surgeon at Camp Tanner During the Spanish-American War.

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The duty of the medical profession in the event of either peace or war is to conserve life and minimize suffering. In war this duty is especially difficult and dangerous—all the more reason why we should acquit ourselves with credit.

It cannot be denied that wars in America have found the country with an army and the medical profession unprepared to give the best possible medical and surgical attention. In the Revolutionary war the army was a shifting and undisciplined mass of men, without uniforms and improperly shod, poorly paid and fed; it is a wonder that anything was accomplished. However, the individual soldiers were born, gun in hand, and knew the Indian methods of warfare. They muddled through seven years of skirmishing, and by good fortune won. The medical profession does not seem to have drawn any particular renown or credit from its services in this war.

It was not long after the close of the Revoluion that the forces of St. Clair, undisciplined and inexperienced, were almost annihilated by the savage Indians of northwestern Ohio. The second expedition, properly organized and drilled under Wayne, was more fortunate. We know little of the action of the doctors in these terrible events. I believe they have left no records.

The war of 1812 was short, and except for the battle of New Orleans was not creditable to America. We know little of the services of the medical men; then, as before, no records were kept and perhaps it is well that none were kept. There was not a single medical journal published in America at that time.

The Mexican war of 1846 did not call out many men, but there was a mortality from the preventable diseases, yellow fever, typhoid fever, and dysentery, amounting to over 16,000.

The Civil War tested the strength of both sides to the utmost. The northern medical forces had much the advantage of the southern in supplies of medicines and surgical instruments. There was frightful incapacity of the medical staff of both armies for a number of months. Surgeon General Hammond's letter to the Secretary of War, in 1862, revealed the unspeakable suffering and death of many men due to inefficient ambulance service after battles. This was not the fault of the medical staff.

Old soldiers have told me their particular dread was that they might fall into the hands of the doctors or be sent to the hospital. The mortality from preventable diseases in all quarters amounted to over 300,000. Finally the army and medical corps were beaten into shape. Hospitals of proper construction were erected. Statistics were kept and there was some glory for our profession. The *Medical and Surgical History of the War of the Rebellion* was for those days a monumental work.

The Spanish war found us again full of the enthusiasm to do or die for the dear old U. S. A., but we had virtually no medical or surgical preparation. The mortality from preventable diseases was more than ten times that from the bullet.

I was on duty as post surgeon with the Illinois troops when rendezvoused at Springfield. About 10,000 came together and were placed in the State fair buildings and grounds, beginning on April 28th. For three weeks the weather was cold and rainy. The men slept on cold cement floors. The buildings were large and draughty, the toilet facilities were inadequate. There were no bathing facilities. The cavalry regiment camped in the open race track enclosure. The tents were often surrounded by water, but this regiment had a regular army officer for its commander and came out of the camp in good physical condition. The seriously sick and injured were taken to St. John's Hospital, which was filled to its capacity at that time. I have the records of all that were then treated, seventy-eight in number. Among these there were six cases of meningitis with three deaths, thirty-two cases of pneumonia with four deaths, and three deaths from all other causes. There were only two cases of typhoid fever with no death. After four or five weeks in Camp Tanner, the troops were mustered into the regular service and left for the national camps. It seems that at least some preparation for good water and for medical and surgical supplies for the small army might have been provided by the war department in five or six weeks' time, but I am quite sure that such provision was not made. I make no charges, but am simply trying to state facts.

The newspapers gave such an account of the general confusion at Washington that I felt quite sure there would not be provision made for medical and surgical supplies for the Illinois toops. I therefore laid the matter before Adjutant General Reece and Governor Tanner. I suggested that we furnish each regiment with a thirty day supply of medicines and surgical dressings and a minor operating case. They authorized me to do this. Each regiment left Springfield with two large packing cases of supplies. Nearly all the regimental surgeons later thanked me for this service. I remember particularly that Major Sullivan of the Seventh regiment wrote me that when they reached Camp Alger within sight of Washington, D. C., they found that none of the other regiments there was supplied with medicine. The word went out that the Seventh Illinois had supplies. The post commander made a requisition on the Seventh to turn over its supplies, and the medical officers of the Seventh preserved their supplies only by burying them. A number of the Illinois troops, notably the First Cavalry, went to Chattanooga, where ten per cent. of the strength were taken sick with typhoid and several died. The same held true of the camp at Jacksonville, Fla., where there were 1,500 cases of typhoid in the corps of 30,000. The sickness in the regiments of the regular army encamped alongside the volunteers was remarkably less than that of the latter.

The scandal of the unpreparedness of all departments of fighting forces of the United States on land is mentioned with shamed faces to this day. The navy was better prepared and made a proud record. Fortunately our contest was with a weak and decadent nation. If it had been against a strong and vigilant nation, our record might have been different. Before leaving the subject of Camp Tanner I might say that soon after the rendezvous began the surgeon general, Senn, took charge of the medical department. He secured a subject and each night gave a lecture describing the various surgical operations such as amputations, resections, and ligations, performing them on the cadaver. However valuable these eloquent and instructive lectures were, I am free to say that they were not what was needed for the fifty surgeons just beginning service in a war in the field. I am quite sure that had lectures been given at Camp Tanner on the methods of water sterilization and personal hygiene of troops, much saving of life might have resulted. The fact is that probably not one hundred surgical operations were performed on the 12,000 Illinois troops during the whole war, while on the other hand there were probably not less than 2,000 cases of preventable illness and a number of deaths.

To emphasize this preliminary statement I insert here the advertisement of the Harvard Medical School, offering to give this summer a course in military medicine:

> One result of the European war has been the realization by intelligent citizens that this country is very inadequately prepared to meet a foreign invasion, and a conviction on the part of many that a foreign war is at least a possibility which we should be prepared to meet. We know, from our own experience in the Civil War and in the Spanish-American war, as well as from information about the present war in Europe, that physicians in civil life are not capable of becoming efficient army officers without additional training. Any adequate plan of military preparedness necessarily involves provision for the proper medical care of our soldiers. The medical profession must be prepared to meet the demand for efficient medical officers or face the disgraceful fact that its imperfect knowledge of camp sanitation and of the administrative duties of a medical officer is responsible for greater loss of life among our soldiers than are the bullets of any enemy. Such was the story in the Spanish-American war, where the chief losses were in regiments in camp, which never left this country. We must not allow this national humiliation—this disgrace to the medical profession—to be repeated.
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> The Harvard Medical School may well feel proud of what it has already done for the cause of humanity in connection with the European war. It has organized and sent abroad three complete hospital units, whose combined terms of service amount to twelve months; and Professor Strong and other instructors took a prominent part in the successful campaign against typhus fever in Serbia. We are not satisfied, however, to rest upon these laurels, but are determined to do all in our power to aid the cause of preparedness in this country.
>
> Few appreciate the magnitude of this problem of applying proper medical care for a large army. It is not improbable that in case of war we should need to put in the field an army of a million men; the experience of the present war forbids us to think seriously of smaller numbers. For such an army there should be ready from twelve to fifteen thousand well trained medical officers. This would mean approximately one in ten of the registered physicians of the United States.
>
> We have at present in the regular army, including contract surgeons, only 550 medical officers. If we add the medical officers of the militia and the relatively small number of those in the medical reserve corps who are now prepared for actual field service, the number of properly prepared physicians now available is not over twelve to fifteen hundred—or approximately one tenth of the number that would be needed for any serious foreign war. It is a mistake to think that efficient medical officers, any more than efficient soldiers, can be had without training, for the efficiency of the army depends on preserving its health. When nine tenths of the medical officers, in case of war, must come from civilian physicians who are at present untrained for such work, is it not the duty of every patriotic physician to prepare himself for such possible service, if he can do so? Is it not the duty of our medical schools to afford opportunities for such training, as far as they can?

We must not forget to record the great medical triumph of our army medical corps, which came as a result of the occupation of Cuba, viz., the discovery of the sources of yellow fever made by Surgeon Walter Reed, in 1900, and the consequent possible eradication of this disease from the tropics. It is believed that this discovery alone has been worth in life and treasure all the expenditure and suffering endured in the war of 1898. We must also render homage to our medical corps, which holds the front rank in making possible the Panama Canal. Never in the history of the world has the medical military officer stood as high as he stands today.

We not infrequently hear it said that, in case of war, civil surgeons could quickly assume the duties of army surgeons, and, aided perhaps by railroad and executive officers and the comparatively few medical officers of the regular army, could meet the problems of caring for the wounded successfully. So far as the actual surgical treatment of wounds is concerned this is true. But, as the late Doctor Rodman, president of the American Medical Association, recently said in his testimony before the committee of Congress: "I went into the army as a contract surgeon in 1880 and served seventeen months. The strictly professional part of my work was the easiest part of what I had to do." Without doubt, hospital units for base hospitals, composed of carefully selected civil surgeons, would be of great value. A glance at the list of duties of the army medical corps, however, will show the need for special training. As given in the surgeon general's report to the chairman of the committee of military affairs, House of Representatives, these are:

> *a.* Professional care of the sick and wounded in garrison, on the march, in camp, on the battlefield, and after removal therefrom.
>
> *b.* Investigating the sanitary conditions of the army and making recommendations in reference thereto, including the location of permanent camps and posts, the adoption of systems of water supply and purifications, and the disposal of wastes.
>
> *c.* Making physical examinations of officers and enlisted men.
>
> *d.* The management and control of military hospitals.
>
> *e.* The recruitment, instruction, and control of the hospital corps and the army nurse corps.
>
> *f.* Furnishing all medical and hospital supplies.
>
> *g.* The direction and execution of all measures of public health among the inhabitants of occupied territory.
>
> *h.* The methodical disposition of the sick and wounded, so as to insure the retention of those effective and to relieve the fighting force of the noneffective.
>
> *i.* The transportation of the sick and wounded.
>
> *j.* The establishment of aid stations, dressing stations, hospitals, and other formations for the care of the sick and wounded.
>
> *k.* The preparation and preservation of individual records of sickness and injury in order that claims may be adjudicated with justice to the government and to the individual.
>
> *l.* The instruction of the troops in personal hygiene.
>
> *m.* In addition to these duties, specifically prescribed, medical officers are required to act as members of retiring boards, examining boards, and courts martial, and as instructors for the organized militia.

In view of these facts I suggest the following statements: The Illinois State Medical Society at its annual session of 1916 believed that:

> 1. The members of this organization are anxious and willing to prepare themselves for proper professional service during any crisis which may arise, and which may necessitate our fellow citizens taking up arms.
>
> 2. The duties of the medical profession in the event of war become so important and onerous that not less than seven surgeons should be provided for every 1,000 troops.
>
> 3. Schools and camps for the instruction of medical men in the duties peculiar to army service should be provided in the near future, and all registered medical men between the ages of twenty-three and forty-five years who can prove themselves physically and mentally fit for service, should be eligible to receive this instruction.
>
> 4. The death rate of the medical corps in modern wars has become so great that to prevent a deficiency of trained men, no medical man should be allowed to serve in the ranks. (The losses of medical officers in the German army up to November, 1915, were 1,491; of the Austrian army, 1,722.)
>
> 5. The preparedness and skill of the German medical corps has been of remarkable value to the army of that nation. Undoubtedly the other leading nations have gradually been able to become nearly as efficient. But the lesson of German preparedness of the medical corps should not be forgotten in preparing ourselves. With all the

preparations made, the German medical army was found lacking in the early days of the war. Professor Czerny has stated that numerous trains loaded with wounded came into Heidelberg unprovided with either surgeons or nurses.

6. Should it be necessary to call out the estimated full war strength of the nation, namely 20,000,000 soldiers, a minimum of 140,000 surgeons would be required. There would then only be about 25,000 remaining to render medical and surgical aid to approximately 80,000,000 people. The possibility of these conditions should be considered and suitable provision be made to meet them.

7. The American light automobile ambulance has been shown to be so valuable in the European war that this form of conveyance in ample numbers should be provided for our forces with the least possible delay. On the 1st day of May, 1916, as I understand it, not a single auto ambulance was listed in the equipment of our army.

8. The x ray and giant magnet have become so essential in the treatment of wounds made by modern weapons that the army should be amply provided with these instruments of precision. It would be interesting to know whether the army is supplied with these instruments in portable form.

9. The modern chemical and biological laboratories have been shown to be essential to care and maintenance of any army by—

a. Providing serum for prevention or inoculation against or for the cure of typhus, typhoid, tetanus, smallpox, cholera, dysentery, diphtheria, erysipelas, gonorrhea, and syphilis.

b. For securing safe water supplies.

c. For the destruction of infecting insects, rodents or parasites, such as mosquitoes, lice, flies, rats, etc.

10. Our experience in civil practice, as well as the remarkable revelations of the great war abroad, have shown that alcohol in every form should be rigidly excluded from the camps of the recruit and the seasoned veteran.

11. Notwithstanding the strenuous efforts made to prevent venereal diseases in the foreign armies, we learn that there has been very great difficulty in combating diseases of this character during the present war. We therefore suggest that the methods of preventing such diseases in the United States army that were in use up to a recent period be again provided. It is wrong to ignore this danger.

12. In trench warfare the use of barbed wire, suffocating gases and hand grenades, as well as other means of destruction, have introduced new factors into the science of war. The medical supplies should be on hand and the medical profession taught how to treat these new methods of injuring soldiers.

13. Provision should be made to continue life and accident insurance of the profession while on war duty. This will probably necessitate increase in the rates of insurance at such a time.

14. Experience has proved that volunteer surgeons, i. e., those not connected with the regular service or the Red Cross service, and having no responsible standing, are not likely to render efficient service in time of war. The same principle applies to volunteer nurses, these being usually society women who desire to shine in the limelight for a brief period. Regular, continuous, systematic, intelligent service on the part of surgeons, nurses, and hospital employees is what counts in the time of stress.

15. One of the greatest services of medical men is the accurate statement of facts; example, each side early in the present war accused the other of using dum dum bullets. This was probably not true of either side. Each side has accused the other of burning out the eyes of children, cutting off the hands of old people. This has been shown to be probably not true of either side. The facts of war are always distressing enough. They should not be magnified by enormous untruths.

16. Finally and above all, the medical profession should exercise its highest powers of mental and moral restraint and insist that humane methods and thoughts be uppermost, even in the face of carnage. Ordinary humanity has failed, religion has failed, all other known means of civilization have failed to prevent wars. The motto of the medical profession is: *Do no harm.* Let us hope that with this motto the brotherhood of medical men all over the world may rise to a great opportunity and find a basis on which all may unite to bring peace and good will between all men now and forevermore.

RUBELLA OR GERMAN MEASLES.

A Study,

By Edward Gray, M. D.,
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Cases of rubella present themselves before the family practitioner in but small number, in general, and usually of only the mildest type; it has been my fortune to see 283 cases since June, 1908, of all types, and it will be the object of this paper to summarize the experience gained thereby and to present some practical deductions relating to causation, diagnosis, prognosis, and treatment.

It is a misfortune that this disease is known under so many different names; for example, roseola, French measles, German measles, false or bastard measles, hybrid scarlatina, Rötheln; and a number of others. While the International List of Causes of Death recognizes the term German measles, it is clear to me that rubella is the best title: for this malady is neither measles nor scarlet fever, nor a hybrid of the two, but an independent, contagious, eruptive fever, specific and epidemic; and characteristic in its history of incubation, invasion, eruption, and clinical course. It affects children chiefly, but not exclusively. I have a list of forty adults between twenty and fifty years of age, whom I saw mostly during 1911. The history of these adults will be shown to be important in the variety of symptoms.

Rubella is doubtless a germ disease as shown by its period of incubation, invasion, exacerbation, and decline, although the exact germ or living principle has not yet been discovered. It occurs in epidemics affecting mainly the families of the better classes and the inmates of institutions, particularly of orphan asylums. The contagion resides probably in the oral and nasal secretions and certainly in the desquamated epithelium. The period of contagiousness extends probably from the first outbreak of the rash until desquamation is nearly completed. Neither measles nor scarlatina protects against rubella nor does it protect against them. It is less protective against itself than has been supposed; for of the sixty-three or sixty-four cases occurring in 1908 one third, or twenty-one cases, had relapsed in 1911. Five of these twenty-one were in adults, twenty years old or over. The writer in the *Reference Handbook of the Medical Sciences*, VI, who records that "there are no clearly proved instances of its recurrence in the same individual," would doubtless wish to withdraw that statement now, twenty-one recurrences having fallen under the eye of a single observer. A case of relapse also occurred in 1908; all these were in children. No case of reincidence or relapse was severe or fatal. This favorable issue is the more interesting because one patient, a boy ten years old, is the only one in whom a sequela—namely, acute nephritis—developed. This was in 1908 and was the sole instance of the kind in the whole series of 283 cases.

ETIOLOGY.

Age. Rubella is a disease *sui generis* commonly affecting children, and these chiefly between the ages of three and fifteen years. These children belong mainly to the families of the better classes, or else are inmates of institutions or homes, orphan asylums in particular. Adults do not always escape; it has been my lot to see thirty-six adults affected (among 158 cases), distributed thus: Twenty-four cases between twenty and thirty years; six cases between thirty and forty; six cases between forty and fifty; thirteen of these were in men and twenty-three in women. It is propagated by itself and by no other malady. This point needs some emphasis in view of an article in the *Lancet* so recently as June 29, 1911, wherein the writer sets forth the notion that rubella is a variety of measles. The distinction may best be shown in the paragraphs given to diagnosis.

SYMPTOMS.

The chief symptoms of rubella are: A stage of incubation; a stage of invasion (though this is frequently absent); a characteristic maculopapular rash or exanthem; swelling and induration of various lymphatic glands, particularly the postcervical and inguinal; swelling of the tonsils and sometimes pharyngitis; fever, usually of mild type; and desquamation of cuticle.

The period of incubation is usually twelve or fourteen days, but may vary between eight and twenty. Twelve was the average here in 1908 and 1912; and fourteen (infrequently fifteen or sixteen) in 1911. Never is the stage of incubation so brief as in scarlet fever. In mild cases the stage of invasion is often skipped, but it is usually seen in the severer cases. While it may last from three to fifteen hours, it is ordinarily brief. The usual history is that the child has gone to bed apparently well and has waked in the morning with the rash. Headache, rigors, convulsions, and vomiting are exceptional; but headache and backache are common enough in adults and were so marked in four of our recent cases as to recall variola. At the close of this stage and concurrently with the rash, occurs the important symptom of enlargement of the postauricular, postcervical, and other lymphatic glands. The chief visible symptom, namely, the rash, now appears. It begins on the neck and along the lower jaw from the nostrils and mouth to behind the ears and spreads rapidly downward over the whole body. In rare cases it appears first on the back or chest. It may, exceptionally, halt with distinct intervals, so that there are two or three crops; this occurred in 1911 in the person of the first grown woman affected here, an employee. It is possible for the rash to fade on the chest and face before invading the limbs, but the usual course is steady, and it reaches the feet in from twelve to twenty-four hours. The exanthem consists of very minute macules or maculopapules of a pink or pale rose color with areas of untinged skin between, seldom confluent. The more discrete the eruption, the more it looks like measles; the more confluent it is, the more it resembles scarlet fever; but the color has never, in my estimation, the vividness belonging to scarlatina. Its hue is best seen upon the back and the inner surface of the thighs. It is hardly elevated above the surface. It presents two types; one strongly resembling measles, which has been named rubella morbilliformis; and the other, like scarlatina, rubella scarlatiniformis. Doubtless the idea of a hybrid disease arose from this circumstance. "The eruption may reach its height in one part before appearing in another; this is a point of value in diagnosis and of contrast to scarlatina and measles." Over any particular area the rash may begin to fade in a few hours, and this fading is seldom delayed beyond twelve hours. It has been noted to disappear one day and then return. Before fading the rash may be greatly altered by the spreading of a bright red flush over the face and neck, and of a fine punctate rash like that of scarlet fever on the limbs at the same time. General erythematous redness of the skin has been noticed. The duration of the eruption is from one and a half to three days, two and a half or three being the usual course. The rash is seldom accompanied by itching, which, if present, is but mild and mentioned only on questioning. A faint brownish yellow pigmentation may sometimes be observed after the eruption has subsided. It seems to have no relation to the severity of the rash. During the stage of eruption a mild fever is usually present, between 99.5° and 101° F.; sometimes, however, in the more severe cases it runs to 102° or even 103°. A temperature exceeding 101° should cause a search for complications. In three cases presenting the complication of acute endocarditis I have seen a temperature of 106°, 109.2°, and 109.6° F. respectively. Manifestly the hyperpyrexia was due to the malignant endocarditis, not to the rubella. The rate of the pulse and of the respiration accords with the degree of fever.

The second cardinal symptom of rubella is the swelling of the postauricular, postcervical, suboccipital, and inguinal glands. This sign may be called well nigh pathognomonic. The enlargement of the glands about the neck always occurs early and, according to Dawson Williams, may be detected as long as a week before the rash appears. I have not sufficient data upon this point just now to either confirm or confute. The enlargement of the inguinal glands was particularly noticed in the epidemic of 1911, existing in at least two thirds of the cases and in every adult. The inguinal glands do not swell so early as the cervical; usually not until the rash begins to decline; while swelling of the postcervical ones probably never fails to take place. This adenopathy is important in differential diagnosis. Some patients, a few only, had, in the summer of 1911, swollen lymphatic glands below the axilla, not in it.

Infrequently the eruption will affect some of the mucous membranes; we may therefore have a pharyngitis or an amygdalitis; a conjunctivitis; a bronchitis, or even some diarrhea. This was the type of the third epidemic seen here (1912), which strongly resembled morbilli in course and complications and led to three deaths by bronchopneumonia. Out of 158 cases in 1911 there were three mild sore throats; two of catarrhal conjunctivitis; two of bronchitis; two of amygdalitis in 1908, but no pneumonia in either 1908 or 1911. Bronchopenumonia appeared in 1912. All these affections of the mucous membranes were mild and soon subsided in 1908 and 1911; they were severe in 1912. In crowded populations, however, bronchitis and pneumonia may prove formidable; or when the morbilliform type prevails as in our epidemic of 1912.

Headache, rigors, convulsions, and vomiting are all exceptional. Headache and backache often occur among adults, and were so marked in four such cases in 1911 as to suggest variola.

The final symptom is desquamation. This is characteristically fine, branlike, or furfuraceous; often scanty in amount, but sometimes moderately copious and in small flakes. The quantity is sometimes so small that the medical attendant or the family is led to believe that there is none; on the other hand, it is occasionally copious enough to allow of shaking out a measurable quantity from the sheets every morning. When it is scanty, we must search under the clavicles. My recent experience leads me to believe that the family physician usually sees but a portion of the desquamation; that in private practice the patients are allowed to dress early and much of the phenomenon of desquamation escapes observation. The duration of desquamation is from one to three weeks; it is prolonged in the ratio of the thickness of the patient's cuticle. I have seen a single case where it lasted for more than a month owing to the thickness of cuticle upon the sole of the patient's foot. Our experience here negatives Edwards's assertion that the average duration is perhaps three days; ten or twelve is nearer the fact. In case of doubt put the patient into a bath: as the water begins to dry off the skin, the shedding of cuticle shows most plainly. The period of desquamation has a practical relation to prophylaxis, as must be apparent.

COMPLICATIONS.

Complications are not frequent in rubella. When present, pharyngitis, tonsillitis, and bronchitis are the most common; then gastrointestinal catarrh and conjunctivitis; while maladies of the serous membranes must be rare. Nevertheless, pleurisy does sometimes occur, and three cases of malignant endocarditis have fallen under my own observation; while Edwards has met one case of tuberculous meningitis. Bronchopneumonia and pleuropneumonia occur as complications and were the cause of three deaths in the third epidemic; they are probable in centres of population. The only sequel which I have encountered thus far is a single case of desquamative nephritis in a boy five years old. While it was a very marked case, the patient recovered in ten days.

DIAGNOSIS.

A typical case of German measles should present little difficulty in recognition. The diagnosis is made by inspection of the skin and of the faucial mucous membrane, and by palpation of the lymphatic glands behind the ears and in the neck; and—later, usually—in the groin; and in the more doubtful cases by the history of the invasion. The diagnosis usually lies between this disease and measles or scarlet fever; but occasionally glandular fever and the nonfebrile skin affections erythema and dermatitis have to be reckoned with. The distinction from measles is usually ready. While the rash of rubella often strikingly resembles that of measles, it is paler in color and presents no characteristic crescentic grouping. More important is the difference in the prodromata; the presence of Koplik's spots in measles and their absence in rubella; the abrupt onset of rubella, often without catarrhal symptoms, and the three days of the latter in measles preceding the outbreak of the rash. Measles, moreover, has not the swollen glands characteristic of rubella; while the conjunctivitis and the fever in measles are of far higher grade and last longer than in rubella. Bronchitis and bronchopneumonia are frequent complications in measles, seldom seen in rubella. Rubella is also devoid of the peculiar mouse nest odor often noticeable in measles. If the existence of measles without eruption is admitted, then the distinction would be difficult indeed and must depend entirely upon the position of the lymphatic glands affected plus the history of the invasion. Typical cases of scarlet fever and rubella are readily distinguished; for the former is a more intense disease in every way; in the nausea and vomiting and—in young children—the convulsions of the prodromal stage; in the pronounced sore throat and the strawberry tongue; in the vivid color of the rash and its broad extent, leaving no sound skin visible in the affected area; in the burning and itching; in the longer duration of the eruption and the much higher degree of the fever; in the frequency and severity of the complications; and in the lamellar character of the desquamation and the large size of the flakes. It will sometimes be impossible to discriminate, by the eye alone, between aberrant cases of rubella and scarlatina, particularly in some of the very mild cases of the latter. It is just here that the position of the swollen glands becomes of so much importance. Involvement of the tonsils is an integral part of scarlet fever; and likewise, usually, of the anterior cervical glands. Hence, if the swollen glands lie at the angle of the jaw or under the tongue, the malady is scarlet fever and we should be on our guard against a postscarlatinal nephritis, particularly in these mild cases; if, however, the glands involved are posterior to the sternomastoid muscle, or border the axilla, or lie in the groin, then the disease is rubella. The time of incubation is also a factor in diagnosis, the period for rubella averaging two and a half to three or four times as long as that for scarlet fever; and being longer than that of measles by two to six days.

Given a case presenting a fleeting rash and a fever of 102° F. or more, the rash not seen by the physician, then the diagnosis between rubella and glandular fever might be impracticable for a day or two until the staining of the skin and a desquamation should declare for rubella or their absence for glandular fever. The latter, moreover, has an incubation period of about seven days, one half that of rubella.

I have seen cases of rubella devoid of apparent fever, which required discrimination from lichen, dermatitis venenata, or other nonfebrile skin diseases. A little attention decides: for the skin disease is not accompanied by chains of enlarged glands nor preceded by a definite period of incubation; and the poison oak eruption itches intensely.

While a "fourth disease" has been described it has not obtained sufficient recognition to demand notice here. Edwards's table of differential diagnosis is to be commended.

PROGNOSIS.

In private practice there are few diseases so free from danger as rubella; but in hospitals and institutions, particularly in large cities, and when the surroundings are unhygienic, or in cases in which the child has been delicate previously, it is more serious. The mortality may then run between one and nine per cent. Edwards, in Philadelphia, records 4.25 per cent. I have myself seen six fatal cases in 284, or a trifle over two per cent. (2.1). Complications and sequelæ are comparatively seldom seen, "and when present are usually of the mildest character" (Holt). When the complication is either endocarditis, pneumonia, or diphtheria, it may well prove fatal. Endocarditis was the cause of the first fatalities which I have seen and was confirmed in each instance by post mortem examination; bronchopneumonia, of the second group of three fatalities.

The type of various epidemics varies in phenomena and severity. No one of the three epidemics observed by me resembled any other.

TREATMENT.

There is no known specific for rubella; but it is not well to leave the patient without treatment; for it has been shown that serious and alarming complications may arise, and there is a recorded mortality of 4.25 per cent. in one epidemic and nine per cent. in another. Some thoughtful care may therefore well be given to treatment. The patient should be put to bed, in isolation, and kept there until the rash has disappeared, say four or five days. Much objection will often be made to going to bed, but the objection should be overruled. All unnecessary visiting is to be prohibited, and isolation should be maintained for seventeen to twenty-one days, or until desquamation is completed. The diet should be light and fitted to the requirements of each case. The young patient is to be allowed to drink freely milk well diluted with lime water, barley water, or lithia water; or whey or weak lemonade, or orange water flavored with glycerin. A cup of hot milk and water flavored with a little tea or perhaps cocoa will be of advantage at times in bringing out the eruption.

The one drug which may be commended for its service is calcium sulphide; but it must be in efficient preparation, well protected from the atmosphere. The doses will be according to the patient's condition rather than the age, and will vary from one sixth grain to two grains or more; and the interval from three hours down to a half hour. The object is to render the blood an unwholesome field for the growth of the specific virus. For restlessness and fever, sweet spirit of nitre, in sweetened water, alone or combined sometimes with spiritus mindereri, will be useful. Sponging with Epsom salt solution, one ounce to sixteen of tepid water, is grateful and soothing.

If the temperature should run high and internal congestion be present, no remedy acts so well in my hands as veratrin; a pellet of 1/125 grain every half hour or twenty minutes until an impression is made and then the interval increased according to the judgment of the physician. Intestinal catarrh may require treatment by calomel, bismuth, and pepsin, or, more often, by a tablet of the combined sulphocarbolates of zinc, sodium, and calcium (the so called intestinal antiseptic tablet), crushed for the small and difficult patients and administered in hot water or milk. The pharynx may require to be mopped or sprayed with liquor antisepticus, one part to three or four of water. The heart and lungs should be examined daily. Some patients will require a stimulant treatment by strychnine, sparteine sulphate, digitalis, wine, brandy, or ammonium carbonate, and frequently administered liquid nourishment, including beef extract or occasionally some other meat juice. Complications on the part of the larynx or trachea will be met by steam inhalations; and of the bronchi according to the state of dryness, rales, or cough present; likewise of the kidney according to the pathological condition.

During convalescence a general tonic should be exhibited of malt extract or of quinine, iron, cod-liver oil, occasionally nux vomica. Desquamation need not debar the patient from exercise out of doors under due precautions. At the close of desquamation the patient should receive a good warm bath and the underwear and night wear be put through a thorough disinfection. The régime for any contagious disease should be put in force at the outset and maintained. The nurse and the visiting physician should wear a gown in the sick room, and on leaving the room the clothing and shoes and hands should be sprayed with a disinfecting solution, as of lysol or carbolic acid. In an institution it is desirable to add a cap to the gown. Very important is rigid disinfection of the underwear of the patients. When it comes off it should be soaked in corrosive sublimate solution for an hour or more before going into the wash tub. Disinfection of the person and his clothing and bedding, especially at the end of the stage of desquamation, is decidedly indicated. When the case has terminated, the bed itself should be disinfected and the bedroom well fumigated before the quarantine is raised. Other children in the family should not be allowed to go to school until the period of incubation is over (fifteen to twenty-one days).

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THE MICROSCOPE IN DERMATOLOGY.

An Aid to the General Practitioner in the Diagnosis of Diseases of the Skin.

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The skin, because of its exposed position, is admirably suited for study of the diseases which may affect it. A correct diagnosis is possible in most cases, when the observer's eye is trained and his conception of pathology is clear. Not every physician can obtain a thorough training in all branches of medicine and become an expert diagnostician, but in dermatology the general practitioner is aided in diagnosis by the exposed position of the integument and accessibility of the abnormal products from the lesions, which may be examined in the laboratory.

It is not intended to describe the evidence which may be obtained by biopsy, by culture, or by the other complicated procedures, but to outline what may be studied by any one who possesses a microscope. These examinations, although simple, will at first tax one's patience. The technic is readily acquired and with a little practice one becomes adept.

The first disease to be considered is syphilis. An early positive diagnosis of this disease can be made by means of the microscope when the causative agent, Spirochæta pallida, is found in the secretion from the initial lesion. This organism is present, not only in the primary stage, but occasionally in mucous patches, condylomata, and the ulcerative lesions of the tertiary stage. A description of Spirochæta pallida, its differentiation from microorganisms resembling it, and the methods for determining its presence in a lesion will be given in the next number of this journal.

The chancroid or soft chancre, although not of such frequence as formerly, is sufficiently prevalent occasionally to cause confusion. Only too often do we see patients suffering from late symptoms of lues in whom the initial lesion had been called a soft chancre. This should not happen. It is desirable to examine every ulcer on the genitals, for spirochetes and the streptobacilli of Ducrey, the exciting agents of the chancroid.

This microorganism is a very short Gram negative bacillus with rounded extremities, measuring from one to two micra in length and about one half a micron in thickness. It does not form spores, is not flagellated, and is not motile. As a rule it is extracellular, but occasionally may be found within pus cells.

To demonstrate its presence, a loopful of the pus from the ulcer should be smeared on a glass slide, dried by passing it several times through a flame, and then stained by the Gram method.

A positive diagnosis of scabies may be made by finding Acarus scabiei or its eggs in the skin. A burrow is removed by shaving the skin with a razor blade. It is then floated in a drop of glycerin on a glass slide, covered with a cover glass, and examined with the low power lens. This organism is an oval or round body having four anterior legs provided with suckers and four posterior legs with bristles, and is found at one extremity of the burrow. This burrow also contains the eggs and feces extruded by the itch mite. The former are round or oval, granular bodies with a double contour; while the latter appear as irregular oval, brownish black, homogeneous masses about one half as large as the eggs.

Unna describes under the name, ringworm, various lesions produced by the activities of a mould fungus in the epidermis. These lesions are varied, their common characteristics are: 1. They cause scaling; 2, a disease of the hair leading to its destruction, or at least its temporary loss, but not, 3, the formation of scutula. This last point distinguishes the group of trichophytosis from that of favus, the second from a series of other fungus diseases (pityriasis versicolor, tinea imbricata, etc), the first from certain diseases of the hair shaft alone.

There are various conditions from which ringworm must be differentiated. On the scalp it may resemble alopecia areata, favus, eczema, seborrhea, psoriasis, and scaly tubercular syphilides. Kerion may resemble carbuncle, blastomycetic granuloma, pustulonodular syphiloderm, and tuberculosis. The superficial type of ringworm occurring on the beard bears a strong resemblance to eczema, sycosis barbæ, impetigo contagiosa, and to a lesser degree to the tubercular syphilides. The deep seated ringworm is to be differentiated from carbuncle, furunculosis, and some types of the late secondary pustulonodular syphiloderm. Blastomycosis and actinomycosis also suggest this form of trichophytosis. Tinea circinata may be confounded with favus of the general cutaneous surface, impetigo contagiosa, eczema, seborrhea, the scaling syphilides, pityriasis rosea, psoriasis and tinea imbricata. Ringworm of the palms and soles, beside resembling the diseases enumerated, also looks like the squamous syphilide. When ringworm attacks the nails exclusively, a positive diagnosis can be made only by means of the microscope. In this locality the disease may resemble chronic eczema, favus, psoriasis, or any of the atrophic diseases of the nails. Occasionally tuberculosis or syphilis may be simulated. Tinea cruris should be differentiated from eczema, seborrhea, and erythrasma.

On a special medium, Sabouraud was able to isolate more than forty strains of the ringworm fungus. He believes that individual strains are capable of producing specific types of lesions. Unna, on the other hand, professes to have seen one strain produce both vesicles and nodes. For all practical purposes, only two groups of the fungus need be studied, namely, the small spore or Microsporon audouini and the large spored variety, or Megalosporon trichophyton. The latter is again subdivided according to its relation to the hair; when within the hair shaft it is called endothrix, when outside it is called ectothrix; and when found within and without the hair, ectoendothrix.

The microsporon is more likely to occur in children, commonly on the scalp and the general cutaneous surface. When on the scalp it produces round, almost bald areas with prominent follicles covered with fine scales. The hairs in these areas are short and broken off, present the appearance of exclamation points, and when pulled come out easily. It is a fungus consisting of mycelia and spores. The mycelia when demonstrated are few in number, resemble narrow transparent tubes, and branch in all directions, but not as promiscuously as in favus. The spores are small, round, or oval, occasionally doubly contoured and granular. As a rule they are numerous and packed densely in the form of a mosaic.

The trichophyton occurs in lesions found in adults, on the beard, on the nails, and on the palms and soles, where it produces eczemalike patches. When on the scalp the trichophyton produces round or irregularly shaped patches covered with grayish white scales, often containing twisted dead hairs. It is the fungus usually found in kerion. Tinea cruris is caused by a large spored fungus, Epidermophyton inguinale. The megalosporon consists of mycelia and spores. The spores are two or three times as large as those of the microsporon and arranged to resemble chains of beads. The mycelia are larger and do not branch as much as those of the small spored fungus. The spores and mycelia occurring outside the hair are usually larger than those found within the shaft. Spores are found most frequently at the frayed extremities of the hair. Some of the scales and crusts contain disintegrated hairs which are always full of spores.

The demonstration of the fungus in hairs, scales, and crusts is rendered simple by soaking the material in a solution of potassium hydroxide and then examining the unstained specimen with the high power lens. Staining the specimens is unnecessary and not as clear as the simple method. In selecting hairs for examination, those should be examined which appear diseased, that is, broken off, dry, twisted, or bent, and those which emerge from prominent and purulent follicles. The hair should come away upon the slightest traction. When scales are to be examined, they should be scraped from the lesion and then cut and macerated into the finest particles.

The hair, crust, or scale is placed in a twenty-five per cent. solution of potassium hydroxide on a glass slide and a cover glass is placed gently over it. To hasten the action of the caustic alkali the specimen should be heated over a Bunsen flame until bubbles rise. The specimen may be examined immediately, but it is better to wait five minutes, as it becomes clearer. It is best to allow scrapings from nails to stand overnight in the potassium hydroxide solution. Most beautiful specimens are obtained by soaking the affected material in the alkaline solution for several days. These may be preserved by allowing glycerin to float under the cover glass and sealing the edges with paraffin.

Care should be observed not to mistake fat droplets and epithelial cells for spores. This may be prevented to a degree by washing the hairs and scales in ether before using the caustic solution. Air bubbles also resembles spores, but their number may be reduced to a minimum by the use of plenty of solution. Besides, air bubbles are usually larger than spores, more irregular, and not granular.

A typical case of favus, consisting of heaps of sulphur yellow, cupped crusts and grayish asbestos-like scales occurring on a scalp showing more or less alopecia and scarring, offers no difficulty in diagnosis. Favus does not always present this picture, however, but may appear as a moist or dry dermatitis or resemble ringworm, lupus erythematosus, folliculitis decalvans, alopecia areata, or psoriasis. All of these possess their own characteristic signs, but often a diagnosis cannot be made except with the microscope.

When making a microscopic examination of material from a favus lesion, we look for the exciting agent, a vegetable fungus called Achorion schönleinii. This fungus consists of mycelia and spores. The mycelia are long, narrow, straight, or curved grayish filaments with numerous branches which spread irregularly in all directions. The spores are round, oval or dumbbell shaped, and more elongated than those of the ringworm fungus. They are numerous and may be found easily in the affected hair or scutula. The scutula are composed almost entirely of spores. They are distinguished most readily at the loose margin of the crust rather than at the more densely packed centre.

The spores of the achorion are longer, more irregular in size and shape, more elongated and abundant than the ringworm spores. The bubbles formed by heating the potassium hydroxide solution tend to persist; whereas those formed in ringworm preparations disappear when the slide is set aside for several hours.

Chromophytosis, pityriasis, or tinea versicolor is a disease of the skin characterized by the development of variously sized and shaped spots and patches which are slightly scaly and yellowish brown in color. It is caused by the growth of a vegetable parasite, Microsporon furfur, in the stratum corneum. This disease is of particular importance to the general practitioner because of the likelihood of confounding it with a fading syphilide. It should be distinguished from seborrheic eczema, pityriasis rosea, and erythrasma. If the diagnosis is in doubt, a microscopic examination for fungi should be made.

Microsporon furfur consists of a dense network of long narrow interlacing mycelia and highly refractile spores which are larger than those of ringworm and arranged in clumps like bunches of grapes; occasionally free spores may be found. The bent pieces of hyphæ and isolated collections of spores are considered by Unna to be characteristic of this condition. The fungus is found with the low power lens in the scales and stratum corneum.

Blastomycosis, although uncommon, is found, and resembles tuberculosis verrucosa cutis, lupus vulgaris, vegetating forms of syphilis, and occasionally epithelioma, kerion, suppurations, whether follicular or not, carbuncle, and actinomycosis. A positive diagnosis may always be made by means of the microscope.

A loopful of pus from one of the miliary abscesses should be mixed with a drop of a saline solution on a cover glass and then inverted over a hollow slide. The blastomycetes are found in the hanging drop. They are yeast fungi, usually round or oval, but occasionally irregular in shape, having an outer homogeneous capsule, a transparent zone, and a central granular protoplasm containing a vacuole. They often show budding. Mycelia are found in specimens from a pure culture.

Fully developed leprosy with nodules and maculo-anesthetic areas is readily diagnosed. A macular leprosy, however, may be confounded with vitiligo, chloasma, morphœa, white spot disease, or syringomyelia, and a nodular with syphilis, lupus vulgaris, multiple benign sarcoid of Boeck, or erythema multiforme. In doubtful cases an attempt should be made to find the lepra bacillus which is abundant in the nasal secretion.

The bacillus is straight or slightly curved, with pointed or rounded extremities. It stains irregularly and shows clear spaces within its protoplasm. It occurs in chains and resembles the tubercle and smegma bacilli. It differs from the smegma bacillus in not being decolorized by alcohol after staining with carbol fuchsin, and from the tubercle bacillus by retaining the stain after immersion in cold carbol fuchsin for six to eight minutes. It is found most often in the secretion obtained from an ulcer almost always present at the junction of the bony and cartilaginous portions of the nasal septum.

Anthrax attacks the skin in two forms; in one, the more common, a malignant pustule appears, which may resemble a boil or a carbuncle, in the other an edema of the tissue occurs which has to be differentiated from erysipelas. A positive diagnosis is always urgent and the discovery of the anthrax bacillus in the discharge makes this possible. A loopful of the pus from the pustule or a few drops aspirated from the deeper infiltration should be smeared on a slide, dried by passing through a flame, and stained with the ordinary anilin dyes or better by the Gram method.

Bacillus anthracis, when found, is usually in the form of short rods with expanded extremities which are slightly concave. Threads made up of these short rods joined end to end are also observed. It is a Gram positive bacillus.

Glanders may be acute or chronic. An acute attack manifests itself in the skin by the formation of a gangrenous ulcer which may resemble a chancroid or a syphilitic ulcer and constitutionally by severe symptoms of intoxication. Chronic glanders assumes the appearance of a benign infection and on the skin produces a chronic abscess which may resemble a broken down gumma, a cold abscess, or sporotrichosis.

An early diagnosis is made by finding Bacillus mallei in the lesion. It is always difficult to find this bacillus in a smear of the pus. Nevertheless, we are more likely to find it if the loop is carried to the floor of the lesion and the deep tissues are scraped. The pus thus obtained, when smeared and stained with methylene blue, may show the bacillus.

This bacillus is a rod with rounded or pointed extremities. It stains irregularly with the ordinary anilin dyes. A satisfactory stain is always difficult to obtain because it is decolorized so rapidly.

In writing this paper an attempt has been made to point out the value of the microscope in the diagnosis of the more common diseases of the skin. Anthrax, glanders, blastomycosis, and leprosy, although uncommon, are seen occasionally and are therefore included. The microscope may also aid in the diagnosis of rare diseases, namely, sporotrichosis, actinomycosis, mycetoma (Madura foot), filarial elephantiasis, Dhobie itch, tinea imbricata, erythrasma, and pinta. There are several diseases of the hair in which a microscopic examination with the low power lens is indicated. These are monilethrix, trichorrhexis nodosa, piedra, and tinea nodosa. It is emphasized that in dermatology, as in any other branch of medicine, the microscope is used mainly for corroborative evidence.

2 West 120th Street.

Treatment of Facial Neuralgia (*Journal of the Med. Soc. of N. J.*, May, 1916):

℞ Mentholis ....grams 5;
Ætheris sulphurici . }
Spiritus lavandulæ, } ....āā grams 50.
M. Sig.: Rub gently over affected area.

CONNELLAN-KING DIPLOCOCCUS INFECTION OF THE TONSIL.*

Its Relation to Arthritis.

By James Joseph King, A. B., M. D.,
New York,
Attending Laryngologist, Hospital for the Ruptured and Crippled; Assistant Surgeon, New York Eye and Ear Infirmary; Etc.

At the Hospital for the Ruptured and Crippled we have been greatly interested in focal infections, especially in the tonsils and teeth, and the relation of these infections to arthritis. It is now generally accepted that most patients with septic arthritis or conditions that were formerly classified as rheumatism have a focus of infection somewhere else in the body. In many such cases I have treated the infection in the tonsils, eradicated it by the use of autogenous vaccines, and later, in most instances, enucleated the tonsils with gratifying results.

About two years ago we noted the frequent presence of a Gram negative diplococcus in the crypts of the tonsils in such cases. An autogenous vaccine was prepared from this microorganism and used in these early cases with brilliant results. For lack of a better name this Gram negative diplococcus has been called the Connellan-King diplococcus. Doctor Gibney has asked me to describe some of the cases that we have treated by these vaccines and enucleation of tonsils.

Case I. J. M., a boy, aged thirteen years, was referred to me two months ago. His family and personal history were unimportant, except that he had had two attacks of tonsillitis in his life, one five years ago and the last one four weeks ago. For about six months he had complained of pains in both feet and ankles. A short time before the pains in the feet started he turned on one of his ankles while playing baseball.

When he first came to me, both ankles were much swollen and the pains in the feet and ankles were considerable. A culture made from the crypts of the tonsil showed the Connellan-King diplococcus, from which an autogenous vaccine was prepared. The boy was given 100 million of the vaccine by hypodermic injection, every second day, until he had received eight or nine injections. By this time the pains and swelling in the feet and ankles had disappeared. No other treatment was given.

On November 20, 1915, his tonsils were enucleated at the New York Eye and Ear Infirmary. He made an uneventful recovery.

Case II. E. W., aged twenty-nine years, still under treatment, was referred to me about one month ago for the consideration of his tonsils and a possible connection with an osteoarthritis of the right hip. He gave no history of tonsillitis.

On July 5th, after a game of golf, he first noticed pain in his right hip, and he did not recall any trauma at the time which might have caused it. He went about as usual for two weeks without treatment. Then his doctor prescribed counterirritants, and kept him at home and in bed for one week. He then went to Nassau Hospital, where he was kept in bed with Buck's extension on for three weeks, during which time he was given remedies for rheumatism. After leaving the hospital he felt better and was able to get about with a crutch and stick. He soon gave up the crutch and could walk fairly well, but limped and tired easily.

When I first saw him, in November, he complained of pain in his right hip and walked with a little limp. Doctor Gibney had found little impairment of the function of the hip. The x ray plate showed an osteoarthritis of the right hip. A culture made from his large and cryptic tonsils showed the Connellan-King diplococcus.

This patient is now receiving autogenous vaccine and thinks he is improving. His tonsils were enucleated at the New York Eye and Ear Infirmary on December 20th. It is too early yet to tell what will be the final result on his hip, but he has improved markedly in a general way since his tonsillar infection was cleared up with the vaccines, followed by tonsillectomy.

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*Presented before the third annual meeting of the Alumni Association of the Hospital for the Ruptured and Crippled, New York, December 18, 1915.

CASE III. Miss E. S., aged twenty-six years, was reported before the New York County Medical Society on October 26, 1915, and her story was published in the *Medical Record*, December 4, 1915. She was first seen by me in consultation, July 26, 1915. She had an attack of tonsillitis five and a half years ago. One month later, arthritis developed in feet and knees, which was progressive in spite of almost constant treatment, including four or five trips, each of one month's duration, to Mount Clemens. Examination: Joints of hands and knees much swollen and deformed, and continual pains in them. Valvular disease, with a distinct mitral regurgitation. Tonsils moderate in size, purplish in hue. Culture from them revealed Conellan-King diplococci. She was treated with the vaccines by her physician, with great improvement. On September 8, 1915, I enucleated the tonsils at the New York Eye and Ear Infirmary. She made an uneventful recovery.

This patient's joints are now almost normal in size and free from pains. Her heart murmur persists, but is softer in character, and I believe improved. Her color and general appearance are greatly improved.

The following tentative conclusions have been drawn from the observations made in about 100 cases:

1. Every case of septic arthritis, commonly called rheumatism, is caused by a focus of infection somewhere in the body. It may be found in the tonsils, ears, accessory sinuses, gastroenteric tract, genitourinary tract, or in and around the teeth.

2. The most frequent focus is found in the mouth and the tonsils, on account of their crypts, harbor the focus more frequently than any other gland or organ.

3. A very simple tonsillitis may be followed by complications—nephritis, endocarditis, myocarditis, arthritis—so serious as to endanger life.

4. The infection may become latent and produce serious trouble weeks or months later at a point far removed from its original site.

5. In view of an occasional general sepsis coming on after a tonsillectomy, it is necessary, where possible, to clear up the infection with autogenous vaccines before operation. In this way the danger of a general sepsis following tonsillectomy is eliminated.

6. Where the focus of infection in arthritis exists in the tonsil, the treatment should consist in the injection of autogenous vaccines until all infection is cleared up, and then the removal of the tonsils by enucleation.

7. The complications in this infection are caused by an absorption of chemical toxines rather than by a bacteriemia.

8. In the Connellan-King diplococci infections the blood changes seem to be a simple anemia and in a few cases a slight increase in the number of eosinophiles, four to six per cent.

9. In some cases symptoms other than those for which treatment was instituted have disappeared. For instance, in one patient with arthritis and marked ethmoiditis the culture was obtained from the throat. After two weeks of treatment the arthritis was only slightly improved, but the ethmoiditis and pus in the nose had entirely disappeared.

10. The treatments with the vaccines have been eminently satisfactory in a high percentage of the cases treated.

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40 EAST FORTY-FIRST STREET.

MAYER'S SOLUTION.

A Noncaustic Hypochlorite,

By DOUGLAS H. STEWART, M. D., F. A. C. S.,
New York.

More than ten years ago, both laboratory and clinical experience united to teach the writer of this communication that freshly made acid solutions of the hypochlorites were better than the alkaline ones. But every day use of the latter upon wounds and upon surgeon's hands was proof of a value so considerable that reemployment after abandonment has now become a surgical habit; and this despite such handicaps as irritation or even cauterization, an odor which suggests cesspools, and a constant search for something better, less irritant, and with a lower degree of offense to the nostrils of the neighborhood.

Experimentation with acids, solid or fluid, and comparison of many solutions resulted in the selection of vinegar and of alum, as the most convenient representatives of their respective types. Alum had the advantage over boric acid, of higher acidity and of withstanding the destructive powers of boiling water. Renewed trial confirms the opinion that there is nothing superior to aluminum sulphate for acidulating hypochlorite solutions. For such a purpose it stands as high among the solid acids as does vinegar among the liquid.

France has given us the *eau de Javelle,* which was first made at the mill of Javelle, whence its name, Javelle water, corrupted by washerwomen into the colloquial javlin water, termed by the *National Formulary* liquor potassæ chlorinatæ. The same country has named liquor sodæ chlorinatæ for Labarraque, who first brought it to public attention, and now Charles Mayer, in *Paris médical* for February 19, 1916, sends us his experience with magnesium hypochlorite. If the reader will term this Mayer's solution, or name the liquid liquor magnesii chlorinati, and will consult either the original record or the excellent abstract published in the NEW YORK MEDICAL JOURNAL for April 29, 1916, page 854, repetition will be unnecessary and this brief essay will be free to limit itself to the results obtained by clinical trial (250 applications).[1]

The first step was the proper one, preliminary to any clinical proof, viz., a verification of the facts, and the writer feels that he went far enough into that matter to be very sure that he may corroborate the essentials of the *Paris médical* article. As the trial itself progressed, it became more and more evident that the method of preparation could be improved and simplified. The result of following Mayer's method is a precipitate of gypsum, or wet plaster of Paris, or calcium sulphate, call it which you will. It is fine, smooth, and free from grit; that is, it is of no medicinal value and in a wound is an inert foreign body, making necessary decanting or straining or scrupulous care in employing only the supernatant solution. But if five parts of calx chlorinata, ten parts of Epsom salts, and a heavy glass microscope slide are wrapped up in a single thickness of gauze which is securely tied with thread, and the whole package is dropped into one hundred parts of vinegar, then in one hour the solution is ready for use. In an emergency a level teaspoonful of the lime, a heaping teaspoonful of the salts may be put into a tumbler and four ounces of vinegar poured upon them, and the whole allowed to stand for fifteen minutes, or longer, and if then strained, it may be used ad libitum, either in full strength or diluted with an equal quantity of water. It may be applied with a wad of toilet paper for cleansing purposes, but cuts and lacerations should be filled with it by means of an eye dropper, which may be allowed to float in the tumbler except when in actual use.[1]

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[1] Mayer prepares his solution by bringing together 190 grams of magnesium sulphate and 100 grams of calcium chloride, each previously dissolved in two litres of water, and filtering the resulting mixture in order to remove the precipitated calcium sulphate. To secure an absolutely clear solution, complete deposit of the precipitate must be awaited and the overlying clear fluid decanted. NEW YORK MEDICAL JOURNAL, *loco cituto.*

At first bandages and wipes were soaked in the solution and were applied as wet as possible, but attempted removal proved them to be adherent two days after such application. They were no worse than the usual bandages or compresses, perhaps, but the patients were educated to expect nonsticking dressings, and this anticipation and its disappointment brought about the following technic: 1. The solution was applied without stint; 2, castor oil was applied to all the dressings which came in contact with the wound. This was selected because of the excellent results obtained from some experiments with chlorinated castor oil. These, together with some curious matters connected therewith, might prove interesting, but they are foreign to the present purpose. If castor oil was not at hand, carron oil was a fair substitute. Bandages fried in deep lard, like doughnuts, were ideal, but troublesome to prepare. Ointments were bad. Drainage and similar matters lost none of their importance. In fact, just why an antiseptic should be expected to take the place of drainage is rather beyond comprehension. One thing was even more inexplicable; occasionally wounds that did need drainage would sometimes heal after Mayer's solution had been injected with a small syringe into all their pockets.

Physicians who will not or cannot sterilize their own fingers may find comfort from this hypothetical question and its answer. Suppose we were obliged to treat thirty septic wounds and that we used the usual hospital method of hand cleansing with a sterile rubber glove for covering. Suppose again that on the opposite hand, after an ordinary wash off, was drawn a good cotton glove and that hand and glove were held in Mayer's solution for two minutes or until they were well wet. And suppose finally that we proceeded to treat the aforesaid thirty septic cases with one hand gloved with rubber and dry, and the other hand cotton-gloved and wet with a powerful germicide such as the Liquor Magnesii hypochloriti—which hand would come through the ordeal with the fewest pathogenic organisms upon it and which glove would, if uncleansed, be the safest to use upon subsequent wounds? The answer of the Petri dish is exactly what we should expect. The rubber glove never proved to be sterile, nor did the hand which it covered, unless some means had been employed to check perspiration. Pus and wound secretions could be put upon the dorsum or the palm of the hand, and if the cotton glove was kept wet with the solution, then both glove and hand would be found sterile, or at least the word "vigorous" would be quite inapplicable to any culture growth which could be obtained from the germ cargo.

Three things stood out prominently, in this preliminary trial, as attributes of Mayer's solution:

1. Its ability to stimulate scab formation.

2. The small size of the scars obtained from large wounds and the increased speed of healing in previously sluggish septic conditions.

3. The simplicity of extemporaneous preparation. Chlorinated lime, Epsom salts, and vinegar are obtainable at almost any feed store or grocery, to say nothing of a drug store or a department store.

Not the least of its good qualities is the way it will deodorize bad smelling shoes or septic vaginæ. At the same time its own odor is slight and not to be compared in offensiveness with that of the ordinary alkaline mixtures of the hypochlorites.

The writer has had his hands in the aforesaid magnesium liquid for an hour or two, day after day, and cannot discover that the epidermis is damaged nor has anything more than trivial eczema appeared upon the skins with which he brought it in contact. Much more irritation, from eczema or dermatitis, is occasionally found after the application of the sodium citrate-normal salt solution than has as yet appeared from the use of liquor magnesii chlorinati.

A demonstration is always of value. He who wishes to witness one may bind any other solution of five per cent. calx chlorinata upon his right arm, and this one may be bandaged upon his left. His judgment will not waver long in deciding his preference for one of the two, nor will there be any doubt in his mind for some hours after the bandages are removed.

128 WEST EIGHTY-SIXTH STREET.

Relation of Gout to Nephritis.—Morris S. Fine (*Journal A. M. A.*, June 24, 1916) makes a study of uric acid concentration in the blood of cases of typical early gout and of early interstitial nephritis and shows that in both conditions the earliest abnormality was an increase in this acid. Determinations of the urea nitrogen, creatinin nitrogen, the phthalein output and the systolic blood pressure in these cases gave results which were strikingly parallel for the two groups. So close was the parallelism that he questions: Is gout only a stage in the development of interstitial nephritis? His observations point to the value of determining blood uric acid as a means of early diagnosis of gout in otherwise doubtful cases, and also to the danger of erring in diagnosis between very early gout and very early interstitial nephritis.

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[1] If time permits, take chlorinated lime, one part, acetic acid, 80 per cent., 1 5 part, and add Epsom salts, two parts, previously dissolved in twenty parts of water.

Abstracts and Reviews.

CONSERVATIVE SURGICAL CORRECTION OF RETARDATIVE DISPLACEMENTS OF THE COLON.

By Charles A. L. Reed, M. D.,
Cincinnati.

Dr. Charles A. L. Reed, of Cincinnati, at the recent 1916 Detroit meeting of the American Medical Association, discussed constipation due to various forms of mechanical conditions in the intestines. Measures for their relief, he said, were radical and conservative. The radical operations were short circuiting and excision, or a combination of both. They were indicated when no other procedure would reestablish physiological drainage of the intestines. Conservative operation consisted in fixation of the displaced colon to relieve retardative angulation and mechanical interference with circulation. The operation devised by the speaker was called parietal implantation of the colon.

The essential steps of the procedure were as follows:

Lower zone of the abdomen: 1. Make a median incision from near the umbilicus to near the pubes.

2. Explore the viscera preferably in the following order: *a,* cecum; *b,* appendix; *c,* first twelve inches of the terminal ileum; *d,* ascending and transverse colon; *e,* stomach; *f,* sigmoid; *g,* proximal intestinal surfaces; *h,* pelvic viscera.

3. Break up any adhesions that may be found.

4. As far as possible, correct all peritoneal abrasions that might have been made by breaking up adhesions, giving particular attention to those which might have resulted in exposure of the muscularis of the intestines.

5. Approximate the peritoneal margins and hold them together with hemostatic forceps, until all work in the upper zone of the abdomen had been finished.

6. If there had been adhesions, particularly if numerous or extensive, put a litre of hypertonic salt solution into the peritoneal cavity before completing closure of the lower incision.

Upper zone of the abdomen: 1. Make an incision transversely across the intercostal interval about three fourths of an inch below the tip of the ensiform cartilage, extending the same incision at an obtuse angle downward and to the right about a half inch below the costal margin for a distance of from five to six inches.

2. The incision just indicated divides, *a,* the integument; *b,* subcutaneous fat; *c,* superficial fascia; *d,* inner half of the left rectus; *e,* all of the right rectus; and, *f,* the inner margins of the external oblique, internal oblique, and the transversalis muscles, and, finally, *g,* the transversalis fascia through the entire length of the incision, care being taken not to extend the incision along this line through the peritoneum.

3. Begin at the epigastric fat and dissect the peritoneum away from the transversalis fascia for a distance of three quarters of an inch along the whole length of the incision.

4. Evert the lower flap by seizing the transversalis fascia at several points with deep bights of hemostatic forceps.

5. Divide the peritoneum and the ligamentum teres along the lower line of denudation and bring the ligamentum teres out through a puncture at the base of the peritoneal flap.

6. Explore the upper zone, particularly with reference to the stomach and duodenum, giving special attention to the frequently enveloping exudate, the gallbladder, and the pancreas.

7. Put the patient in the Trendelenburg position, bringing the transverse colon and omentum out through the incision.

8. Fasten the omentum to the denuded transversalis fascia by stitching the base of the former by its external surface, to the lower margin of the denuded surface of the latter, employing a continuous interrupted suture and exercising care to avoid wounding or constricting important omental vessels.

9. Close the wound by the following steps: *a.* Stitch the margin of the upper peritoneal flap to the under surface of the transversalis fascia. *b.* Approximate the divided ends of the muscles by continuous interrupted sutures of chromic gut passed through the superficial fascia, muscle, and transversalis fascia. *c.* Fortify the last line of sutures with a few silkworm gut sutures passed through the fascia, muscle, and skin. *d.* Close the skin according to the operator's usual method, that employed by the writer being preferably the continuous buttonhole stitch with fine catgut.

The speaker reported 226 consecutive cases of parietal implantation without a death, and sixty-two cases in which the operation was combined with other procedures, with six deaths. The results, so far as functional restoration with consequent good health was concerned, were reported to be highly satisfactory. Demonstrations by x rays were presented, showing the implantation intact after more than five years.

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Contemporary Comment

Medical Aspects of the Mexican Situation.—The great European war has now lasted for nearly two years, and to the ordinary perception there is no immediate indication of it ending, says the *Boston Medical and Surgical Journal* for July 6, 1916. Though many persons feel, or at least express, confidence in the manner of its termination, to impartial observers its outcome still seems as much as ever on the knees of the gods. Naturally, as members of a dispassionate profession and citizens of a neutral country, American physicians, whatever their personal sympathies, have been largely interested in the medical aspects of the great war. . . .

The United States is now menaced, more acutely than at any time since April, 1914, with the incidence of a second Mexican war, which at the present writing seems likely of declaration within a short time. In the several States throughout the Union during the past week, the militia, or national guard, has been mobilized, with the demonstration of varying degrees of efficiency and preparedness. A number of these militia units have already been dispatched to the Mexican frontier. Whether or not this mobilization proves to be the precursor of actual war, the Mexican situation is not only of intense concern to all Americans, but in its medical aspects affords to the American profession matter of import for action, as well as observation. The occasion and opportunity have arrived when the medical corps of the army and navy, the medical officers of the national guard, and, in the event of extensive hostilities, civilian members of the profession will either demonstrate or fail to demonstrate their fitness to deal competently and creditably with the medical urgencies that arise in time of war; and it is most earnestly to be hoped and expected that this demonstration will be in every respect a credit to the American profession. . . . Unlike law, medicine speaks with an even stronger and more authoritative voice in times of war than in times of peace; and in Mexico, as well as in Europe, the work of our profession will be not only to succor the injured, but to maintain the standards and purposes of civilization through the inevitable barbarisms of war.

The Conquest of Syphilis.—Under this head, *Northwest Medicine* for April observes: "Greatly as mankind has benefited through the newer tests for syphilis, they have not been without harm. Many of the patients treated with one or two doses of salvarsan when that treatment first came out, with promise of complete cure, have neglected other treatment and are now returning, often with thoroughly established syphilis of the internal organs or of the nervous system. There is little good introduced into this vale of tears that is entirely free from evil. And so, not only has salvarsan therapy been abused, but its diagnostic congeners, serology and spinal puncture, have also been badly used. Sometimes through scientific zeal, sometimes through commercialization, these worthy adjuvants to the practice of medicine have done considerable harm. As a result of too enthusiastic acceptance, especially of the recent vaccine tests, there is great danger that many persons will be pronounced syphilitic on exceedingly doubtful evidence. This is especially true of congenital syphilis, in which the exploiters and purveyors of luetin teach that positive reactions are practically certain, notwithstanding that there may be no clinical evidence to substantiate them in a given case. That luetin and possibly other skin tests may react positively in the presence of syphilis is not disputed. The danger is that they may react where no syphilis is present. The tests are fairly delicate and in reading the results the differences between positive and negative findings are inconsiderable. A multitude of accidents may enter into the reaction, such as infection, constitutional dyscrasia, etc. It must not be forgotten that many laboratories are presided over by enthusiasts who have had little clinical training and who lack any aptitude for that kind of training. They discover, the clinician must apply. Exuberant claims are seized upon by the commercial world, advertised and lauded in season and out, with results that at times seem more than risky. Until absolute proof is forthcoming, these tests should be accepted and used cautiously and, unless backed up by other evidence, should be taken with great reserve, lest they bring fear, doubt, and unnecessary treatment into the lives of persons who do not deserve such affliction. If in the fullness of time they shall be proved as certain, they will benefit humanity, but until absolute proof is forthcoming they should be accepted in a conservative spirit worthy of scientists. Taking in its entirety, the problem of syphilis is being solved. Sanitary and moral prophylaxis go hand in hand with better diagnosis and better treatment and offer hopeful prospects of a complete conquest of the scourge."

Cancer of the Skin.—During the ten years ending with 1909, out of every 100,000 deaths in the United States, 918 were due to cancer of the skin. Two per cent. of all skin diseases are cancerous. This state of affairs is certainly susceptible of vast improvement, as a result of the conscientious efforts of the whole profession to recognize and remove precancerous lesions of the skin; and to teach their patients the doctrine of early removal of suspicious lesions. Thus the *Journal of the Florida Medical Association* for May, 1916, in some notes credited to the American Society for the Control of Cancer. The notes continue:

Cancer here as elsewhere never begins in a healthy area of skin, but has as a warning of its approach one of the precancerous lesions, which is usually present quite long enough to give ample time for its recognition and removal. The skin, being in plain view, offers unusual advantages for frequent inspection of a suspicious area and unusual opportunities for the safe, simple, easy, complete, and inexpensive removal of its potential cancers; therefore every death from cancer of the skin is a monument to carelessness or procrastination on the part of the physician or the patient, or both.

Some of the usual precursors of cancer of the skin are:

1. Pigmental moles, the kind which are deeply pigmented, and slightly raised above the surface of the skin. These are especially dangerous if they occupy an area which is constantly irritated by the clothing, shaving, etc.
2. The dark, dirty looking, warty growths of the exposed surfaces of the skin of those past middle life. These are the so called senile warts, about five per cent. of which become cancerous.
3. Small lumps in or just under the skin, remaining a long time, are frequently beginning cancers. They are at least never normal, and act as an outstanding invitation to cancerous development.
4. Unhealed ulcers, which have persistently resisted ordinary treatment for a few weeks, with the exception of varicose and syphilitic ulcers, should be looked upon as possible grave enemies to their hosts, and should be got rid of at once.

These and other localized areas of chronic skin lesions are so very apparent, so easy of complete and painless removal by the knife, under local anesthesia, and so frequently the sites upon which cancer later develops, that the physician is untrue to his patient and himself who does not take a definite stand in urging their removal in the early, precancerous stage.

Editorial Notes and Comments

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NEW YORK, SATURDAY, JULY 15, 1916.

THE PARALYSIS SCARE.

We intimated in our issue for July 8th (page 77) that the present endemic of infantile paralysis was by no means so terrible a thing as the first newspaper reports made out. The disease has been with us annually for many years, and has taken its toll in death and disability. It was always thought to be a hot weather disease and usually invaded the city in August; it came early this year, and after cool weather, and seems to have greatly impressed some one new either to office or to sources of publicity. When we compare the results of our annual visitations of croup and diphtheria, the latter with its postdiphtheritic paralysis, we are moved with difficulty to regard as serious the invasion of anterior poliomyelitis. Nature may have concluded that the legs of New Yorkers, especially in movements toward civic cleanliness, were becoming obsolete, and have therefore decided gradually to eliminate them. The plague seems to have reached its height and to be already abating; but we hope that a lesson in cleanliness has been taught. Already myth had begun to hover about the attack; for example, the second submarine boat from Germany is to bring us a specific treatment, probably to heap coals of fire on our heads. The board of health is reported to be working along with the Rockefeller Institute on a new serum. It was about time that the authorities awoke to a disease the treatment of which has not varied for over a quarter of a century.

PHYSICAL STANDARDS FOR THE RECRUIT.

To the medical man the most significant feature of the recent unfruitful attempt to bring the army up to its full strength is the disproportion between the number of applicants and the number rejected because they were not up to the physical standards set by the army. The as yet incomplete returns, while the number of the applicants is not small, point to an acceptance of less than ten per cent. This condition may mean either that the applicants as a class represent the physical standards of the country, which are, therefore, wofully poor; or that the physical standards placed for the military arm of the government are unusually high. If the rejections are due to the low physical standards of the people at large, then the matter is, indeed, of grave significance—and radical measures must be devised to bring the citizenship up to effective standards. Either all individuals of school age and school attendance must have forced upon them systematic physical training of the ordinary or of the military variety, or there must be compulsory military training some time after the school age. In the last analysis military training is but physical training with a purpose.

With the advance of civilization, with its machinery and its labor saving devices—with the ease of living added, there is an ultimate tendency to disuse of the muscles and their consequent atrophy. There is a devolutionary change in the muscular system inimical to the physical standards of the race. Any form of training that would develop the muscles, or recreate the habit of their use would redound to the benefit of the race. Individuals with good development of the muscles find a positive pleasure from their use, while to those undeveloped nothing is more irksome. It is the adversity to which a species is put or the amount of use to which its powers are put that produces the resisting qualities necessary to the survival of the fittest. A nation whose physical standards become greatly reduced, must give up its place among nations.

On the other hand, if the number of the rejections for military service is due to the rigidness of the physical requirements, a rigidness exceeding actual necessity, then these must be revised in order to give volunteers the advantages of this training and the people the benefit of the service of those fitted for them. There must be a determination between the physical deficiencies due to occupational, postural, or hygienic, and therefore correctable conditions, and those which are substantial and go to the very root of army efficiency. In the former, it is military life which they need to bring them up to the standard; the admission of such defectives would be the means of reclaiming a class of people who now form a great part of the inefficient citizenship of every community. The medical examination would often be the means of calling attention for the first time to the presence of correctable defects at the bottom of previous inefficiency. The maintenance of even a very large army might be justified if it trained a defective citizenship into an effective one.

Physical training encourages pride in physical development. It is an achievement well worth more effort than is now expended on it. Military training engenders a care of the body at least as particular as the care given to military equipment. Physical development is the basic factor in preventive medicine. The incidence of disease varies under all circumstances, in any community, according to the physical development and the resisting power of the inhabitants.

THE ROENTGENOGRAPHIC DIAGNOSIS OF EARLY PULMONARY TUBERCULOSIS.

Many clinicians are not aware of the progress in the many fields of röntgenology. American workers hold a prominent place; to mention Case, Cole, Carman, George, Pfahler, Crane, Dunham, Hickey, and Caldwell in the United States means the omission of other excellent workers in this specialty. It is generally recognized that the x ray is practically indispensable to give a definite picture of what is going on within the lung, to back up the clinical findings, and to help in the early diagnosis of tuberculosis. For the past six years or more Kennon Dunham, of Cincinnati, has been devoting his energies to the study of the röntgenographic findings in pulmonary tuberculosis, especially in its earliest stages. In 1911, the *Bulletin of the Johns Hopkins Hospital* contained papers on this subject by Dunham, Boardman, and Wolman. Dunham's ideas seemed so radical that acceptance of them was declined by many of his colleagues. Dunham did not permit this to dampen his ardor. He went ahead with his work, and his latest standpoint is given to us in the *American Journal of Röntgenology* for March, 1916. In his X Ray Examination of the Chest for Pulmonary Tuberculosis, just issued in Kelly's well known stereoclinic series, we may study the stereoröntgenographs reproducing various tuberculous conditions of the chest. The discussion still going on in röntgenological circles should not prevent us from carefully considering Dunham's views, since they can no longer be ignored by the average clinician. We give the gist of Dunham's findings.

He declares that the treelike shadows seen in ordinary chest plates are made up of the artery, the bronchus, the vein, the lymphatics, and their connective tissue. The artery and bronchus proceed from the roots to the periphery of the lung, often so close together as to interweave or overlap, each of the structures being accompanied by its lymphatics. A larger vein follows each main bronchus, but is situated at a considerable distance from it when compared with the artery which very closely follows all the branchings of the bronchial tree. This is the normal condition.

Now, in pulmonary tuberculosis, there are characteristic abnormal changes or densities of these linear markings or treelike shadows, which reach the periphery, are more or less fan shaped with the apex toward the hilus, and are characterized by a lack of homogeneity, since each trunk has distinct and characteristic markings. Dunham believes these abnormal densities in the linear markings to be due to tubercles situated along the bronchial tree, the linear markings representing the branches of the larger bronchi and their vessels (which latter two structures form the trunks). The spread of tuberculosis thus seems to be along the main trunks or bronchi, the tubercles forming along this pathway, and, even when still quite small, breaking into the bronchi which thus drain these minute cavities.

Dunham argues that although the early individual tubercles are too small to be seen röntgenographically, we can mark the results of their dissemination along the bronchial tree, extending in a fan shaped or cone shaped fashion from hilus to pleura, increasing the density of the lung tissue in these regions, and so changing the normal linear markings that they are "blotted out by a cloud effect" or "obscured by mottling and studdings" or "a heavy density over the entire area penetrated by the markings from several trunks." In fact, the author insists that if stereoscopic chest plates are well taken, they will show tuberculous disease when the clinician fails to secure signs of this condition by physical examination.

It is necessary to make a careful study of röntgenographs of normal lungs in order more easily to detect abnormal signs. It may be stated that although by the use of the röntgenograph little indistinct spots of increased density about the root of the lung can be detected before clinical examination determines their presence, still, according to some workers in this field, we cannot, in the present state of our knowledge, assert with positiveness that this means tuberculosis until the progress of the case definitely proves it.

The opponents of Dunham's interpretation of his findings assert that such spots may be due to inflammation of any sort, not necessarily of a tuberculous nature. It is also necessary to prove that such findings indicate active and not inactive tuberculosis. As already mentioned, one group of workers insists that we cannot or should not diagnose pulmonary tuberculosis until definite tubercles can be seen in the röntgenograph. Clinicians as well as röntgenologists have split into two camps on this issue. There is an increasing tendency, it seems, to accept Dunham's findings and his interpretations. At any rate it is certain that before long the question will be fought out and settled one way or the other.

No matter what the ultimate decision may be in this matter, there is no question that Dunham has done truly wonderful, intensive work in his chosen field. One important point is that we should not fail to make the examination and study by the stereoscopic method. This is emphasized by all who have had experience in röntgenology of the chest. The history of the patient is most important to determine whether or not the process in the lungs, as discovered by x ray, is active or inactive.

THE ETYMOLOGY OF DIABETES.

Some lexicographers have derived our word diabetes from the Greek διαβήτης, a pair of compasses, on account of the attitude presumably taken very often in the twenty-four hours by sufferers from the disease. Dr. Robert Saundby, of Birmingham, writes to the *British Medical Journal* for June 24, 1916, to remind such etymologists that an erect and straddling attitude would be regarded as distinctly indecent by all oriental peoples, among whom a squatting position is universal when urinating. Despite the opinion of the distinguished former president of the British Medical Association, when we recall that Latinists used the word diabetes for siphon (although *sipho* was also in use), it is difficult to escape the conclusion that the word came to be applied to the disease through the exercise of a sense of humor on the part of some onomatologist of the middle ages. Doctor Saundby, however, characterizes all efforts to trace the origin of the name to be mere guesswork.

GASTROINTESTINAL STASIS.

The last word has not been said as to the causation of gastrointestinal stasis, by this term meaning an atonic condition of the digestive tract which impedes the passage of the intestinal contents, particularly in the stomach, the duodenum, the ileocecal region, and the colon. The views of Arbuthnot Lane are well known. In brief, Lane teaches that the delayed passage is due to an atonic intestine dragging on peritoneal bands, a condition which results in the formation of obstructive kinks in the lumen of the intestine. For this condition he advocates radical surgical treatment.

In contradistinction to Lane's view is the theory more recently propounded by Keith and Alvarez, who have applied modern ideas of cardiac physiology to the gastrointestinal tract. Keith (*Proceedings Royal Society of Medicine,* October 15, 1915) ascribes the fault to defective innervation. He describes six nodal areas of the gastrointestinal tract corresponding to certain "definite aggregations of myenteric plexus." These nodal regions he locates at the junction of the esophagus and cardia, the pylorus, the third portion of the duodenum, the junction of the jejunum and ileum, the lower extremity of the ileum, and the distal colon. The section of the plexus corresponding to each node, Keith believes, regulates the rhythmic contraction of its musculature. A disturbance of rhythm in one zone is capable of producing similar disturbances in adjoining zones.

On examination of specimens from operation and autopsy, Keith found that there were gross pathological changes in the nerve fibres of Auerbach's plexus corresponding to his nodal areas. These structural changes he considers sufficient to account for the intestinal disorder and alimentary stasis. He states that the stasis occurs in parts adjacent to the nodal zones.

Still more recently, McClure (*loco citato,* February, 1916) has discussed the subject, and is inclined to consider Lane's peritoneal bands and Keith's structural changes in the plexus of Auerbach alike as late events in the process and secondary to a low grade of inflammation caused by bacteria or toxins passing through an atonic intestinal wall. He believes that intestinal stasis without infection may exist for a long time and give no symptoms but constipation. McClure does not hold that stasis must always precede infection, however, as he states that infection may often give rise to stasis in persons predisposed to disturbances of innervation in the alimentary tract. He finds certain definite skin areas corresponding to the nodal areas of Keith and Alvarez, stimulation of which leads to reflex stimulation of the nodal areas of the intestine, and he points out that appropriate stimulation of the reflex skin area thus becomes a valuable mode of treatment in intestinal stasis.

None of the theories thus far described can be accepted as final, but each has an undoubted measure of truth. The theory of Keith and Alvarez has much to commend it, and if McClure's observations can be placed on a sound practical basis by abundant confirmation, it will make a distinct contribution to our understanding and treatment of gastrointestinal stasis.

WHITE GANGRENE.

Major A. J. Hull, F. R. C. S., R. A. M. C., communicates to the *British Medical Journal* for May 27, 1916, a note on a form of gangrene seen only in the lower extremity. In addition to gas gangrene and gangrene due to direct interference with the blood supply, writes Major Hull, septic gunshot wounds may be attacked by a very acute infective process which is a form of gangrene. The condition appears to be an acute streptococcal infection, and is, in appearance, not unlike phlegmasia alba dolens, but is attended by the local circumstances associated with gangrene and the general effects of an acute toxemia. The skin is glazed and white, moist, cold, and pits on firm pressure. A firm edema is present, and the distal pulse in the limb cannot be felt. The glazed white appearance of the distended skin, instead of the usual redness, seems particularly characteristic. Early in the condition the patient is extremely ill, with clammy, sweating face, and running pulse. The condition is usually fatal, and death occurs in about twelve hours. The infection is so rapidly fatal that little change in the color of the limb has been noticed. In patients who have survived somewhat longer, it has been found that during the last few hours the limb has become mottled black and the discharge exceedingly foul. No gas has been noticed in the discharge, and no crackling has been detected in the tissues. The appearance is somewhat suggestive of deep seated pus, owing to the tension of the skin, but, on making an incision into the limb, the wound merely oozes serum. In the more severe and extensive forms the infection is so severe and the patient's condition so serious that no treatment appears practicable. Amputation gives the only chance of recovery.

THE PREVENTION OF TRENCH FOOT.

The importance of this condition leads J. G. Blackman, of Portsmouth, to record, in the *British Medical Journal* for June 10th, the fact that in all the cases which have come under his observation in a small relief hospital the men confessed to being the subjects of sweating feet. Other factors are doubtless involved, but it is easy to conceive that the accumulation of this sweat, under conditions of warfare, would soon swarm with bacteria and become highly irritating to the skin and subcutaneous tissues. It would be interesting to observe whether trench foot selects the subjects of hyperidrosis. To prevent or mitigate the localized hyperidrosis Mr. Blackman has found the following treatment useful, in addition to the daily foot bath and change of socks: 1. Painting the feet with a forty per cent. formaldehyde solution. 2. A dusting powder composed of French chalk and zinc oxide, rubbed down with a few drops of formaldehyde and applied to the feet and inside of the socks. 3. A generous diet containing plenty of nitrogen.

Special Articles

INFANTILE PARALYSIS.

By BEVERLEY ROBINSON, M. D.,
New York.

During the last few days New York has been much alarmed by the number of cases of acute anterior poliomyelitis. The epidemic is of virulent type and its extension and duration are uncertain. There is no trustworthy remedy in the acute stage, and isolation is evidently the main dependence of the health board. Many deaths have already occurred and we know well what the future of many who survive will be. Too frequently they will be more or less crippled and have very imperfect use of the lower limbs.

The infectious nature of the disease is now widely recognized. Further, it is known that a third person may carry it, although at the time he may be perfectly well so far as symptoms go.

The only remedy thus far accepted is hexamethylenamine in frequently repeated doses. Its value, however, is not great, and even during the time of its taking, the disease has broken out. It behooves us to seek for something better.

I suggest to all physicians the use of ammonium salicylate, in frequently repeated doses. The dose should be, for a child two or three years old, from one to two grains every two hours. After twenty-four or forty-eight hours the dose should not be given so frequently.

The remedy advised has hitherto been little employed. I am confident from what I have observed of its great utility in the treatment of grippe and acute articular rheumatism, that it would be equally valuable in the treatment of infantile palsy.

As a salicylate it is surely of known germicidal value. As an ammonium salt it is stimulating and eliminates itself, in part, through the upper respiratory tract. It may be taken for one or two days, at least, without appreciable unpleasant effects, and it is unquestionably more indicated than any other drug I know of at present.

I hope to have it receive a wide trial and also to be compensated by knowing it has been useful. I trust my colleagues will let me know of any of their successes. To children it may be given dissolved in flavored water.

42 WEST THIRTY-SEVENTH STREET.

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News Items

Medico-Chirurgical Society of Central New York.—At the annual meeting of this society, held in Syracuse recently, the following officers were elected: President, Dr. Edward P. Hall, of Skaneateles; first vice-president, Dr. J. M. Keese, of Syracuse; second vice-president, Dr. L. S. Henry, of Syracuse; secretary and treasurer, Dr. E. A. Gayde, of Utica.

Doctor Darlington to Study Health of Army at the Mexican Border.—It is reported that Dr. Thomas Darlington, of New York, will be sent by the National Civic Federation to the Mexican border to study health conditions of the enlisted men of the army and the State militia. Special attention will be given to the causes of disease, to camp sanitation, and to food supplies. It is said that Secretary of War Baker approves of the plan,

Yellow Fever Commission Reaches South America.—The Yellow Fever Commission of the International Board of the Rockefeller Foundation, headed by Surgeon General William C. Gorgas, United States Army, arrived at Lima, Peru, on July 11th. The commission will study sanitary conditions at the port of Iquitos.

Prize for Infantile Paralysis Cure.—It is reported that Representative Isaac Siegel, of New York, has introduced into Congress a resolution appropriating $100,000 to be given as a reward to the person who succeeds in developing a cure for infantile paralysis. It is expected that the appropriation will be rushed through both houses.

Kentucky Valley Medical Association.—The following officers were elected at the annual meeting of the society, held in Richmond, Ky., on June 30th: Dr. Clarence H. Vaught, of Richmond, president; Dr. Wilson Bach, of Jackson, vice-president; Dr. J. H. Evans, of Beattyville, secretary and treasurer. Next year's meeting will be held in Jackson.

Cuba Quarantines Children.—According to cable despatches from Havana, the Cuban military authorities have adopted quarantine restrictions against United States children on account of the epidemic of infantile paralysis. In the future children arriving from American ports who have an abnormal temperature will be isolated until the trouble is diagnosed, while children in normal health will be kept under surveillance until the danger of infantile paralysis has passed.

New Britain Physicians Give Services to Country.—The New Britain, Conn., Medical Society, at a recent meeting, voted to give free medical attention to all persons who were in any way dependent upon the men who have gone to serve their country at the Mexican border. One of the local drug stores has offered to give free prescriptions to these persons also. The members of the society wish to emphasize the fact that this is not charity. It is the method they have adopted of aiding their country in the present crisis.

The Mayo Clinic to Establish a Base Hospital on the Mexican Border.—Colonel Jefferson R. Kean, Medical Corps, United States Army, who is director general of military relief of the American Red Cross Society, announces that a letter has been received from Dr. William J. Mayo, of Rochester, Minn., stating his willingness to organize a base hospital, the personnel and equipment of which are to be furnished by the Mayo Clinic. The number of medical officers in a base hospital is twenty-three, the number of beds 500, and the cost of the equipment is estimated at $25,000.

Connecticut State Health Officials Hold Annual Meeting.—The eighth annual convention of the health officers of the State of Connecticut was held in Middletown on June 30th. Dr. Edward K. Root, of Hartford, president of the Connecticut State Board of Health, presided. At the closing session steps were taken to perfect a permanent organization of the State health officials, and a resolution was adopted to that effect. The chairman was authorized to appoint a committee representative of the various health interests of the State, to prepare a constitution and bylaws and to call a meeting for purposes of organization.

American Association for the Study of Spondylotherapy.—The annual meeting of this association will be held in Chicago, September 18 to 21, 1916. An excellent program of papers will be presented, dealing with the latest advances in spondylotherapy, electronotherapy, reflex therapy, and physical therapy. All members of the medical profession are invited to attend. The officers of the association are: Dr. Albert Abrams, of San Francisco, honorary president; Dr. F. J. Bomberger, of Mapleton, Minn., president; Dr. William L. Heeve, of Brooklyn, N. Y., first vice-president; Dr. Valdemar Sillo, of New York, second vice-president; Dr. S. Edgar Bond, of Richmond, Ind., secretary-treasurer; executive committee, Dr. Edward J. Agnelly, of Detroit; Dr. Hugo Summa, of St. Louis, and Dr. J. W. Unger, of West Point, Miss. Dr. Bond will be glad to furnish full information regarding the meeting to all who are interested.

Base Hospitals for Massachusetts Troops.—Three base hospitals are to be established on the Mexican border for the benefit of Massachusetts troops. These institutions will be conducted by units drawn from the staffs of the Massachusetts General Hospital, the Boston City Hospital, and the Peter Bent Brigham Hospital. A fund of $25,000 is being collected for the support of this service.

Pacific Coast Oto-Ophthalmological Society.—At the recent annual meeting of the society, held in Portland, Ore., Dr. C. A. Veazie, of Spokane, was elected president; Dr. P. A. Jordan, of San José, Cal., first vice-president; Dr. Frank A. Burton, of San Diego, second vice-president; Dr. L. D. Greene, of San Francisco, secretary-treasurer. Next year's meeting will be held in Spokane.

A Special Meeting at the Academy on Infantile Paralysis.—On Thursday evening, July 13th, a special meeting was held at the New York Academy of Medicine for the purpose of discussing infantile paralysis. The following program was presented: What We Know About the Transmission of the Disease, by Dr. Simon Flexner; Clinical Types of the Disease, by Dr. Henry Koplik; Abortive and Nonparalytic Cases, Their Importance and Their Recognition, by Dr. George Draper; The Present Epidemic—the Types Which It Presents, by Dr. Louis C. Ager; Laboratory Aids in the Diagnosis, by Dr. Josephine B. Neal; Importance of the Present Epidemic, by Dr. Haven Emerson. A general discussion followed.

Sites for New Tuberculosis Hospitals.—A site has been selected for a new and larger county tuberculosis hospital in Broome County, N. Y., to take the place of the present institution, which is not only inadequate but is in an unsuitable location. The new site, which is near Chenango Bridge, has been informally approved by the State Department of Health. In Niagara County, a site has been selected by the Board of Supervisors about a mile and a half from Lockport, for the new hospital for which $100,000 was made available recently. Supervisors' committees in Herkimer, Rockland, and Nassau Counties are looking for sites for their county tuberculosis hospitals, and in each county several suitable properties are under consideration.

The First Hay Fever Ordinance.—A recent number of the *Weekly Bulletin* of the Department of Health of the City of New York, commented on the assertion that New Orleans was the first American city to adopt a hay fever ordinance providing for the cutting of weeds. It was pointed out that the board of health of the New York department adopted such a law at least six months previously. The department states that it is now in receipt of a letter from the health authorities of Savannah, Ga., calling attention to an ordinance providing for the removal of weeds and other vegetable growth, originally passed by the city of Savannah on August 28, 1900. This law was subsequently amended and in its present form dates from July 3, 1910.

The Infantile Paralysis Epidemic.—On Monday, July 10th, 103 new cases, with 14 deaths, were reported in greater New York, and on Tuesday there were 195 new cases, 115 in Brooklyn, with 32 deaths. Since the outbreak of the epidemic there has been a total of 1,278 cases, with 270 deaths. Everything known to science is being done by the health authorities to curb the spread of the disease. On Wednesday morning, Mayor Mitchel called a conference of the heads of city departments, the medical advisory board of the health department, and a number of prominent physicians, among them being Dr. Simon Flexner, Dr. L. Emmet Holt, Dr. William B. James, Dr. H. M. Biggs, Dr. William M. Polk, Dr. A. H. Doty, Dr. J. Winters Brannan, Dr. Abraham Jacobi, Dr. Walter B. James, Dr. Francis C. Wood, and Dr. Glentworth R. Butler. Congress has been asked to appropriate $135,000 to be used by the United States Public Health Service in fighting the epidemic in New York and to prevent its spread to other States. The Public Health Service reports that while cases of the disease have been reported from various parts of the country it is epidemic in New York city only.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Department of Biology, Olivet College.

Twenty-eighth Communication.

PHOSPHORUS.

Phosphorus is an irritant poison exerting a peculiar effect on parenchymatous and osteoblastic tissue. Although reports from different observers are not always in accord, the following sequence of processes seems usual. The irritation of phosphorus initiates a primary hyperemia of the cells of the alimentary tract, liver, and kidney; this is accompanied by a remarkable acceleration of the intracellular metabolic processes wherein the catalytic changes soon greatly exceed the anabolic; imperfectly metamorphosed products of the cells are thereby thrown into the circulation and the cells become infiltrated with minute fat globules from the blood stream. These fat globules soon coalesce and, with continuance of the endosmotic current of fat there ensues an intracellular pressure which rapidly lowers the vitality of the cells, resulting in necrosis and death. Following destruction of the epithelial cells, the structures beneath set up a protective growth of fibrous connective tissue, but this ultimately defeats tissue conservation by terminating in a static cirrhosis.

In some respects the action of phosphorus on bone is similar in the early stages, though without causing fatty infiltration. There is a stage of hyperemia and increased activity of the osteoblasts which results in a partial or complete substitution of cancellous tissue with dense compact bone, the medullary canal becoming larger and the bone harder and denser. But with the absorption of the cancellous tissue the actual strength of the bone is diminished, as since this cancellous tissue is of great service in distributing lines of stress, the bone also has its tensile strength lessened directly by a lowering of vitality, so that a condition akin to rickets frequently arises in cases of chronic poisoning.

Naturally such a hyperemia of the marrow of long bones must result in a stimulation of the blood forming tissue, with increase in the number of red blood corpuscles. Continuance of the drug irritation brings on a degeneration of the marrow, with serious interruption of corpuscle formation.

On other tissues of the body phosphorus seems to have little effect. The central nervous system shows practically no change, there is no observable effect on respiration or blood pressure, and the heart is not affected except by toxic doses, although in chronic poisoning the heart muscle, together with the muscle system as a whole, partakes in the general tendency to undergo fatty infiltration.

The alimentary tract suffers early and severely through fatty infiltration of the epithelial cells and the sequent intercellular fibrosis. Bile salts are decreased; bile pigments are increased at first, but later decreased; the glycogen and lecithin are also reduced.

From all these considerations we may be led to conclude that the one certain indication today for the use of phosphorus is disturbances of bone development. The local increase in blood supply, and the seemingly specific irritation of the osteoblasts, frequently induce such a stimulation of osteogenesis as to measurably compensate for previous deficiencies. The pill of phosphorus is the best preparation, each pill containing 0.6 mgm.

Management of Cases of Delay in Breech Presentation Due to Extension of the Legs.—Robert Jardine (*Glasgow Medical Journal,* February, 1916) points out that cases of this type are not, strictly speaking, instances of impaction. The explanation commonly vouchsafed for the delay in descent, viz., that the extended legs, lying along the child's body well up on the chest, act as splints and prevent the lateral flexion of the body supposedly necessary, is held invalid by the author, who shows that this lateral flexion occurs only at the outlet and has no bearing on the descent when the child is still above this level. From prolonged observation he is convinced that, instead, the breech is prevented from descending by the retraction ring. The membranes in these cases have always ruptured very early in or even before labor, and before the os has been fully dilated the retraction ring grips firmly the child's body either behind the knees or just below the feet, contracting with each uterine contraction and thereby preventing progress. Often a sulcus can be felt or seen running across the abdomen between the umbilicus and pubes, but the retraction ring can be detected much earlier by passing the flattened hand beyond the presenting part, when it will be felt as a distinct ledge running around the interior of the uterus and gripping the child. In breech cases the hand should be passed up over the front of the child under deep anesthesia, and extension of the legs will then be recognized. In this event, if the os is not fully dilated, dilatation should be completed manually and the child promptly delivered, preferably by passing up a hand, swinging one of the child's legs inward, and bringing it down below the retraction ring. Traction should then be made upon it to bring the body down, an assistant meanwhile firmly compressing the uterine fundus to keep the head well flexed and arms down—else they will probably be caught by the ring and the child's life perhaps be lost in consequence. Delivery should be completed in the usual way, by firm suprapubic pressure combined with gentle traction on the body. As a rule this will not interfere with the third stage of labor. Opium and deep anesthesia are alike powerless to relax the retraction ring when once it has formed.

A Suction Bougie for Chronic Gonorrhea.—A. Cambell (*Brit. Med. Jour.*, June 10, 1916) describes a bougie consisting of a flexible wire tube, wound spirally, with the coils close together. In use this is thoroughly lubricated, slipped over a suitable sound, introduced into the urethra and the sound is then removed, leaving two inches of the bougie projecting from the meatus. Over this free end is slipped a hollow metal cover, one end of which has a conical tip to fit closely into the meatus. To the other end there is attached the tube leading to a small drainage chamber which is connected to a mercury manometer on the one hand and a suction pump on the other. With everything in place, suction is slowly begun and increased almost to one atmosphere of minus pressure. This suction is maintained for fifteen to twenty minutes and is then slowly reduced. On removing the catheter many small masses of yellowish purulent material will be found in the crevices between the coils of the wire. These are removed from the pockets lining the urethra and often contain gonococci, even when previous examination of the prostate and urethra does not show any organisms. Following the use of suction the urethra is irrigated with a one in 4,000 to one in 8,000 solution of potassium permanganate. This form of treatment has proved successful in chronic cases and has given prompt results where other measures had completely failed.

Cartilage Transplantation in Plastic Surgery.—H. Morestin (*Bulletin de l'Académie de médecine*, May 23, 1916) attributes to cartilage transplantation an important role in plastic surgery, especially in mutilating wounds of the face and cranium. Transplanted cartilage is not only well borne, but becomes actually engrafted locally and persists without reduction in size or other particular change. It is easily cut and extemporaneously modeled by the surgeon. Material is obtained with impunity from the costal cartilages, especially the sixth, seventh, and eighth, and transplants from another individual may be used, if desired. Cartilage transplantation affords a simple, certain, and very precise means of repairing losses in the cranial bones. Through the already existing scars missing portions of bone are completely replaced by variously fashioned cartilaginous fragments, which require no support other than is afforded by bringing together the superficial soft tissues. The perichondrium, where preserved, should be placed inward, as there is a tendency to incurving on this side. No drainage is required. The method is distinctly superior to all others in making good depressions at the lower part of the forehead and for restoring the upper orbital margin. The lower and outer margin of the orbit and the malar prominence, hitherto offering an insoluble plastic problem, can also be confidently restored; in this way preliminary operations for closing sinuses and restoring the conjunctival sac and eyelids being, however, frequently required. Even the superior maxilla may be restored with cartilage. In ophthalmic plastic work, the orbital cavity may be in part filled with blocks of cartilage, thus preventing the sinking in of artificial eyeballs to too great a depth and favoring proper symmetry of the natural and artificial eyes. Loose pseudarthroses and extensive bony losses of the lower jaw are also susceptible to marked amelioration by the insertion of cartilage, though the propinquity of the septic oral cavity and the movements of the jaw represent difficulties to be surmounted. By transplanting the sixth, seventh, and eighth costal cartilages in one piece, the whole ascending ramus and much of the horizontal arch of the jaw can be reconstituted. Many other applications of cartilage transplantation are possible, as in joint surgery the reconstitution of the bones of the forearm, the metacarpals, the phalanges, and the repair of all other osseous deficiencies in which light skeletal support is alone required. Most of the author's cartilage transplantations were done under local anesthesia.

Treatment of Pruritus ani.—Charles J. Drueck (*International Journal of Surgery*, June, 1916) finds it essential to treat the cause, if possible. At times, a few inverted hairs may give rise to this condition. The diet should be regulated; no excess of meat, spices, condiments, sugars, etc., should be permitted. If constipation is present, the bowels should be emptied thoroughly with a saline or rhubarb. Aloin is contraindicated because of the irritating effect on the rectum. The genitourinary system should be examined for anything that may give rise to a reflex irritation. If syphilis is the cause, mercury and the iodides should be employed. If due to lithemia, salicylates and alkalies should be given. Linen should be worn next to the skin rather than wool. Pajamas should not be worn, as they fit too closely. Locally cleanliness and keeping the parts dry must be required. Autogenous vaccines have been used with success in some cases; the x rays have proved useful in others.

Chancroidal Adenitis.—H. Gougerot (*Paris médical*, May 6, 1916) notes that inguinal adenitis, in the absence of lesions of the lower extremities or abdomen, may be of three types: 1. Acute or subacute suppurative adenitis occurring in association with an active or recently healed genital lesion; 2, subacute suppurative adenitis without portal of entry; 3, chronic suppurative adenitis persisting months after a chancre. Adenitis of the first type is usually due to chancroidal infection. In most instances the primary chancroidal lesions coexist and are readily discovered, but in some they are already healed; a month or more may elapse between the healing of the soft chancre and the appearance of adenitis. While all suppurative adenitides of venereal origin should be suspected to be of the chancroidal form, coexisting syphilis should always be thought of, even in the presence of a most typical chancroidal lesion. The second type of adenitis is due sometimes to streptococci or staphylococci which have gained entrance through the urethral or the anal mucosa, at other times to the chancroidal organism, constituting thus a chancroidal adenitis without a chancroid. The author reports two cases of the latter form. Recognition of this subacute variety is of practical significance, for untreated the condition may drag on for a long time, may ulcerate, and may even terminate in phagedena. Truly chronic venereal suppurative adenitis is exceptional. One of Gougerot's cases had a chancroidal phagedena for five years, eventually succumbing to typhoid fever. Cases of chronic chancroidal adenitis with sinus formation may be associated with local tuberculous involvement and may lead to a condition of the surrounding skin resembling elephantiasis. On the whole, the marked clinical variations in chancroidal buboes must be clearly borne in mind. The treatment of inflamed but not yet softened inguinal glands consists of rest in bed, mercurial or silver applications to the chancroids, and gray oil or collargol ointment applications to the glands themselves. Calomel ointment or masses of cacao butter containing 0.03 or 0.04 gram of gray ointment may be applied to the chancroids. This procedure failing, hot moist dressings should be used and the bubo punctured, when pus has collected, at a point where the skin is still fairly resistant; the pus should then be evacuated, iodoform and ether injected, these evacuated, and the procedure repeated until the ether returns clear, when some of it is allowed to remain in the cavity, the needle is withdrawn, and a cotton dressing applied. Where sinuses exist, iodoform and ether or zinc chloride should be used. For chronic ulcerations, with or without phagedena, tissue destruction with hot air at 700° C. under general anesthesia should be tried. Avoidance of sinus formation, through treatment of early cases by puncture and not by incision, should be the chief aim.

Orthopedic Treatment in Old Hemiplegia.—George R. Elliott and Samuel W. Boorstein (*Jour. A. M. A.*, July 1, 1916) give in full the case history and details of treatment employed for a patient who had a complete hemiplegia for twenty-five years. As a result of various orthopedic measures he was soon enabled to walk well and to regain a moderate degree of use of his paralyzed arm. The striking results of treatment in this long standing case of paralysis and contracture serve to emphasize the need for a revision of our ideas of prognosis in hemiplegia and the need for prompt and adequate orthopedic treatment in all cases, beginning as soon as consciousness is thoroughly restored.

Hypertonic Solutions and Mineral Oil in the Treatment of Infected Wounds.—A. Goubaroff (*Presse médicale*, May 25, 1916) recommends the following measures, which, in his experience, have yielded the best results in cases of infected wounds: After the skin has been painted with tincture of iodine the wound is thoroughly opened up and foreign bodies are removed directly with forceps or by irrigation with isotonic salt solution or Dakin's hypochlorite solution. Occasionally, in malodorous wounds with gangrenous tissues still adherent, heated air at 300° C. is applied; usually, however, such wounds are merely irrigated with a hypertonic, eight to ten per cent. solution of sodium chloride. This type of solution is well borne, causing no irritation or pain, exerting a pronounced hemostatic action, and having marked antiseptic and deodorant properties. It draws lymph freely into the wound, thereby affording a favorable field for phagocytosis. Large rubber drains are introduced and the wound is then filled with dry sterile gauze previously dipped in liquid petrolatum. Where there is marked fetor, or in penetrating mouth wounds, the gauze is impregnated with hypertonic salt solution instead. At times even tablets of salt are introduced between the layers of gauze. In most instances, change of dressing consists simply in introducing a little liquid petrolatum into the wound. The surrounding skin is cleansed with cotton dipped in benzine or gasoline. The oily dressing never adheres, traumatism, pain, and bleeding when it is removed being therefore obviated. Another procedure which gives excellent results in these wounds is exposure to direct sunlight, or, as recommended by Chaput, to electric light.

Postoperative Ileus.—William M. Thompson (*Surgery, Gynecology, and Obstetrics*, June, 1916) arrives at the following conclusions: First, that the best results in the treatment of inflammatory ileus are obtained by enterostomy and drainage in cases so severe that radical measures would be fatal. Enterostomy should be done rapidly and without disturbing adhesions. When the patient recovers ileoileal anastomotic closure of the enterostomy wound and cecostomy or appendicostomy will complete the cure; second, that in favorable cases ileoileal anastomosis with cecostomy or appendicostomy for drainage and to relieve back pressure in the colon gives the best results; third, that by short circuiting and putting the damaged gut at rest it may be restored to health and function even after vascular changes have taken place; fourth, that the mortality of resection for this disease is too high to give it a place in the treatment of inflammatory ileus; fifth, that the adhesions should not be broken up nor the damaged gut handled in the operation.

Paraffin for Lousiness.—B. Hall (*Brit. Med. Jour.*, June 10, 1916) has found that the following is a simple and effective means of curing this condition: With the exception of the scrotum the entire body of the victim should be wetted with paraffin oil, which the patient may apply with his hands; the application should be made without rubbing, since that would cause a dermatitis; when wetted all over, the back having been done by an orderly, the patient should dress at once. A single application is invariably successful.

Treatment of Malarial Hemoglobinuria.—K. Ross (*Jour. Florida Med. Assn.*, June, 1916) finds that nephritis is present in all cases and influences the treatment. Elimination through the skin and bowels should be secured and the kidneys should be rested. Repeated doses of twenty to thirty grains of calomel should be given every two hours until from sixty to 120 grains have been taken. One eighth to one quarter of a grain of pilocarpine hydrochloride should be administered every four hours to promote sweating and should be continued so long as the hemoglobinuria persists. For the nervousness, doses of twenty to thirty grains of sodium bromide may be given every three or four hours. Since morphine inhibits elimination, it should not be used and quinine must not be used at all on account of its hemolytic properties. Alcohol is also absolutely contraindicated. Stimulation, in the form of small doses of digitalis is usually needed during the attack, and nitroglycerin, strychnine or digitalin may be given hypodermically when immediate stimulation is demanded. The aftertreatment consists of rest, tonics and change of residence to a nonmalarial region.

The Effect of Ferrivine and Intramine on Syphilis.—By employing several cases of well marked secondary syphilis with pronounced lesions, L. W. Harrison and C. H. Mills (*Lancet*, June 17, 1916) tested the value of these two new compounds recently brought forth by McDonagh. No beneficial effects whatever were produced and the syphilitic lesions even increased in one case during treatment. The same lack of results was observed in a case of gummatous lesions. Aside from being devoid of therapeutic action, ferrivine caused very intense and even threatening constitutional reactions every time it was given, while intramine often led to local tissue necrosis and abscesses. The injection of the latter drug was also followed by intense local pain lasting several days. The subsequent use of salvarsan in the same cases gave prompt results.

Craniocerebral Wounds of War. — Harvey Cushing (*Military Surgeon*, June, 1916) states that there is no unanimity of opinion as to what should be the routine treatment of cranial wounds at first line hospitals. Some surgeons owing to sorry experience advocate leaving all except the minor injuries alone; some advise immediate trepanation only of the tangential wounds in which the dura presumably has escaped injury; but by far the larger number, basing their views on the experiences of earlier wars, recommend the prompt treatment of every case at the earliest moment. The usual operation consists in enlarging the wound with a crucial incision, elevation of depressed fragments, the removal as far as possible of the spicules driven into the brain, and direct drainage usually with an iodoform gauze pack.

Suppurative Otitis media.—E. Hamilton White (*Canadian Medical Association Journal*, June, 1916) urges that at the onset of an acute suppurative otitis strict confinement to bed should be insisted on until it is established that the infection is mild, and that the disease is running a favorable course, and that a limit should be put to the time during which such an ear shall be allowed to discharge by thorough investigation as to the cause of delayed healing, and by the adoption of active surgical measures in appropriate cases. Every week of added discharge makes it more certain that the hearing will be damaged permanently and brings nearer the danger of serious deep seated trouble.

Resuscitation Apparatus.—Yandell Henderson (*Jour. A. M. A.*, July 1, 1916) notes several ingenious pieces of apparatus for use in resuscitating drowned, asphyxiated, or poisoned persons who are suffering from failure of respiration. The various apparatus have been examined by the author and the most that can be said of the best of them is that they provide mechanical means of artificially supplying air, or air slightly enriched with oxygen, to the lungs. Perhaps the greatest danger from their use lies in the fact that too much reliance is placed upon their efficiency and thus too often the victim is neglected while the apparatus is being brought. For resuscitation the most important element is prompt action and there should be universal training in the technic of the prone pressure manual method of artificial respiration. Where available immediately most of the forms of apparatus are capable of giving good results, since they give fuller ventilation of the lungs than is possible by the manual method. In gas and smoke cases oxygen should be administered at once and the only effectual method for this is by means of a closely fitting face mask and a distensible rubber bag.

Causes and Treatment of Perthes's Disease.—Frederick C. Kidner (*American Journal of Orthopedic Surgery*, June, 1916) relates a case operated in for osteochondritis deformans juvenilis which presented symptoms almost typical. He found beneath the epiphyseal line of the femur a walled off cavity containing a soft grayish red material which, on examination, showed a growth of Staphylococcus aureus of low vitality. From the study of this case the author considers that the disease is due to a low grade hematogenous infection and that operation, followed by mechanical treatment, is indicated.

Urethroplasty at the Base of the Glans penis.—Courtney W. Shropshire and Charles Watterson (*Annals of Surgery*, June, 1916) state that in doing this work the following points should be observed: First, the urethral tract must be free from disease; second, control oozing as much as possible with hot packs; third, place all sutures with lower part of the U parallel with long axis of penis; fourth, do not tie the sutures too tightly; fifth, wash the bladder through a catheter with saturated solution of boric acid daily; sixth, remove the catheter every other day and irrigate the urethra without distention, with solution of boric acid, but do not use a mushroom catheter; seventh, dress the wound by painting it with tincture of iodine, three per cent., on the third day, remove catheter on the seventh day, and have patient drink a half gallon of water daily, beginning as soon after the operation as possible. Take out the first sutures on the fourth day and remove the retention suture, last, on the tenth day.

Subastragalar Arthrodesis in Lateral Deformities of Paralytic Feet.—DeForest P. Willard (*American Journal of Orthopedic Surgery*, June, 1916) states that the operation devised by Dr. G. G. Davis for correction of the lateral deformities of paralytic feet consists of two incisions on either side of the foot below the malleoli, drawing aside the tendons and then digging up or gouging out the surfaces of the joints of the astragalus and scaphoid and os calcis. The author asserts that the operation insures a more stable foot, does away with the use of braces and does not prohibit other operation. No recurrences have followed this operation.

Foreign Bodies in the Respiratory Tract.—Nathan W. Green and Leon T. LeWald (*Annals of Surgery*, June. 1916) draw the following conclusions: 1. All recently aspirated foreign bodies should first be sought by the Röntgen ray and the bronchoscope without delay, and removed if possible through the mouth. 2. If they cannot be removed through the mouth, tracheotomy should be done and another attempt made by means of the bronchoscope. 3. Failing in this the tracheal wound should be held widely open by wires or by a large tube in the hope that the foreign body may be coughed out. 4. If immediate removal by these methods is unsuccessful, a period generally elapses during which patients may undergo secondary changes in the lung, such as pneumonia, gangrene, abscess, and generally an overlying empyema. 5. If patients recover from these acute infectious processes, they pass into the class of deferred cases with the foreign body still present as an aggravating factor in their chronic lesion. 6. Removal of the foreign body in these deferred cases does not always effect a cure. 7. Lung abscesses must be treated along surgical lines, and even then we cannot always hope for cure, but only amelioration of the affliction.

Twilight Sleep.—Charles B. Reed (*Surgery, Gynecology and Obstetrics,* June, 1916) considers that from case observation the morphine scopolamine analgesia when properly administered is harmless both to mother and child. The treatment has been successful in these cases, since twenty-nine per cent. of the cases were practically and fifty-six per cent. entirely free from pain—or eighty-five per cent. in all. Strength is conserved and the convalescent period is shortened. Whether or not the woman gets up earlier is a question of uterine involution rather than one of days, or of strength or of treatment. The important consideration is that she feels better much sooner. Primary pain, weakness, hemorrhage, prolapsed cord, and a lack of correlation between the size of the pelvis and the child, are conditions unfavorable to "twilight sleep." Twilight sleep will not succeed in every case, but does no harm when properly used and it will act happily in about eighty-five per cent. of the cases selected with due regard to contraindications.

Colloid Gold in the Treatment of Pneumonia.—Commes, at a recent meeting of the Société de pathologie exotique (*Presse médicale,* May 25, 1916), advised intravenous injections of colloid gold, begun as soon as the diagnosis is established, in pneumonia. One to two c. c. of the remedy may be injected without untoward result. Three daily injections are generally sufficient to cause a return of the temperature to normal and to arrest the progress of the disease.

Desiccation in Ophthalmology.—William L. Clark (*Jour. A. M. A.,* July 1, 1916) finds that heat of just sufficient degree to desiccate, but not to carbonize the tissues is of great value in the treatment of new growths and congenital tumors about the eye. Such heat can be most satisfactorily produced from a high speed static machine fitted with a suitable transformer, and can be best applied through the medium of a fine steel needle which is lightly brushed over the growth. The part to be treated should first be anesthetized locally with cocaine or novocaine. From an extensive use of this form of treatment the author draws the following conclusions: That it is a successful method of treatment for localized basal cell epitheliomas about the eye, for it has cured the majority of cases in which it has been properly applied. Where there have been recurrences a second or third application has usually relieved the condition. The cosmetic results are excellent. In advanced cases complete cure is not certain, but much temporary relief may often be given. Round cell sarcomas and melanosarcomas have also responded favorably, and success is certain in such benign growths as angiomas, warts, xanthoma and lupus erythematosus. It is also of value in the treatment of granular conjunctivitis and ulcers of the cornea.

Treatment of Typhus.—R. O. Moon (*Lancet,* June 10, 1916) asserts that thorough ventilation is the most important factor, not only as an antipyretic but as a nerve sedative, tending to lessen the violent headache and insomnia of the early stages. Hydrotherapy is valuable employed in the form of cold baths, cold local applications or the water mattress which should not be below 65° to 70° F. Where cold baths cannot be given, morphine is of great service hypodermically for headache, delirium and insomnia. The diet should be mainly milk until the temperature reaches normal.

Intraperitoneal Inoculation of Animals: Its Diagnostic Value in Orthopedic Surgery.—Melvin S. Henderson (*American Journal of Orthopedic Surgery,* June, 1916) reports that in a series of 143 cases of suspected tuberculosis forty were reported as positive by the inoculation test. Joint fluids, purulent discharges and emulsified tissues were injected into the peritoneum of guineapigs. In children, when tests were made, injection into rabbits was used in addition as a check. The writer considers the test practicable and of especial value in obscure cases where a positive result serves to determine the diagnosis. He performs the test three times before giving a negative diagnosis.

Behavior of Hypochlorites on Intravenous Injection.—H. D. Dakin (*Brit. Med. Jour.,* June 17, 1916) observes that eusol has been recommended for intravenous injection in man. Granting that the maximum possible concentration of the hypochlorous acid contained in the full dose persisted for a short period of time, there would only be from fifty to sixty-five mg. of the acid present per litre of blood. This is far below that concentration which shows any active direct action on such organisms as the colon bacillus or staphylococci suspended in blood or serum *in vitro.* The action of the hypochlorites depends upon the active chlorine liberated and experiments, both *in vitro* and *in vivo,* have shown that the chlorine at once becomes anchored in an inert form to one or more constituents of the blood and that a very large quantity of hypochlorous acid has to be introduced to give the faintest detectable trace of active chlorine. Further, the idea of some secondary effect, such as the stimulation of antibacterial or antitoxic substances, is not supported by experimental results. Lastly the drugs of this group are not without harmful effects and even in small amounts produce hemolysis of the red cells in the living animal. The only conclusion which may be drawn from the experiments is that these substances, when injected intravenously in the doses advised, cannot have any appreciable direct germicidal action.

Miscellany from Home and Foreign Journals

Origin of Hypernephroma.—Alexander Fraser (*Surgery, Gynecology, and Obstetrics,* June, 1916) discusses the origin of hypernephroma and concludes: 1. Of thirty-four so called hypernephromata, there is convincing evidence, both clinical and morphological, that one of the number was a neoplasm originating in an accessory nest of cortical adrenal cells, although the possibility of origin from the cortical cells of a misplaced adrenal composite cannot, of course, be denied. It is interesting to note that the patient in whom this tumor was found was a female with pronounced male characteristics. In another case of so called hypernephroma, the tumor apparently rose from multiple nests of adrenal cortical cells lying in or around the capsule of the kidney. In the remaining thirty-two instances of so called hypernephromata, the tumors evidently were derived from renal adenomata. In other words, it would appear that the majority of cases of hypernephromata is misnamed, and should be classified as nephromata, the term hypernephroma being reserved for malignant tumors arising from cortical adrenal cells. 2. It has been shown, a, that the primary structure of tumors of adrenal origin is essentially different from the primary structure of tumors of renal origin; b, that the primary structure of adrenal tumors never imitates the primary structure of renal tumors; c, the primary structure of some renal tumors (adenomata) can, at an early stage, through proliferative changes, imitate the primary structure of tumors of renal origin; d, both tumors of adrenal and of renal origin can undergo secondary degenerative and malignant changes, which make their histological features similar, these changes being practically always present in the renal tumors. On the other hand, they occurred in only one of the two cases of adrenal growths described, consequently Fraser believes that the diagnosis of hypernephroma should not be based on the appearances presented by those parts of the tumor in which secondary degenerative and malignant changes have occurred.

Mild Forms of Typhoid Fever.—Roger Voisin (*Paris médical,* May 13, 1916), among 103 cases of typhoid fever in subjects not previously inoculated against the disease, met with forty-four mild cases of various types. One of these types was characterized by an abbreviated course of the disease, which lasted only from seven to thirteen days, in spite of the positive Widal reaction; a temperature of 39° C. was rarely exceeded in these cases, and the general condition remained good, the patient having one or two stools a day, with headache, malaise, a few rose spots, coated tongue, and distinct splenic enlargement. To such cases the term "typhoidette" is applied. A second, more frequent variety, comprising seventeen cases, was characterized by a rapid recession of the disease, frequently in spite of severe early symptoms, such as high fever, stupor, prostration, dry tongue, and pronounced diarrhea; the men affected persisted in their military tasks until the symptoms became very marked, but upon admission to a hospital these symptoms passed off usually in four to six days. A third type was that of gastric disturbance, with a fever of 38° C. or 38.5° C., initial vomiting and diarrhea, and a broad, coated tongue; purgation and a diet of water and later milk brought relief in four to eight days, but the enlarged spleen indicated a more profound systemic infection than the general condition suggested. The fourth type was of especial interest, essentially a typhoid enterocolitis, characterized by marked apathy and cephalalgia, a white tongue, malodorous breath, tenderness over the scaphoid, at times rigid abdomen, obstinate constipation, and a long drawn out course, the affection dragging on for several weeks, with a temperature seldom exceeding 37.5° C. and sometimes persistently normal in spite of the accompanying symptoms. The fifth type showed successive recrudescences of fever, sometimes separated by intervals of apyrexia, with reappearance of rose spots at each recrudescence, but presenting symptoms, in general, rather mild. In none of these five forms were any complications noted, although previous experience had shown that hemorrhage and perforation might occur even in mild typhoid cases.

Grippe in Nurslings.—R. Raimondi (*Presse médicale,* May 11, 1916) observes that at the end of October, in November, and in December, grippe in nurslings is relatively mild, lasting as a rule only from three to five days. In the second week of January, however, severity increases, and the disease is regularly most virulent from March until the beginning of May. When infants are in unhygienic surroundings the affection is promptly acquired and the incubation period, generally forty-eight hours, is reduced in many cases to twelve or twenty-four hours. During some months the tracheal form of grippe, with otitis, may be most common, while during others the bronchial form with lung complications will predominate. In some instances nervous symptoms such as extreme prostration and somnolence, or insomnia, are most conspicuous; or, gastric, gastrointestinal, and especially hepatic involvement may attract attention. The liver should always be percussed and palpated in the infant with grippe, as it is often congested, tender, and enlarged, especially on the left side. High degrees of fever occur particularly when the liver or other alimentary organ is involved. The beginning of convalesence is marked by a temperature lower than 37.5° C., both morning and evening, for a period of four days; whenever these conditions are not fulfilled, a return of high fever may occur and the grippal infection has not yet been mastered. Grippe is differentiated from measles by more pronounced temperature oscillations in the former and by less pronounced lacrymation. The cough of grippal tracheitis differs from that of whooping cough in being accompanied by fever and is more persistent and exhausting. The symptoms of catarrh of the mucous membranes preceding the intestinal involvement of grippe differentiates it from enteritis due to dietetic error. An enlarged liver, without splenic enlargement or jaundice, but with catarrh of the respiratory mucosæ, indicates hepatic grippe. Redness of the tonsils and pharynx frequently accompanies the grippal coryza of infants. In all weak infants the probability of pulmonary complications of grippe renders the prognosis sombre.

Acute Perforation of Ulcers of the Stomach and Duodenum, with Case Reports.—Martin T. Field (*Boston Medical and Surgical Journal*, June 8, 1916) observes that acute perforation of gastric and duodenal ulcers is not an uncommon accident. Early operation yields a high percentage of cures, while late operation gives a low percentage. It occurs most often in adult males who give a history of stomach trouble. Its possibility is not excluded by complete absence of dyspepsia. The most important diagnostic guide is a sudden, severe epigastric pain, followed immediately by signs of a spreading peritonitis, which manifests itself through general tenderness and muscular rigidity. Early or first hour general tenderness and rigidity are important signs in differentiating acute perforation from appendicitis and other intraabdominal lesions. The first points of maximum tenderness and rigidity, especially in duodenal perforation, are on the right side above and below. Later the rigidity becomes boardlike over the whole abdomen. Tympany over the liver may occur, but usually is not present. The abdominal pain as a rule is very severe and patients have an anxious expression, but at first the pulse is often only slightly accelerated.

Facial Paralysis in Military Practice.—From clinical considerations the trunk of the facial nerve is held by E. J. Moure, in *Presse médicale,* April 13, 1916, to consist of two groups of fibres; the one comprising the superficial fibres is distributed to the muscles of the lower part of the face, the other including the fibres occupying the centre of the nerve is distributed to the upper aggregation of muscles supplied by the facial nerve. The first group thus forms a protective sheath around the second, and is more exposed to irritation and impaired function from external causes than is the second. In most patients with traumatic section of the facial nerve under Moure's observation, the involvement was only partial, the lower branches to the chin or lips being alone severed. Such patients were but little inconvenienced in speaking or even in masticating and required no special surgical treatment. Contusion or section of the upper branches, on the other hand, was often accompanied by fistula of Steno's duct and ophthalmic disturbances demanding surgical correction. The salivary fistulas were nearly always overcome by preventing mastication for three or four weeks. In relieving paralysis Moure was uniformly successful in three cases upon merely excising, under local anesthesia, all the thick cicatricial tissue intervening between the cut ends of the nerve fibres. The two margins of the incision were then sutured together, and within two or three months motility returned. Among six cases in which operation for removal of a missile from the mastoid process was instituted, the nerve was found actually cut in but one instance; in the others it was either compressed, lacerated, abraded, or neuritic, a large neuroma being found in one instance. The operative treatment in these cases consisted in broadening the bony channel in which the nerve is normally lodged and liberating it from above downward. The procedure is far more difficult than where the parts are changed in appearance by fungous granulations, pus, or osseous fragmentation, but the results in the author's cases were promising, paralysis completely disappearing in two cases and the condition being more or less improved in the remaining four.

Petroleum Ether in the Isolation of Typhoid Organisms from Stools.—H. C. Hall (*Berlin. klin. Woch.*, Dec. 27, 1915) describes a modification of Bierast's method, comprising the shaking out of the suspected stool with petroleum ether after emulsification in bouillon. Following the shaking out process the mixture is allowed to stand for about two hours at room temperature and a drop of the sediment is then plated out on Conradi-Drigalski plates and incubated for sixteen to twenty hours. This technic suffices to kill off practically all of the colon bacilli and to leave only typhoid and paratyphoid organisms. If the plates show practically pure cultures resembling those of either of these two types of organisms, the colonies from them can be emulsified and tested directly by agglutination to determine their precise nature. The modified method gives definite results even in doubtful cases in twenty-four hours, which is a great saving in time over previous methods. Experiments were made with several samples of petroleum ether and it was found that the ethers with higher boiling points were less actively destructive to colon bacilli, the most active of all being that ether which boils at about 50° C. The paraffins were also found to have some destructive action on Bacillus coli, especially pentane, which boils at 38° C.

Cardiac Palpitation Due to Arterial Hypertension.—Camille Lian (*Presse médicale*, May 22, 1916) calls attention to cases of this type met in military practice, referring in particular to the necessity of not mistaking them for instances of mere neurotic disturbance. Twelve cases were met in a single batallion of territorial infantry. The palpitation is usually manifest in tachycardia alone, with dyspnea and precordial oppression or pain, but may show an extrasystolic arrhythmia in addition. In light cases the disturbance appears on marching and passes off with rest, but in many others is permanent, persisting in recumbency, with a pulse rate often of 100 and in cases of intermediate severity never descending below eighty. Diagnostic investigations in these cases should be such as to detect any latent nephritis. The urine should be examined, and minor signs of uremia, gallop rhythm, and abnormal sharpness of the second aortic sound should be looked for. Blood pressure estimations are essential in the diagnosis. The systolic pressure will be found to be ten to fifty, and the diastolic pressure ten to twenty mm. above normal.

The heart in these cases has difficulty in performing the excess of work required by the high pressure, and the tachycardia is a symptom of left ventricular weakness. Tachycardia of neurotic or Basedow origin is distinguished by the relatively lower degree of hypertension. The patient should be relieved from military service if the excess of systolic pressure to forty or fifty mm. and that of diastolic pressure twenty mm.; if the pulse rate fails to recede below 100 at rest; or if arrhythmia is present. In the milder cases, the subject may be detailed for auxiliary service, or else receive relatively sedentary employment in his regiment and be relieved of arduous duties as well as of his knapsack in long marches. When the disturbance recurs, he may be placed at rest on a diet of vegetables and milk for a week or two.

Experimental Colonic Stasis.—Charles H. Frazier and Max Minor Peet (*Annals of Surgery*, June, 1916) conclude that the result of these experiments on colonic stasis would seem to indicate that mere stagnation of feces in the colon of the dog, when on a normal mixed diet, does not lead to the formation of toxic substances of note, at least, in the presence of normal flora of the canine colon. The fact that these dogs remained in perfect health and gained in weight would indicate that simple colonic stasis in a dog is harmless and certainly would suggest that the dire effects attributed to colonic stasis in man were, in part at least, due to some cause other than the absorption of products usually formed in simple fecal stagnation.

Diagnostic and Prognostic Significance of Disturbances of the Hairy Growth in Nerve Injuries.—Maurice Villaret (*Presse médicale*, May 18, 1916), from studies in over 165 cases, states that in a case of peripheral paralysis or contracture clearly due to a nerve lesion, if a diminution in the hairy covering is observed, the prognosis should be guarded, complete interruption of the nerve being indicated, whereas if hypertrichosis is noted an incomplete nerve lesion, such as lateral section, compression, or neuritis, is suggested. The indications for treatment vary in consequence. In clearly functional cases, a normal hairy covering suggests hysteria and exaggeration, and hypertrichosis, some vascular or sympathetic disturbance, or what Babinski terms reflex paralysis or contracture. The results of examining the state of the hairy covering coincide so frequently with those of electrodiagnosis that such examination can, to some extent, be substituted for electrodiagnosis, where apparatus for the latter is not available.

Dyspnea—Its Occurrence and Significance.—J. Wheeler Smith (*Medical Record*, June 17, 1916) divides dyspnea into two varieties—physicochemical and mechanical. The first variety is due to insufficient oxidation of the tissues independent of mechanical interference with respiration, while the latter is characteristic of mechanical dyspnea. Varieties of physicochemical dyspnea are that experienced at great altitudes, the dyspnea of anemia, of cardiac and renal disease, of pneumonia, and of tuberculosis. Mechanical dyspnea may be considered under two heads, that due to insufficiently pervious air passages and that due to inadequate respiratory movements. The former is called obstructive dyspnea and may be due to any obstruction which either narrows the lumen of the respiratory tubes or presses upon the tract from without. Smith reports a case of dyspnea in a man of forty-eight years due to tumor in the superior thoracic aperture. This was the result of great enlargement of the right group of tracheobronchial lymph glands whose primary focus was a small ulcerated epithelioma in the esophagus. The primary tumor was entirely overlooked because it was entirely without symptoms; both lungs were extensively involved; the severe symptoms were all due to the metastatic involvement of a small group of glands, so placed, however, in the rigid superior aperture as to be very important.

Functional Results after Excision of Large Joints in Military Practice.—Nové-Josserand and Tuffier (*Bulletin de l'Académie de médecine*, May 16, 1916), summarizing the results of 1810 joint resections, either primary, i. e., within three days after the injury, or secondary, to overcome suppuration, find that, in the upper extremity, 49.44 per cent. of favorable results were obtained, and in the lower extremity, 76.66 per cent. Primary resections were failures in eighty per cent. of the shoulder cases and in seventy per cent. of the elbow cases, as against only thirty-two per cent. of failures after secondary resections, whether of the shoulder or elbow. In the case of the hip joint, there was little difference between primary and secondary resection, while in the case of the knee primary resection gave good results. and secondary resection was frequently a failure. The mortality of joint resection was five per cent. in the upper extremity and twenty-seven per cent. in the lower. Joint resection, whether primary or secondary, is always to be preferred to amputation, which is justifiable only to save the patient's life.

Base Hospital Work in Russia.—H. H. Snively (*Military Surgeon*, June, 1916) comments upon the unusual freedom from epidemics among the civil population of Russia in the summer of 1915. The peasants said this was due to the absence of the doctors. Perhaps, the prohibition of vodka was a factor. This prohibition, while not absolute, is strict enough to be effective, and has had a tremendous value in the military way. There was so little drunkenness seen in the army or out of it that the sight of a drunken man was an unusual event, although no doubt officers and soldiers would have used liquor had it been obtainable. Among thousands of soldiers he saw only two cases of wood alcohol poisoning.

Sanitary Problems of Trench Warfare.—Lieut. Colonel Frank E. Keefer (*Military Surgeon*, June, 1916) says that we have as yet learned but little concerning improvements in military hygiene and sanitation, the difficulties in the practice of which have all been immensely enhanced by trench warfare. Rain and mud, frost and snow, filth, the problems of supply of food and water, the disposal of wastes, the prevalence of parasitic insects—all these and many more difficult problems press for solution or at least for amelioration. Men move to the trenches by stealth and at night. Unless the trench is completely "organized" as the expression goes, soldiers are never dry, or warm, or comfortable, during their entire tour of one or more days. They must take with them their ammunition, food, and water, while those they relieve must carry out their own excreta. Frequently, those on duty stand in water and mud continually. They are tormented by some or all of a variety of insects, which may include flies, mosquitoes, lice, ticks, the itch mite, and bedbugs. The number of flies in Gallipoli is said to be "amazing." But as a matter of course the loathsome louse is the most pestiferous and distressing. Even when the louse is not the dreaded host of typhus, the insinuating attentions of this insect are hardly to be borne.

Trichinosis and the Cerebrospinal Fluid.—William Lintz in the *Journal A. M. A.* for June 10, 1916, reports three cases in which Trichina spiralis was found in the cerebrospinal fluid. The fluids appeared normal, contained no sediment, and only one of the three failed to reduce Benedict's solution. The centrifugated specimen showed a few lymphocytes and from one to four trichinæ in each field. Should the trichinæ be found in the cerebrospinal fluid with a fair degree of constancy it would be a quick method of making the diagnosis of trichinosis.

Examination of Normal Gastric Secretion by the Fractional Method.—Eugene S. Talbot, Jr., in the *Journal A. M. A.* for June 10, 1916, concludes as the result of work carried out on normal and pathological stomachs that the fractional method of gastric analysis should replace the old tube method. The true secretory curve of digestion can be determined only if the test meal is introduced into the empty stomach. The fasting stomach with this method gives a larger residuum than was formerly believed to be normal. The Ewald meal influences the intensity of appetite secretion variably in different patients. By the fractional method the high point of secretion and the rapidity of the change in acid secretion can be determined. No one form of secretory curve is common to all normal stomachs. The contour of a given normal curve depends on the intensity and duration of appetite secretion as influenced by the test meal, the amount of gastric mucus, the concentration of food secretion, and the emptying time of the stomach, which is fairly uniform.

Failure of Right Heart in Pulmonary Disease.—F. J. Poynton (*Lancet,* June 17, 1916) outlines briefly two cases of this secondary cardiac disturbance as the result of extensive, chronic pulmonary disease, and summarizes the more important symptoms and diagnostic features. Primarily there is a previous history of chronic and very extensive lesion of the lungs, which may be of any form, tuberculous or other. In such a case there will be an abrupt change from a pulmonary to a cardiac symptomatology with marked cyanosis and general lividity, and pronounced venous stasis. The jugulars will be engorged and phlebographs will often show an abnormally large A wave. Often the ventricular form of venous pulse will be wanting. The heart rate is usually rapid and the pulse small and feeble, but the rhythm is usually normal. The urinary output is not much diminished. The liver becomes greatly enlarged and tender and ascites and edema are usually marked. Auscultation reveals a tricuspid systolic murmur over the ensiform, and radiographs of the heart will complete the diagnosis by showing a greatly dilated right heart with a nearly normal left. When such a condition has developed in an old pulmonary case the prognosis is bad and treatment is of little avail. Digitalis may induce some improvement in the heart's action at first, but soon fails to be of any benefit.

The Etiology of Shell Shock.—Harold Wiltshire's (*Lancet,* June 17, 1916) critical study of the cases of shell shock leads him to conclude that wounded men are nearly immune from its development, the effects of the wound apparently antagonizing the psychic causes of the shock; that neither hardship nor exposure is a predisposing factor: that physical concussion is an exceedingly rare cause, as also is the chemical action of gases resulting from explosives. The two chief causes seem to be gradual psychic exhaustion from prolonged fear and some special psychic shock, such as that caused by a horrible sight. There is no necessary connection between sex complexes and the cause of shell shock.

Symptomatic Variations in Late Tetanus.—Léon Bérard and Auguste Lumière (*Bulletin de l'Académie de médecine,* May 16, 1916) found that in seven cases of late tetanus developing in subjects not previously immunized, the disease always appeared after secondary surgical procedures, at times very trifling, presented symptoms identical with those of early tetanus, and uniformly ended fatally, the systems of the patients having long been impregnated with septic products and toxins, and failing to resist the tetanic intoxication. Of fifteen cases in which tetanus followed supplementary surgical procedures in patients already immunized with one or more injections of tetanus antitoxin, the tetanus developing in from twenty-four to 122 days (average fifty-eight days) after the last preventive antitoxin injection, nine were cured. The symptoms in these cases were relatively mild, but grew more and more severe the longer the period between the preventive injections and the appearance of the disease.

Etiology of Iritis.—Ernest E. Irons and E. V. L. Brown in the *Journal A. M. A.* for June 10, 1916, note that of 100 cases there were only twenty-three in which syphilis was the cause of the iritis and sixteen others due to other causes in which syphilitic infection had occurred. In eighteen patients a dental lesion—either an alveolar abscess or an apical infection—was the source of the iritis. In sixteen cases the tonsil was the source of the infection. Gonorrhea accounted for nine cases—all in males. In eight of these cases an active or recent, usually multiple arthritis was present. Tuberculosis was the responsible factor in eight cases, sinus infection in three, and a nonvenereal infection of the genitourinary tract in three. Seventeen cases presented several infections, so that it was impossible to determine which caused the iritis. From the clinical study carried out by the authors it would appear that several factors are concerned in the production of iritis, among which may be noted the presence of a focus of infection partially protected from the resisting forces of the host, the periodical entrance into the blood stream of these organisms and their lodgment in the eye, changes in the eye itself, and, finally, changes in the organism itself.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16, 17, and 18, 1916.

The President, Dr. W. Stanton Gleason, of Newburgh, in the Chair.

(*Continued from page 94.*)

The Cerebrospinal Fluid in Cerebrospinal Syphilis.—Dr. Charles Clyde Sutter, of Rochester, analyzed the findings in fifty cases of cerebrospinal syphilis, including ten cases of general paresis and nine cases of tabetoparesis. He found the greatest value of the examination in paresis and tabetoparesis, next in cerebrospinal fluid, and lastly in tabes. The Nogouchi butyric acid seemed the most trustworthy of the globulin tests. It was present in almost all of the cases examined, forty-one out of fifty cases, and weak in four others. The cell count was a very important element in the study of the cerebrospinal fluid. When studied differentially it gave some insight into the severity of the meningeal reaction. The Lange colloidal gold chloride reaction was a useful adjuvant to the Wassermann and other tests. In paresis he found the typical paresis curve. In tabes dorsalis the reaction was not quite so characteristic and was present in a smaller proportion of cases. The chief advantages in this reaction were the small amount of fluid used, its technical simplicity, the sharpness of the reaction, and its delicacy. The reaction was particularly useful in differentiating incipient general paresis and neurasthenic conditions in the syphilitic. The positive Wassermann reaction was now a more constant finding in the cerebrospinal fluid, since larger (five times) quantities of fluid were used in performing the reaction. A negative response should not be accepted as decisive until the technic with a larger amount had been used. In conclusion, he emphasized the value of the examination of the cerebrospinal fluid in both the study and the treatment of syphilis. The serum Wassermann should be used as a routine in the physical examination of all patients, with or without a history of venereal diseases. A positive reaction should be followed by a lumbar puncture with a study of the fluid in order to determine whether the nervous system was implicated. The treatment should not be suspended until after a systemic course of treatment and only after a negative Wassermann reaction in the cerebrospinal fluid to the larger amounts of fluid.

Medical Aspects of Cancer.—Dr. L. Duncan Bulkley, of New York, said that cancer was not a surgical disease, although it was true that the local results of the cancerous process might be removed by surgical measures, that the wound might heal primarily, and in some proportion of instances the tissues might remain sound. But experience had shown that the mere removal of the cancerous tumor and adjoining tissues surgically did not insure that the disease would not return in or near the scar, or elsewhere. It was well recognized and acknowledged that about ninety per cent. of those affected with cancer died from that malady. Surgery as a cure for cancer had been tried in the balance and found wanting, since under the supervision and treatment the death rate had increased to a lamentable degree of late years. According to the United States mortality reports, the deaths from cancer under surgical control had increased steadily and alarmingly since 1900, when they were sixty-three in 100,000 of the population, to 79.4 in 100,000, in 1914, or over twenty-five per cent. During the same period the mortality from tuberculosis, under intelligent medical supervision, had diminished from 201.9 to 146.8 in 100,000, or over twenty-seven per cent., making an actual difference of over fifty per cent. in their relative mortality since 1900. At this rate the deaths from cancer would outstrip those of tuberculosis in fourteen years more. Was it not time for them to consider whether the present attitude toward cancer was correct or not? The points thus far acknowledged by those who had most deeply studied cancer were both negative and positive.

Metabolism in Gout.—Dr. Nellis B. Foster, of New York, propounded two questions for discussion: 1. The cause of the increase of uric acid in the blood; and, 2, the explanation of deposits of uric acid in cartilages. In gout, as in health, the sources of uric acid were known and did not differ; there was no new source of supply. All the evidence indicated that man was unable to destroy uric acid once formed. Man resembled birds in respect to his purin metabolism. It seemed likely then that the uric acid increase in the blood in gout was due to a defect in excretion. The same increase in the blood was noted in renal disease. For the deposition of uric acid as tophi, no explanation was at hand. It was not due to the blood being saturated, since this was not the case; serum dissolved more uric acid than water because of the phosphate content. The explanation was probably to be found in the chemical state of uric acid, which existed in two forms in many animals, free and combined. This was not demonstrated in man as yet, but evidence pointing to this conclusion was accumulating.

Treatment of Gout.—Dr. Arthur F. Chase, of New York, said the determination of uric acid in the blood was an aid to the diagnosis of gout and served as a guide in its treatment. A list of cases showed an accumulation of uric acid in the blood, about three mg. in 100 c. c. in patients with clinical gout, and below this figure in cases of infective arthritis and neuritis. The differential diagnosis between the uric acid retention of incipient nephritis and gout was made by clinical symptoms. The treatment was directed toward lessening the formation of uric acid and facilitating its elimination. A table was shown illustrating the amount of uric acid reduction due to dietary restrictions and to the administration of salicylates and atophan. This table also showed that the elimination of uric acid was not increased by giving quinine, colchicum, or diuretin. Alcohol, tea, and coffee caused retention of uric acid in the blood. A purin free diet was given containing all foods except meat, meat extracts, peas, beans, spinach, tea, coffee, and alcohol, and an accessory diet consisting of meats and fish of which the uric acid forming possibilities were known, being based upon the fact that 100 grams of roast beef produced 0.14 mg. of uric acid, of which approximately one half was excreted by the urine. By determining, according to the suggestion of von Norden, the eliminative capacity of the body for exogenous uric acid, it was possible to keep the intake of purins well within the limit. Or, according to Umber, the number of days required to eliminate the uric acid arising from a definite amount of purin substance could be ascertained, and articles on the accessory diet given at such intervals that retention of uric acid was avoided. For practical purposes these methods had proved cumbersome, particularly as they necessitated the accurate collection of twenty-four hour specimens of urine and the careful weighing of prepared diets, and were being superseded by the simpler procedure of examining the blood for uric acid The continuous use of alkaline drinking waters induced a deposition of sodium biurate in the joints and cartilages and was capable of precipitating an acute attack of gout. The value of the periodical administration of atophan or, in nonnephritic cases, of salicylates, in depleting the blood temporarily of uric acid, was emphasized as a means of giving symptomatic relief and preventing the deposit of uric acid in the joints, thereby aborting acute gouty attacks. Exercise, massage, and hydrotherapy assisted in the elimination of uric acid, while the treatment of acute attacks was limited to the giving of colchicum, large doses of hydrochloric acid, salicylates, water, and the application of soothing lotions.

Dr. JULIUS SCHILLER, of Amsterdam, said it seemed to him that they were just drifting in medicine and surgery. Many eloquent papers had been read and they showed that physicians knew what should be done for these children, but they were unable to do the things that ought to be done because they did not have the means. The medical inspector knew the children in his schools that needed glasses or needed to have other defects corrected, but the parents did not have the means to have the work done. They could not do much until basic economic conditions in the home were improved.

Dr. A. P. SQUIRE, of Rotterdam, was interested in the significance of Hutchinson's teeth. He asked if any one had tested for the Wassermann reaction in children having Hutchinson's teeth, and if any one had found out just what this sign signified in school children.

Doctor HOWE said no one had called attention to the effect of coffee and tea drinking in relation to the nervous conditions that had been discussed. In his work he had found that a very large proportion of children drank tea and coffee, even in families that were fairly intelligent.

Dr. JOHN HEFFRON, of Syracuse, said the question asked in regard to Hutchinson's teeth was important. These cases frequently came under his observation, and he felt that the sign known as Hutchinson's teeth was sometimes due to a delay in the eruption of the teeth. He had not been able to discover that any one had made observations on this point.

Doctor HOWE said that the State Department of Health stood ready to make the Wassermann test. They had found a reasonable number of children with syphilis and had treated them successfully.

Doctor WHITBECK said that the examination of the teeth was very important. In orthopedic work all cases of arthritis were examined by the x ray in order to ascertain the condition of the teeth. When a focus of infection was found in a socket of a tooth, the patient was put under treatment until the condition cleared up. In a goodly number of cases, if the focus of infection was not removed, a chronic rheumatism developed. Frequently, when there was an abscess at the root of a tooth, the dentist wanted to save the tooth, but he thought it was better to pull the tooth out, since, if the source of infection was not thoroughly removed, the condition might progress and lead to permanent disability.

Dr. L. DUNCAN BULKLEY, of New York, had noted that nothing had been said as to the importance of thorough mastication. Mothers should be instructed to teach children to chew their food properly; they should insist on a child staying at the table fifteen, twenty minutes, or a half an hour. Some device, as aluminum or celluloid balls or a cardboard cuff around the upper arm, would prevent the child from thumb sucking.

The Value and Limitations of Physiological Therapeutics.—Dr. JOHN M. SWAN, of Rochester, said that the various forms of modern hydrotherapy, gymnastics, massage, passive motion, etc., were the direct descendants from an ancient cult which flourished so long ago in the hills of the Argolic Peninsula. It must not be supposed, however, that it would do today to tell a patient to go to a health resort and take a few baths. The details of the various forms of treatment employed must be studied and understood, and careful prescriptions must be written for the kind and duration of the treatment desired. In this day of scientific research into the causes of the various effects following different forms of treatment, it would no longer suffice to say, as it was said many thousand years ago, that the value of the waters at Apidaurus depended upon some drops of gorgon's blood which had been given Æsculapius by Athena, nor would it do to ascribe the benefits to changes in metabolism when no metabolic studies had been made, to influences on the skin, heart, and blood pressure, not backed up by figures, to the influences of salts, gas, etc., in the water, not confirmed by control experiments with plain water. Doctor Swan quoted a few paragraphs taken from Honan's paper, published in 1910, entitled Bad Nauheim: Its Treatment and Therapeutic Value: "There is so much of real therapeutic value in the baths of Nauheim that I know all progressive practitioners of today will appreciate a truthful and unprejudiced opinion of the most recent studies of these waters. It is a well known fact that carbonic acid baths have a special action on two organs of the human body—the heart and the skin. The heart is strengthened by the increased flow of blood in the coronary arteries due to the action of the carbonic acid on the vasomotor nerves and the increase in the coronary circulation. To the presence of certain salts is due the activity and great therapeutic activity of these Nauheim baths. The carbonic acid, as we know, greatly accelerates the action of the calcium and sodium salts."

Doctor Swan then reported several cases that he had treated with the brine baths, carbonic acid baths, and with fresh water only. In one case of a male, aged fifty-one years, who was suffering from a moderate amount of cardiac hypertrophy with beginning arteriosclerosis, the water in the fourth bath, instead of the usual one sixth dilution of brine, was fresh. The patient observed no difference. This was an example of several other cases in which the patients noticed no difference in their condition from these baths and in which the pulse rate was not affected. Doctor Swan said that his object in presenting the subject in this manner was not to discredit physiological therapeutics, but to endeavor to stimulate those who were engaged in the administration of health resorts to study the effects of the methods employed by every method obtainable, so as to provide some accurate basis for the statements made. They should try to get away from mysterious statements whether it was gorgon's blood or radium, to get away from commercialism which tried to make patients believe that x spring was the only place in the world where the patient could get well.

Further Report on the Technic of Abdominal Cæsarean Section.—Dr. William M. Brown, of Rochester, said this subject had been presented by him when he proposed a modification of the Davis operation into an extraperitoneal one. The present technic had been evolved on account of the evil effect of manipulation of the intestines, which accompanied most abdominal surgery. Every operator recognized the need of packing the cavity with gauze to keep the uterine contents from spilling into it, and also the necessity of keeping the abdominal wall firmly against the uterus. Assistants experienced great difficulty in holding these together until the child was safely delivered. He found that patients who suffered most from shock, distention, and pain were those who had had most traumatism and handling in the peritoneal cavity. To avoid the slipping down of the uterus in the pelvis before the incisions were closed, he had devised a method of temporary suturing of the uterus to the abdominal wall, so that an assistant could be dispensed with. This prevented emptying of the uterine contents and protected the viscera from handling. At first he feared excessive hemorrhage might result, but he found that bleeding was more easily controlled than in pelvic delivery. Later he simplified the procedure still more by the use of four to six of the ordinary power clamps of Moynihan or Backhaus, and fastened the uterus firmly to the abdominal wall instead of using sutures. In an analysis of fifteen cases treated in that way there had been no deaths and recovery had been remarkably smooth and free from vomiting and distention. His conclusions were, therefore, that fixation of the uterus to the abdominal wall before delivery possessed distinct advantage to the patient, protecting both from infection and from subsequent pain and discomfort; second, that patients who underwent this operation did not suffer more hemorrhage than under the old form of operation or of pelvic surgery.

Dr. J. Wesley Bovee, of Washington, D. C., would like to know the method of treatment, of the abdominal wound and the uterine wound in operating in these cases of suspected infection.

Dr. Sylvester J. McNamara, of Brooklyn, asked by what method Doctor Brown applied the forceps; how much abdominal wall was included in the grasp of the forceps? Had Doctor Brown any experience with tearing of the uterine wall by such forceps?

Dr. A. B. Miller, of Syracuse, knew how sincere Doctor Brown was in his work and the interest he had shown, but he felt that every man became subject to a method and Doctor Brown had become subjected to this method of fastening the uterus to the abdominal wall. Did Doctor Brown select the cases where he suspected infection, or did he apply this method in all his cases? Generally, he felt that there was no great risk of infection in the uterine contents. They would not give rise to infection in the peritoneal cavity, although they might give rise to endometrial trouble. This method was successful in the hands of Doctor Brown. The method of Davis of upper abdominal operation, however, prevented adhesions. They might do Cæsarean sections many times and not have infection. He felt that nothing particular was gained by fastening the uterus to the abdominal wall. Infection was not likely here, it might do harm in the endometrium, after the placenta had been removed, and then would be more serious than in the peritoneum.

Dr. William Bryan, of West New Brighton, had had better results since he had been doing the Davis operation with high incision, and had paid little attention to the contents of the uterus, whether they escaped or not. He had had no occasion for regret. He had not clamped the abdominal wall to the uterine wall. He had had experience in getting an assistant to keep the uterus from getting down into the pelvis. He made a special point of telling the assistant to keep his finger in the upper angle of the uterine wall and let him (Doctor Bryan) do the rest. He had attempted to suture the uterine wall to get a mechanical grip, but it took extra time and traumatism. If they succeeded they had not accomplished much. The uterine contents did not do much harm. Careful technic, rapid operation, and a simple procedure, with less delay and less traumatism gave the best results.

Doctor Brown was grateful for the discussion of his method. In regard to Doctor Bovee's remark about the treatment of the incision and suspected infection, he had practically made no difference, that was, unless he was certain that there was no infection. He had had one case of infected uterus in a hysterectomy. He did not know the patient had fever, and she was already on the operating table and he was not told until the operation was finished. He was impressed with the fact that while the woman had a severe sepsis, chills lasting twenty-five minutes, temperature 106° F., there was no infection of the peritoneum; it was a pure septicemia. She got perfectly well.

In regard to tearing of the uterine wall, which

Doctor McNamara spoke of, he had had nothing of that kind. They had used Guy sutures, which tore out because they did not go in deeply enough into the abdominal wall, but since the use of clamps, the assistants placed the clamps before he completed the incision through the uterus. The clamps did not go into the endometrium at all. The abdominal incision was made and then the uterine, and the assistant picked up a comfortable portion of the uterine muscle and the whole abdominal wall half an inch from the edge of the incision and clamped it. He then finished his cut through the uterus. The main question was not so much of infection as it was of handling the intestine; after the uterus was emptied it contracted and the intestines would override unless they took a whole towel to pad them off. He then closed the uterine incision, but many operators under such conditions put in a whole towel to keep out the intestines.

The Influence of Luetic Invasion in Gynecology and Obstetrics.—Dr. J. Wesley Bovee, of Washington, D. C., said that syphilis was to be found about eight times as frequent as admissions stated. There was found to be an alarming prevalence of lues among those who denied it, or who presented no symptoms. Morrow and Neisser stated that five per cent. of the German population and two per cent. of the population of the United States had been infected. In 619 cases collected from gynecological and obstetrical clinics there was a probable total of thirty-eight per cent. infections; about sixty per cent. of those were in white women. Luetic infection in females was much more obscure and easily overlooked or mistaken for other conditions than in the male. Cervical chancre closely resembled erosions and infiltrations. In one case seen there was marked resemblance to cervical cancer. Local manifestations of luetic invasion of the female genital tracts were slight and disappeared without leaving a trace. Tertiary lesions of the cervix, however, were sometimes seen. Possibly spermatozoa carried spirochetes into the ovaries and tubes, but thus far this was not proved.

Considering the relationship of lues to obstetrics, which was highly important, they could discuss the probable routes of infection from mother to child, and also the value of Colles's law, which should be subjected to revision. He felt that there was no such thing as a healthy mother with a syphilitic child, and vice versa. Infection was latent in one or the other. He felt that once a diagnosis of lues was established, treatment should be as vigorous as was compatible with safety. It would seem beneficial perhaps to regard all patients as at least mildly luetic, and to apply antiluetic treatment.

Dr. Thomas J. Watkins, of Chicago, as to the frequency of lesions on the cervix, believed it to be greater than stated. This emphasized the risk of examining patients without gloves and also the importance of sterilization of instruments between the examination of one patient and another. He had not seen many physicians' offices fully equipped for sterilization of instruments, so that they depended upon some simple chemical agent for sterilization. It was not too much to say that all obstetrical and gynecological cases should have the Wassermann test. One of the most important questions of today was how often patients should have the Wassermann test and what class of cases should have it. Two papers had appeared which brought out very emphatically the need of this test. A man who had made examinations of 4,000 cases found that of those with a positive Wassermann fifty per cent. were women in whom syphilis was not suspected.

Dr. George Gray Ward, of New York, said the matter was of interest in regard to the question of Colles's law which they had been led to believe had proved incorrect. At a recent meeting in Washington, however, Dr. Whitridge Williams reported a case which seemed to prove that this law might hold good. He had had a case in his service of a negress who had had eleven labors under his control. She had had repeated Wassermanns but all were negative. The first five labors were perfectly normal, the sixth was a twin birth, and one child was markedly syphilitic and one not. This was probably a case of superfecundation. Subsequent labors under observation gave no evidence of syphilis. The woman never showed syphilis. If the woman had two lovers at the time of conception it would be the strongest evidence that there was reason to believe in the validity of Colles's law.

Results and Technic of Vaginal Subtotal Hysterectomy for Procidentia and Cystorectocele Associated with Fibroid Growths or Fibrosis uteri.—Dr. Hiram N. Vineberg, of New York, in a method previously described, had dealt with amputation of the body of the uterus at the internal os and the use of the cervical stump to hold up the bladder by anchorage to the subpubic fascial ligament. That method possessed advantages over total hysterectomy, and was attended by less hemorrhage. At that time ten cases had been treated in that way, but since then twenty additional cases had been operated in. The technic was as follows: 1. Longitudinal incision of the anterior vaginal wall, extending from near the urethral meatus within an inch or an inch and a half of the cervical os. 2. Separation by sharp or blunt dissection of the vaginal walls from the underlying bladder. 3. Pushing of the bladder up from the uterus and base of the broad ligament by gauze dissection. 4. Transverse incision of the vesicouterine peritoneal fold. 5. Delivery of the body of the uterus through the vaginal incision. 6. If the ovaries were to be preserved, a ligature was passed around the ovarian ligaments and the tissues were cut between the ligature and the uterus. If they were to be removed, the ligature was passed around the infundibulopelvic ligament. 7. A ligature was passed at the level of the os internum, the body of the uterus was amputated at the desired level by a wedge shaped incision, the thin edges of the wedge toward the cervix; the edges of the wound then brought down by continuous catgut suture and the raw area of the cervix sutured laterally in the same way. 8. The cervical stump was then sutured to the subpubic fascia and anterior vaginal wall. Further modifications of this operation would be the shortening of the uterosacral ligaments to prevent the cervical stump from pushing downward. Of thirty-two cases, twenty-five had given excellent results. One was a failure.

Technic of Vaginal Plastic Operations for Cystorectocele and Prolapse of the Uterus.—Dr. R. T. Frank, of New York, said this was an attempt to standardize technic. The technic was described which in ten years had given more uniform results and which was most readily taught to most surgeons in a hospital. The operation for cystocele was as follows: The anterior lip of the cervix was seized with volsellum and pulled to the vulva; the mucosa was seized with artery forceps half an inch below the mucosa; the mucosa was incised between the two fixed points and resected on both sides half an inch along the line of incisions superficially; neither deep nor wide reflection was permissible; narrow flaps on each side were seized with two forceps by an assistant; at the lowest angle of the wound the bladder was freed from the cervix in the median line by the snips of scissors; the bladder was freed by pushing firmly up against the cervix until the lateral fibres became more plainly demarcated. After exposure of these bladder pillars the vaginal flaps were to be separated more widely; a thin line of fascia continuous with the pillars was to be preserved. The repair was to be done as follows: Two transverse sutures of medium chromic catgut were passed, taking in first one pillar, then the cervix, then the opposite pillar; the upper suture was passed at the lower border of the peritoneal reflection, the next one half inch below it; the pillars were united firmly in the median line by tying, thus raising the bladder to a higher level and making it flat instead of bulging.

For rectocele the repair was as follows: After exposure, the rectum should be pushed away from lateral structures with the finger. The approximation should take place at the descending ramus of the pubis. The rectum should be passed, taking in the lateral fascia and underlying muscle on one side, then forming a partial pursestring suture, grasping the rectal fascia between the rectum and mucosa around the upper part of the rectocele, and again grasping the lateral structures on the opposite side, the suture being tied. The rectum was thus firmly fixed and held back. The gap in the mucosa should then be sutured with interrupted sutures, as this region later became less accessible.

The Pessary in Retroversion and Prolapse.—Robert L. Dickinson, of Brooklyn, said the pendulum swung from one extreme to the other. In former times it swung too much toward the pessary treatment, and now it swung too much to the surgical side. They often heard sweeping condemnation of pessaries, but it could be safely said that there were a great many cases of retroversion that were practically symptomless, that could well be left alone. In the group that could be taken care of by pessaries there should be included, first, the retroversions of early pregnancy; second, post partum retroversions; third, bad risks; fourth, a few cases where retroversion had affected the bladder. In regard to the first group of cases, a physician should examine his patient early, between the first and second omitted periods.

(*To be continued.*)

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Treatise on Blood Pressure in Ocular Work. With Special Reference to Factors of Interest to Refractionists. By Eugene G. Wiseman. Illustrated with 19 Engravings. Rochester, N. Y.: John P. Smith Printing Company, 1916. Pp. xviii-267.

The particular purpose of this work is to acquaint optometrists with some of the facts relative to blood pressure and their bearing upon the refractive and muscular conditions of the eye. It is interesting in connection with the assertion so persistently made that optometry is not a part of the practice of medicine, to note this emphasized sentence in the preface: "If it is important to detect such diseases with the ophthalmoscope after the destruction has taken place, is it not far more important to detect symptoms of the fundamental causes of such disturbances in time to avert the impending disaster?" Not only is the answer obviously affirmative, but the corollary is just as obvious, that no one should practise optometry until he has had a thorough instruction in physiology, pathology, and treatment; in other words, in the practice of medicine.

This conclusion is emphasized strongly as soon as one reads the book, which is divided into two parts, the first presenting the general facts of arterial anatomy, histology, physiology, pathology, and sphygmomanometry, the second dealing with the relationship between general and ocular pathology. In the latter we find discussions of diseases of the circulatory, digestive, and urinary systems, anemia, diabetes, chlorosis, exophthalmic goitre, and syphilis, as well as the effects produced by tobacco, alcohol, and atropine. The writer evidently has read widely, and yet either has or appears to have only a superficial knowledge of his subject. This is not astonishing if he has pursued his medical studies unaided, for those of us who are well acquainted with these studies know that their depths are not reached easily, and that many fallacies lie on the surface ready to trip every one into error. We wish we could recommend the book, for its author has made a strong effort to bring into prominence matters that are of importance. As it is, the only thing we can do is to recommend him to take a full course in some Class A medical school, allow himself time to digest the knowledge acquired there and to appreciate its bearings on his own observations, and then to try again.

Transactions of the American Surgical Association. Volume the Thirty-third. Edited by John F. Binnie, M. D., Recorder of the Association. Philadelphia: William J. Dornan, 1915. Pp. xxviii-825.

This volume, containing the papers read before the association at the meeting held June 9 to 11, 1915, is a valuable addition to any physician's library, as it embraces articles by many of the best known surgeons in the United States. The address of the president, Dr. George E. Armstrong, is unusually well written and the fact that he is a Canadian accounts for his interest in military surgery at this time. He gives a brief review of its history. Of the forty papers nine deal with the surgical complications of typhoid fever and with the surgery of the spleen. The gallbladder and breast follow in order of prominence.

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Interclinical Notes

The *Nurse* for July, 1916, pays itself a few well deserved compliments on the success which has attended its two years of existence. This issue explains the success. Dr. Conduct W. Cutler, Jr., writes on Homemade Surgery, Dr. Thompson Frazer on the treatment of tuberculosis, Dr. Francis Carter Wood on cancer, Dr. Anne E. Perkins on nursing the insane, Dr. W. S. Birge on amnesia, while a large and well trained chorus of nurses supports these stars by valuable contributions on the accomplishments, vocational and avocational, of those who attend the sick or wounded. The scenic setting, so to speak, is admirable, particularly in the act concerned with diet; the prognosis would be very grave where a patient refused to consider any of the trays photographed for this department.

* * *

From page 767 of *Commerce and Finance* for July 5th, we learn that in talking airily for all these years about sisal, we have been exposing our ignorance and have probably been well laughed at by experts; hereafter we shall always call it henequen and will refuse firmly and knowingly to pay more than six cents a pound for it.

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Official News

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the two weeks ending July 8, 1916:

Cook, F. C., Surgeon. Detached from the *Louisiana* and ordered home to await orders.

Curl, H. C., Surgeon. Detached from the *Alabama* and ordered to the *Rhode Island.*

Dragoo, C. H., Assistant Surgeon. Ordered to the Naval Hospital, Newport, R. I.

Dunbar, A. W., Surgeon. Detached from the Naval Academy, Annapolis, Md., and ordered home to await orders.

Richards, T. W., Surgeon. Ordered to duty with the Military Relief Division, American Red Cross, Washington, D. C.

Stuart, M. A., Passed Assistant Surgeon. Detached from the *Wilmington* and ordered home to await orders.

Taylor, J. S., Surgeon. Detached from the *Rhode Island* and ordered to the *Alabama.*

Wilson, Talmadge, Assistant Surgeon. Detached from the Naval Hospital, Yokohama, Japan, and ordered to the *Wilmington.*

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the United States Public Health Service for the seven days ending July 5, 1916:

Draper, W. F., Passed Assistant Surgeon. Granted one month's leave of absence from July 10, 1916.

Foster, M. H., Surgeon. Granted one month's leave of absence from July 5, 1916.

Francis, Edward, Surgeon. Granted three days' leave of absence from June 26, 1916.

Grimm, R. M., Passed Assistant Surgeon. Detailed to deliver an address on public health at the Chautauqua to be held at Pickens, S. C., July 11, 1916.

Knight, C. P., Passed Assistant Surgeon. Directed to proceed to Pensacola, Fla., Quarantine Station, and assume temporary charge.

Lanza, A. J., Passed Assistant Surgeon. Detailed to attend a meeting of the Montana Medical Association at Miles City, Mont., July 10, 1916.

McKeon, F. H., Passed Assistant Surgeon. Granted one day's leave of absence from July 11, 1916.

Oakley, J. H., Surgeon. Granted three days' leave of absence from June 24, 1916, under paragraph 193, Service Regulations.

Pettus, W. J., Surgeon. Granted leave of absence for one month and six days, from July 17, 1916, with pay, and twenty-four days without pay, from August 23, 1916.

Preble, Paul, Passed Assistant Surgeon. Detailed to deliver an address on public health in rural communities at the annual school of health officers, at Burlington, Vt., July 6-7, 1916.

Robinson, D. E., Surgeon. Granted one month's leave of absence from July 8, 1916.

Stimson, A. M., Surgeon. Granted one month's leave of absence from July 6, 1916.

Williams, L. L., Senior Surgeon. Bureau letter dated May 23, 1916, granting one month and fifteen days' leave of absence from July 1, 1916, amended to read one month's leave of absence from July 18, 1916.

Yarbrough, H. C., Assistant Surgeon. Directed to proceed to Liberty, Mo., to conduct studies of rural sanitation in Clay County.

Births, Marriages, and Deaths

Born.

Bates.—In Morrisville, Vt., on Saturday, June 24th, to Dr. and Mrs. George L. Bates, a son.

Married.

Ball-Mauck.—In Burton, Ohio, on Saturday, June 24th, Dr. Clay A. Ball, of Muncie, Ind., and Miss Helen E. Mauck.

Beatty-Snyder.—In Trenton, Mo., on Wednesday, June 21st, Dr. Jesse Beatty, of Farragut, Iowa, and Miss Pearl Snyder.

Blaisdell-Rose.—In Brooklyn, N. Y., on Saturday, July 1st, Dr. Silas C. Blaisdell and Miss Mary E. Rose.

Broughton-Leavitt.—In Exeter, N. H., on Thursday, June 29th, Dr. Henry White Broughton, of Boston, Mass., and Miss Mary Lawrence Leavitt.

Finney-Wheeler.—In Fairfield, Conn., on Thursday, June 29th, Dr. William Finney, of Baltimore, Md., and Miss Theodore Wheeler.

Keough-Clark.—In Pawtucket, R. I., on Tuesday, June 27th, Dr. Peter L. Keough and Miss Mary G. Clark.

Kickham-Keating.—In Boston, Mass., on Wednesday, June 28th, Dr. Charles Joseph Kickham and Miss Mary Keating.

Malcolm-Murphy.—In Fairfield Beach, Conn., on Saturday, June 24th, Dr. F. L. Malcolm, of Yonkers, N. Y., and Miss May Murphy.

Martin-Cook.—In Plymouth, N. H., on Monday, June 19th, Dr. Harold W. Martin, of Dorchester, Mass., and Miss Mildred Harlowe Cook.

Monahan-Casey.—In Providence, R. I., on Wednesday, June 21st, Dr. John T. Monahan and Miss Mary Casey.

Ott-Roulstone.—In Chelsea, Mass., on Friday, June 16th, Dr. George J. Ott, of Boston, and Miss Mary S. Roulstone.

Sullivan-Jones.—In Woodbridge, N. J., on Wednesday, June 28th, Dr. Charles Joseph Sullivan, of New Brunswick, N. J., and Miss Anabel E. Jones.

Weed-Tovey.—In New Haven, Conn., on Monday, June 26th, Dr. Arthur R. Weed and Miss Alice Tovey.

Died.

Aultman.—In Meigs, Ga., on Thursday, June 22nd, Dr. I. R. Aultman, aged fifty-six years.

Anselme.—In St. Louis, Mo., on Friday, June 30th, Dr. Francis B. Anselme, aged fifty-five years.

Blundell.—In Allendale, N. J., on Friday, June 30th, Dr. William Blundell, of Paterson, N. J., aged eighty years.

Brooks.—In Washington, D. C., on Sunday, June 25th, Dr. Floyd Vernon Brooks, aged sixty years.

Clarke.—In Amherst, Mass., on Thursday, June 22nd, Dr. George S. Clarke, aged sixty-two years.

Corrigan.—In Providence, R. I., on Friday, July 7th, Dr. John P. Corrigan.

Coues.—In Cambridge, Mass., on Monday, May 1st, Dr. S. F. Coues, Medical Director, United States Navy, retired.

Eaton.—In Lowell, Mass., on Sunday, June 25th, Dr. Wyllis G. Eaton, aged sixty-two years.

Etheredge.—In Wagener, S. C., on Saturday, June 24th, Dr. Luther B. Etheredge, aged forty-five years.

Johnson.—In Newark, N. J., on Saturday, July 1st, Dr. William Mapes Johnson, aged eighty-one years.

Jones.—In Memphis, Tenn., on Monday, June 26th, Dr. Heber Jones, aged sixty-eight years.

Long.—In Carlisle, Pa., on Sunday, July 2nd, Dr. John Coover Long, aged sixty-nine years.

Niles.—In Springfield, Ohio, on Saturday, June 24th, Dr. Lewis E. Niles, aged fifty-four years.

Nolen.—In Baltimore, Md., on Friday, June 30th, Dr. Charles F. Nolen, aged forty-eight years.

Watkins.—In Spring City, Tenn., on Sunday, June 25th, Dr. Reece Kelso Watkins, aged sixty-seven years.

Whitbeck.—In Rochester, N. Y., on Monday, July 3rd, Dr. John F. W. Whitbeck, aged seventy-two years.

Wood.—In New York, on Thursday, July 6th, Dr. Charles S. Wood, aged fifty-two years.

Woodward.—In New York, on Sunday, July 2nd, Dr. Julius H. Woodward, aged fifty-eight years.

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Original Communications

THE DIAGNOSIS AND TREATMENT OF ACUTE ANTERIOR POLIOMYELITIS IN THE PREPARALYTIC AND POSTPARALYTIC STAGES.*

By M. N. Neustaedter, M. D., Ph. D.,
New York,
Lecturer in Neurology, New York University and Bellevue Hospital Medical College.

While nothing new has been discovered about the epidemiology, etiology, diagnosis, and treatment of poliomyelitis since 1912, it might be apropos at the present time to reiterate some of the salient features with a view of suggesting some points in its diagnosis and treatment.

ETIOLOGY.

That the disease is infectious and contagious, no one will gainsay. We know that the virus belongs to the variety that can be filtered through a porcelain and asbestos filter and that it is highly resistant to many destructive measures; thus it withstands glycerinization for long periods, drying over caustic potash, freezing, and is not injured in a 0.5 per cent. phenol solution for three days. Gastric and intestinal juices seem not to affect it. On the other hand, it is readily destroyed when heated to a temperature of 50° C. for half an hour, or in weak solutions of hydrogen peroxide, formaldehyde solution, menthol, potassium permanganate, or corrosive sublimate. Several investigators have reported pure cultures of a coccus producing the disease, but this is as yet unconfirmed.

The mode of its infection can be accepted as fairly well established. Infections may be propagated either by the circulatory or lymphatic system. No evidence has as yet been adduced that the circulatory system is the primary route for the virus of poliomyelitis, while the evidence in favor of the lymphatic system seems to be conclusive. It was my privilege to be the first to prove that the nasopharynx was the point of entry, and later investigators produced the disease experimentally from the nasal discharges of patients as well as from healthy carriers.

It is then conceivable that its mode of dissemination may be through direct contact or indirectly through persons, living animals, or dead objects. House pets may carry the virus from place to place; toys, books, linen will likewise carry infection, and, most of all, dust is the greatest disseminator of the disease. This last agency was proved by me when I produced the disease experimentally in monkeys from dust of the sick room; this was fully confirmed by Swedish investigators. It may be that the fly carries the germ and thus spreads the disease, but it was not proved that insects act as hosts for the virus. Articles of food may be contaminated and may infect by coming in contact with the pharynx. Milk and also water may be carriers, since the virus has been shown to remain viable in them and retain its virulence for over thirty days. The nasal discharges are probably swallowed, and, as it was shown, the virus survives in the intestinal tract; it may, under certain circumstances, contaminate the sick room through feces.

The period of incubation is estimated to be from two to thirty-three days. I have one case on record in which I could establish a period of incubation of one day. It was in a physician's child and the father brought the infection after staying in the house of a relative with a poliomyelitic patient for thirty-six hours. Twenty-four hours after he had arrived home, his child was stricken with fever, which lasted two days. On the third day, the child's lower extremities became paralyzed.

As to age, the statistics vary. In Europe five per cent. of all patients are over sixteen years of age; in this country not more than one per cent. of all patients are over sixteen years old. Both sexes seem to be equally attacked. Poliomyelitis, furthermore, shows definite seasonal variations in its incidence. The records of epidemics in many countries show that it occurs during the summer and reaches its maximum in the late summer and early autumn. Sporadic cases occur everywhere throughout the entire year. Our present epidemic started rather early in the season, owing probably to the high virulence of the virus.

It is significant that, while the disease is highly contagious and infectious, we find, comparatively speaking, not many cases of infection during an epidemic in proportion to the population of an affected community. It is rarely that more than one member of a family is attacked at a time; few nurses were infected while attending cases in hospitals, and the epidemic recurs only every three to five years in the same locality. It may be due, as some authors argue, to an acquired active immunity.

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*This original communication was written by special request of the New York Medical Journal.

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I believe that it may also be due to an inherited immunity and that individuals are affected who exhibit a point of minor resistance in the cerebrospinal axis. Within the last few years I have collected fifty cases from my clinic and private practice with a fairly trustworthy family history. These show 5.4 per cent. to have neuropathic or psychopathic taint. This high percentage, even in so small a number of cases, is more than a mere coincidence. While I do not regard it as conclusive, I believe it significant, and further inquiry along these lines seems to me advisable.

Before entering upon a discussion of the clinical picture I deem it necessary to review the pathology of the disease as we understand it today. This, like the symptomatology, we must divide into two stages—the preparalytic and postparalytic. It is well to remember, as I have pointed out recently, that poliomyelitis is a pathological entity, but not a clinical one. That is to say, it cannot be regarded as affecting the anterior horns of the spinal cord exclusively, but rather the entire cerebrospinal axis, the gray and white matter and the meninges as well. Nor are the other viscera to be disregarded, for in no small number of cases these are also affected; so that by recognizing that acute poliomyelitis is a general infection and that, in accordance with particular sites attacked, corresponding symptom complexes will appear, its course may be more easily explained and its bearing on treatment. Its pathology, however, is uniform and shows the same characteristics, no matter what part is affected. This is true of experimental and clinical cases alike.

PATHOLOGY.

In the prodromal stage we find macroscopically a hyperemia of the cord and meninges; the vessels of the brain cortex, basal ganglia, ventricles, pons, bulb, cerebellum, and cord at all levels, especially marked in the cervical and lumbar regions, are congested. The entire cerebrospinal axis presents an edematous condition. Yet there is little, if any increase of the cerebrospinal fluid. This is clear as a rule in this stage, and contains a large amount of polynuclears the first few days and then mononuclear cells—lymphocytes exclusively. The cell count may range anywhere from thirty to ninety cells per c. mm.; its globulin content is increased, and its reducing property for Fehling's solution, due to the presence of dextrose, is intense. The brain and cord, on section, have a moist, translucent, edematous appearance, and the gray matter of the cord is often swollen so that it projects above the level of the white matter. Frequently punctate hemorrhages may be discerned by the naked eye. Bearing in mind that the nasopharynx is accepted as the point of entry, we ought to find some evidence of this focus. Every clinician describing the clinical picture of acute poliomyelitis calls attention to the fact that there is no redness of the throat in the ordinary acceptance of the term; so all report the throat as negative. To my mind the throat is by no means negative. The paleness of the nasopharyngeal mucosa and its edema, accompanied in the early stage by a serous and frothy transudate, is constant in the affection and *pathognomonic* of the earliest prodromal stage. This is analogous to the edema of the brain and cord. I know of no affection in which such a condition of the pharynx obtains. Since the infant swallows the nasal discharges and some may enter the bronchi, we can explain at times the presence of foci of congestion in the lungs and alimentary tract. The virus, as I have stated, is propagated by the lymphatic system, and we may, therefore, have foci of congestion and edema in the various glands.

Histologically, the disease is characterized by a perivascular and interstitial infiltration of round mononuclear, polymorphonuclear, plasma, and endothelial cells. This is also true of the lymph spaces around the ganglion cells of the anterior horns of the cord, the cells of the nuclei of the cranial nerves, the cortical brain cells, basal ganglia cells and those of the cerebellum. Early in the disease there is also a marked infiltration of cells into the lymph spaces in the intervertebral ganglia. These and the vessels of the pia in the anterior longitudinal fissure of the cord are the very first to be involved. This has been experimentally demonstrated as early as the third day after infection. This infiltration follows along the sheaths of the central vessels of the cord into the anterior horns. Not infrequently we find an involvement of the vessels of the white matter of the cord as well, giving us a picture of transverse myelitis. In such cases the infiltration may be local or diffuse throughout. The capillaries of the gray matter of the cord are engorged. The degenerative changes in the ganglion cells in this stage are not great, but there is marked gliosis, especially of the wandering neuronophagocytes. Alterations of the peripheral nerves have not been described. There have been cases described in which the cell degeneration was marked in this stage, while the perivascular infiltration was scanty. These are exceptions. The first changes, then, are those of an acute interstitial meningitis, which is not associated with fibrin formation or with an exudate on the surface of the meninges. To summarize, the whole process is one of an inflammation. The blood early presents a leucocytosis with a predominance of polymorphonuclears, and, according to some investigators, mononuclears.

If the process goes on to the subacute or chronic stage, we find the following changes in addition to those enumerated. The perivascular exudate forms a sheath apparently completely surrounding the vessels for long stretches, pressing on the lumen of the vessel, and thus exerting a mechanical obstruction to circulation and thereby to cell nutrition. To this mechanical obstruction I ascribe the edema and one phase of cell degeneration. Devoid of nutrition, the cell swells up, the Nissl bodies coalesce, the nucleus becomes eccentric, and the cell finally breaks down, becoming autolyzed in its own ferment, there being no antiferment present to counterbalance it. There is also another phase of cell destruction. We find frequently a marked infiltration of the pericellular lymph spaces, with leucocytes predominating over the perivascular infiltration. These polynuclear cells and some mononuclears, probably polyblasts, enter into the ganglion cells with the probable purpose of destroying the virus therein. They are seen on section in a degenerated state, caryorrhexia. These are the cells which absorb the products of degeneration of the ganglion cells and other leucocytes through phagocytosis. This is a characteristic form of degeneration of ganglion cells which we find in poliomyelitis. In place of the ganglion cells we find an accumulation of round cells. This process of cell destruction is termed neuronophagocytosis. Once the cell is destroyed, it is conceivable that later we should find a degeneration of its axone. As this process is becoming complete the whole anterior horn structure is converted into connective tissue; it shrinks and presents what older writers described as scars.

The ganglion cells of the anterior horns of the cord possess, beside motor, somatic functions also, and once destroyed must of necessity produce trophic disturbances in muscles and bones supplied by them; and the first to atrophy is the affected muscle. In later stages we find also involvement of bones.

A word about the question of immunity and the nature of the toxin of the virus. Various observers have found that the serum of a patient or animal recovered from the disease will neutralize the virus *in vitro* after being incubated for an hour in a temperature of 37° C. Such mixture, when injected into a monkey, will not produce the disease; nor will an animal again be successfully infected, in the majority of instances, after it has once recovered from the affection. Animals have been also rendered actively immune by successive vaccinations with the attenuated virus after the method of Pasteur. On the other hand, it was established that the serum of a recovered case had no protective or curative power whatever. As to the character of the toxin, we have so far established that, whatever exotoxin there may be, it is a negligible quantity and of no great toxicity. Nor does the endotoxin seem to be very toxic. This conclusion I have reached from my experiments and clinical data at hand. I have succeeded in separating the endotoxin and found that the product of a suspension of a virulent virus, of which 0.1 c. c. did bring down a monkey in six days, would kill a rabbit of 900 grams only when injected with fifteen c. c. Guineapigs immunized with such endotoxin have yielded a serum which rendered the virus *in vitro* inactive after an incubation period of three quarters of an hour in a temperature of 37° C. Whether such serum possesses any protective or curative properties remains to be seen at the conclusion of my work.

SYMPTOMATOLOGY.

Our difficulty lies mainly in the possibility of early diagnosis of the disease before the onset of paralysis. The importance of this cannot be overestimated, since it may afford us a means of attempting to intercede in time to prevent paralysis and, possibly, death. In searching, then, for a set of symptoms during the preparalytic stage that would prove a criterion, we must have recourse to its pathology in that stage. Bearing then in mind the picture described above, we may expect very early *fever* as the first sign, accompanied sometimes by vomiting, with or without diarrhea. Alongside of this there are, without exception, nasopharyngeal symptoms. Frequently we hear that the patient began to sneeze, or made attempts at sneezing, and at times this was accompanied by copious nasal discharges. Upon inspection we find a somewhat anemic, glistening edematous condition of the nasopharyngeal mucosa, with a serous, frothy transudate, analogous to the edematous swelling of the cord that we see upon autopsy. This condition persists for a few weeks after the paralysis had set in and then changes to an anemic atrophic condition of the mucosa. I desire to lay stress upon this sign as being, in my opinion, pathognomic of the disease at its onset, and, taking it in conjunction with other signs that I am about to enumerate, will enable the general practitioner, who is the first to be consulted, to diagnosticate the case early. With this sign present, it becomes imperative to make a lumbar puncture, and the cytological findings in the cerebrospinal fluid as enumerated will at once clear up any doubt.

Headache and pain ought to be, and as a rule are, constant accompaniments. The little infant cannot tell us of its headache, but he is giddy and drowsy, yet rarely comatose; the mentality is always clear, and the child is easily roused. This is in accord with my statement, that the exotoxin is of a negligible quantity and the endotoxin is not very toxic, or else there ought to be high fever and delirium, even coma. The older children, when affected, always complain of this characteristic headache and giddiness. These symptoms are due rather to the hyperemia of the brain vessels and the edema without appreciable augmentation of the cerebrospinal fluid.

It has been shown in experimental as well as clinical cases that the exudate in the intervertebral ganglia is marked early in the disease, and associated with this infiltration there is an inflammation of the dura of the cord. For these reasons there is, quite early, pain in the extremities and along the spinal column, a hyperesthesia along the affected area, and rigidity of the muscles of the neck. It should be remembered, however, that there is no pain on pressure along the course of the peripheral nerves of the extremities, unless it is a neuritic case, but rather on extending the affected limb. The children are found with their extremities in a flexed position, and an attempt to extend them, or even slight passive motion, produces excruciating pain—so much so that the patient cries from apprehension when only approached by the physician or nurse. The inflammatory condition, when extending to the brain meninges, may give rise to simple twitchings or even convulsions in direct proportion to the extent and intensity of the affection. The patients, as a rule, favor some extremity in particular, for there is the weak spot, and this favored extremity will become paralyzed. Reflexes may be weak or already absent. In some instances they are exaggerated at the beginning.

To recapitulate, then, we meet in the prodromal stage the following constant symptoms: Sudden onset with fever, headache, drowsiness, at times twitchings or convulsions, pain in extremities on passive motion and along the spinal column on pressure, sometimes gastrointestinal disturbances, the nose and throat symptoms, as mentioned, and the cytological findings in the cerebrospinal fluid. Some investigators call attention to an early and profuse perspiration, but I cannot verify this.

In attempting to classify the symptom complexes of the subacute and chronic stages, we must bear in mind that in reality we are dealing not with an anterior poliomyelitis, but with a polioencephalomeningomyelitis. In these stages we get the end results of the infection; the symptoms indicate the site or sites of involvement anywhere along the cerebrospinal axis. In these stages some of the prodromal symptoms disappear, notably fever, headache, and the gastrointestinal symptoms, if such were present, and often pain also. All the symptoms may clear up and the patient fully recover. These are abortive cases and during every epidemic, the present one included, many such cases are reported. Most of the others that survive present several groups of paralyses, such as, 1, cerebral spastic; 2, bulbar cranial nerve involvement; 3, spinal flaccid paralyses; 4, pontine and cerebellar cranial nerve involvement, tremors, and ataxias; and, 5, mixed types. Of the cranial nerves the facial and acoustic are most frequently involved, the former resulting in Bell's palsy, the latter in deafness. The cerebral type is rare, and it is perfectly clear that if the sensoriomotor region is involved we shall have a spastic hemiplegia with or without epileptiform convulsions, or, if only the centre of one extremity is involved, a spastic monoplegia will result. In the spinal type we have, of course, the flaccid paralysis of one or more extremities, according to what segments are affected. Here the motor neuron emanating from the anterior horn becomes destroyed, causing a break in the spinal reflex arc, giving us a flaccid paralysis, loss of reflexes, wasting of the muscles, loss of response to the faradic current, and a positive reaction of degeneration. In the course of time this condition results in contractures, shortening of the affected limb, spinal curvatures and other orthopedic defects, abdominal and diaphragmatic hernias. The mixed types are those of bulbospinal or cerebrospinal symptom complexes. It seems to me that such classification reconciles the chief clinical symptoms with the predominant anatomical lesions.

TREATMENT.

Since the disease is directly contagious and is disseminated by healthy as well as sick carriers, prophylactic measures are essential. A strict quarantine for a number of weeks is, of course, the first requisite for the efficient protection of the public. Since I have shown that dust contains the virus in a viable condition, I advise a thorough scrubbing of the floors and frequent flushing of the streets and sidewalks. We must remember that people spit on sidewalks and children play there. On general principles I advocate the extermination of insects as possible carriers. Milk and other articles of food, where practicable, should be boiled. Domesticated animals and household pets should receive frequent washings. Bathing in stagnant water in an infected neighborhood, the playing of children around sand heaps in parks and their congregation in playgrounds or places of amusement during an epidemic should be prohibited. Since it was shown that the virus is readily destroyed by menthol and hydrogen peroxide, I strongly advise that the nasopharynx of the sick be frequently sprayed with a one per cent. solution of peroxide of hydrogen, and that of the healthy children be sprayed with a solution of 0.5 per cent. menthol in liquid petrolatum. As a measure of individual prophylaxis, this has given me good results in my practice. All these measures I advocated in the International Congress of Hygiene in Washington, D. C., in 1912. Since then it has been shown that feces contain the virus, and it would be necesary to disinfect these discharges, as well as bedpans and urinals. Bed clothes and other linen used by the patient should be thoroughly boiled.

During the febrile stage, complete mental and physical rest is imperative and should be continued so long as there is pain, for every movement causes discomfort. The patient, therefore, should be handled with extreme gentleness; we should avoid flexing the neck or hips, or extending the limbs, or even bending the spine. I would even forego sponging in high fever, in order not to cause pain by such manipulation. Bromides and chloral are, as a rule, efficient in alleviating pain in infants, but in older children the opiates or coaltar preparations will have to be resorted to in extreme cases. An exclusively fluid diet and mild catharsis, when necessary, should be carefully maintained. A cold compress to the head in temperatures higher than 102° F. proves soothing.

When the acute stage passes and paralysis sets in, a more active treatment must be instituted in order to prevent possible deformities and restore such muscular function as conditions may warrant. My guide as to when such active treatment should be begun is when pain subsides completely, and *not earlier*. So long as pain lasts, even with the fever gone, I immobilize the affected limb by putting it in a well padded splint, and patients are invariably grateful. I have seen many partial recoveries from loss of muscular function from such procedure. During the stage of active exudate manipulation of the extremity will cause fatigue in the nerve cells, and is apt to enhance the process of degeneration, while complete rest may, and frequently does hasten absorption of the exudate, and restitution *ad integrum* of nerve and muscle is made possible. All our spontaneous recoveries are due, in a great measure, to such precautions. Warm baths during the afebrile stage are of great benefit, and the patient should be left in the bath as long as he can remain with comfort—the longer the better. With the pain gone, about a fortnight after the onset of the paralysis, we may begin with massage, passive movements, and galvanism. No more than five minutes should be allotted to these measures daily, for the structures need very little encouragement and too much stimulation will easily exhaust them and produce the reverse of the desired effect. In using galvanism I prefer the interrupted to the continuous current, and then only of a weak amperage, just enough to produce contractions.

Active exercise of the muscles by the patient should be encouraged, and this is best accomplished with infants while bathing daily by putting into the tub some floating toys and encouraging the patient to attempt to handle the objects with the affected limb. Older children can be persuaded to counteract antagonistic passive movements by the masseur. It may well be remembered that at times groups of cells in a given involved segment of the cord or cranial nerve nucleus may escape destruction and their function be restored, if thus encouraged. In this treatment we should persist for years. Several youngsters in my private and clinical practice who were hopelessly paralyzed for months, after persistent treatment for several years, have regained a fair amount of function in certain muscle groups. To avoid contractures, counteracting splints may be applied with advantage, but left on only part of the time at the beginning, for example, only over daytime, and removed at night. If no improvement is noticeable in any muscle group after persistent treatment for a few years, it is advisable to resort to operative measures, such as tendon transplantations or other surgical measures, as the case may demand. That the patient should at all times have a bland, well nourishing diet and plenty of fesh air applies here as well as in all febrile and wasting diseases. In common with all clinicians I recommend that we should *do all we can,* and at the right time, but in our zeal take care *not to overdo.*

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DIAGNOSIS AND TREATMENT.

Old and New Methods,

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When Herophilus organized his medical school a little more than 2200 years ago, he attached special importance to the cardinal points in the teaching of the great Hippocrates—acute observation and careful interpretation of symptoms. In addition, he paid great attention to the sciences, especially anatomy, physiology, chemistry, and botany, and the Ptolemies assisted him by erecting great buildings, museums, laboratories, libraries, and botanical gardens. Their aims and methods compare fairly well with ours at the present time.

The writer desires in this paper to refer to certain phases in some serious diseases and conditions, and especially to show the importance of team work between the clinicians and laboratory workers. The fact that the majority of physicians in this part of Canada have great respect for such scientific workers as Amyot, Mabee, Fitzgerald, Mann, Lancaster, and others, and have much confidence in their good judgment, should materially assist us in getting good results both as to diagnosis and treatment. In brief reports of some illustrative cases names will not be mentioned, as a rule, although *ego* will creep in at times.

CERTAIN FORMS OF CANCER.

About twenty-five years ago, a diagnosis of condyloma was made at the Toronto General Hospital. A consultation was deemed advisable, and, as it turned out, there was a serious difference of opinion. Two competent men pronounced it epithelioma, and advised amputation. A specimen was sent to the laboratory, and the report given—epithelioma. I again investigated and talked the matter over with the microscopist. I found that he only expressed his opinion and did not pretend that this should be accepted without doubt. No operation was performed. After treatment, local and constitutional, the growth or growths melted away, and the man left the hospital in good condition. My clinical class followed this case carefully, and knew all about our doubts and fears. I tried to impress upon the students the importance of studying the case in all its aspects. When a specimen is sent to the laboratory, a full clinical history should go with it. The microscopist gave a wrong opinion in this instance, but in a majority of similar cases his opinion would be both correct and helpful. At the same time I mentioned the case of a woman with a tumor of the breast, which, I thought, was innocent. The microscopist proved to me that I was wrong, and the breast was amputated with happy results.

Two cases of hysterectomy will now be considered. A woman supposed to be near the end of the menopause had some hemorrhages which caused alarm. After a slight curettage the scrapings were examined with negative results. The symptoms were so serious, however, that the consulting surgeon advised hysterectomy. I was called in consultation, practically to decide for or against. I said yes, without hesitation. The operation was performed and a good recovery ensued. She is now happy and well, better, I think, than she could ever have been without the operation. The only criticism I should think of offering is that the curettage was unnecessary in this case and should not have been done. But one may ask, is that not going too far? In such a case surely a thorough investigation is advisable, and a slight curettage can scarcely do harm. My reply is, that it can do much harm. This patient for over twenty years was troubled with "nerves," and this "slight operation," although done gently and skillfully, gave her great pain and upset her seriously. As it turned out, it was useless, and in such a case therefore worse than useless. If the surgeon intends to operate regardless of what the laboratory may discover, surely curettage is unnecessary.

In the second case the patient was fifty-three years old, and had ceased to menstruate fifteen years before. She had serious hemorrhage for three months. Examination of uterine scrapings gave negative results, but because of the clinical symptoms the uterus was removed, and with the annexa was sent to the pathological laboratory for examination. After a few days a report came saying that decidual remains were found in the uterus, and a corpus luteum in one of the ovaries. This was considered "a good joke" on the surgeon, and reports spread through the city. The surgeon demanded a thorough investigation, which was allowed. Two pathologists of unquestioned reputation examined the specimen, and reported positively that there were no decidual remains, no corpus luteum, and that there was cancer. Apart from this incident evidence had been accumulating for years that laboratory men in Toronto were constantly belittling the work of the clinicians as to their interpretation of symptoms. Of course a simple glance at the clinical report in this case would have prevented the possibility of such an enormous blunder, which might have blasted the reputation of an able surgeon, and also that of a decent woman.

A brief reference will be made to another case much more pleasing to contemplate. A few weeks ago a prominent physician of Toronto had symptoms of inflammation within the abdomen. After section a lump was found connected with the colon. Judging from the clinical symptoms it seemed likely that it was inflammatory in character. The laboratory findings were at first doubtful and sarcoma was suspected. Then four pathologists took hold, and after efficiently studying the specimen, decided that it was inflammatory. While I may not mention names in this paper, it will probably do no harm to say one of them was Welch of Johns Hopkins. Probably all connected with this case were inclined to thank Providence for the modern laboratory, which even in these days contains many men who are as careful and thorough in their methods as were Pasteur and Lister in their best days.

One of the scientific instruments which, as every one knows, has come into pretty general use is the sphygmomanometer, and along with it a good many remedies for the treatment of abnormal blood pressure.

Very careful laboratory investigations were conducted in various countries with a view to discovering a remedy for high blood pressure. The different forms of treatment which developed may be placed under three headings:

1. Administration of medicines that reduce blood pressure, such as potassium iodide, or such modifications as iodopin and the nitrites. A favorite combination in some parts of England is:

℞ Sodii nitritis, ...gr. ss;
Erythrol tetranitratis, ...gr. ¼;
Mannitol nitratis, ...gr. ¼;
Ammonii hippuratis, ...gr. 1.
M. Ft. Mistura.

2. When the heart begins to fail because of these depressing remedies, some therapeutists endeavor to build up with digitalis, strophanthus, etc.

3. Avoid certain kinds of food, overeating, constipation, tobacco, and alcohol. Try change of climate, e. g., going from Canada to some place south, the favorite place being California. Many found, through clinical observation, that the pressure reducers, especially the nitrites which lower pressure by vasodilatation, do more harm than good. It is also thought the proper plan is to treat the serious condition itself and not one of its symptoms. If we accept this view, we can simplify the therapeutics by eliminating No. 1, then we shall not need No. 2.

Probably most practitioners now agree that No. 3 contains the most important if not the essential features. What about California? I should eliminate it entirely. The climate of a quiet comfortable home where the patient is surrounded by those she loves, is the best I have discovered.

One of my patients, a woman aged sixty-two years, has had arteriosclerosis for eight years (perhaps more). The blood pressure, from 1910 to 1915, averaged 230 to 240. Up to 1912 she took at various times such medicine as mannitol nitrite and erythrol tetranitrate. Neither did any good. I thought each did actual harm. She has had nothing of that sort for the last four years. She avoids as far as possible all the causes of high pressure. She takes cascara, rhubarb, salines, phenolphthalein, with occasional doses of calomel or blue pill. Her favorite laxative is a pill made up of blue mass and compound rhubarb; a pill of two and a half grains each is taken at bedtime on three consecutive nights.

For some years it was supposed that by the serum diagnosis (Wassermann reaction) in the later stages of syphilis, whether active or latent, the disease could be detected. A little more than a year ago a patient was in the Toronto General Hospital. For some reason which I do not know he was subjected to the Wassermann. The laboratory finding was positive. After an interval a second positive was declared. The patient, a married man with a family, was then told that he had latent syphilis. He was much astonished and greatly worried. Now it happens that we have recently been able to tell him that he has never had any symptoms of syphilis, and this statement has given him unbounded comfort. Even at that time it was recognized in many hospitals and laboratories that the Wassermann reaction was "merely an auxiliary to the diagnosis of syphilis, which must ultimately stand or fall by the clinical examination" (Fönss). Freudenthal could have told them some time before that he sent specimens of the same blood to four institutes in Berlin; in two the reaction was found to be negative, in the third it was doubtful, and in the fourth it was markedly positive.

It is unfortunate that the clinician and the laboratory men do not work these cases out together with the hope that they may finally agree. Although there may be some doubt about the significance of certain findings, it seems to have been established that the reaction cannot be positive in the absence of syphilis unless through technical error. On account of the number of such errors, especially in Berlin, this work has been for some time carried out exclusively in the State Institute in Holland.

A brief report will now be given of one of our ordinary every day patients with symptoms easily discoverable by ordinary methods. A girl, aged fifteen years, was brought to me by her father a few weeks ago. An appendicectomy had been performed by an excellent surgeon in Montreal more than a year before with apparently good immediate results, allowing her to be removed from the hospital to her home in two weeks. For months, however, she did not appear to be well, and numerous and varied laboratory investigations had been made. After a time she got fairly well, and was sent to one of our best boarding schools in Toronto. Reports as to her physical condition not being favorable, the father came to Toronto and placed her under my care. He told me she was run down, got tired easily, and suffered from headache and constipation. I found out from the patient herself that she also had disorders of menstruation, and one other symptom to which she attached importance, viz., heartburn, after every meal. The father told me that the laboratory findings showed "thin blood," but nothing else "very bad." For anemia she was getting iron tonics and plenty of good nourishing food. He wished me to look after the meals, and see that she got plenty of hot meat at least twice a day. I went to the school a couple of days after and found that she was getting three heavy meals a day, and in addition three full glasses of milk, and chocolate and cocoa at various periods of the day. The bowels had not been moved by a laxative mixture which I gave her, when I first saw her. The combination of meat and milk is particularly vicious.

Here was a charming, handsome, strong girl with good physique with an appetite which caused her to eat more food than she could properly assimilate, and her whole system was being poisoned because of defective elimination. It was just a plain old fashioned case with clinical manifestations sufficiently clear to indicate proper simple treatment. There was no albuminuria or glycosuria in any form. A restricted diet was ordered, and after some days the bowels were properly evacuated. After this she felt better, but more hungry than ever; and now the big fight has begun. She demands the hot meat twice a day, and she gets it, although she is submitting to most of the other restrictions. In this case, as so often happens, the doctor and the indulgent, kind woman in charge, have opposed to them the strong wills of a forceful father and a determined girl. Who will win in this case, I do not know, but if we fail the girl will suffer and come into mature womanhood crippled and perhaps broken down. Surely the so called older methods of diagnosis and treatment in this case are the all important ones, although great assistance may be derived from careful laboratory investigations in the future.

Is it true, as many of our best physicians fear, that the tendency for the young practitioners who have received admirable courses in our well equipped colleges is to neglect the human side, and to treat the disease instead of the patient, forgetting or overlooking the important fact that the latter always is a personality which should be carefully considered? Are we losing the kindly sympathy which was formerly of so much assistance in the treatment of our patient? Are we becoming mere mechanics, neglecting "the higher and more intellectual means of drawing conclusions by inductive reasoning?" (Shepherd.) Are the men who are trying to divorce science from practice, to exalt the laboratory investigators and belittle the clinicians, working in the interests of our profession or of suffering humanity? We are inclined to answer—No, and at the same time to express the opinion that it would be better to work loyally together, and thus be in a position to put forward our strongest and united efforts to do the best we can for the patients placed under our care. In doing so we may think it well to go back to Hippocrates and carry out his advice by paying very great attention to acute observation and careful interpretation of symptoms.

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AN ANALYSIS OF CERTAIN NEUROTIC SYMPTOMS.*

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In one of his initial lectures in neurology delivered before the seniors at Cornell Medical School some ten years ago, Dr. C. L. Dana announced that the textbooks for the course would be three: one by Dr. Conan Doyle called *Sherlock Holmes;* another by W. M. Thackeray entitled *Vanity Fair,* and a third by C. L. Dana, *A Textbook in Neurology.* To this he whimsically added, "You needn't bother about the last, but be sure to read the first two."

Of course, the inference drawn was that *Sherlock Holmes* had been recommended for its exposition of deduction. However, it was not until recently when at the suggestion of a patient I read *Pendennis,* that I was granted a fuller appreciation of Thackeray's subtlety of character analysis and his understanding of many of the mechanisms later emphasized by the psychanalytic school in the elucidation of those queer turns of thought and action to which all of us are subject from time to time. And so, forsaking the more classical neurology as exemplified by textbooks and principles, let me quote from *Pendennis* two passages pertinent to the theme of this paper.

In recording Pendennis's (Chapter 24) love affair with Laura, Thackeray describes Mrs. Pendennis, Arthur Pendennis's mother, as watching it with "that anxiety with which brooding women watch over their sons' affections—and in acknowledging which, I have no doubt there is *sexual jealousy* on the mother's part and a secret pang."

In the same chapter Laura is described as becoming jealous when her dearest friend Blanche showed her some love poems written to Blanche by Pendennis, with whom Laura herself was infatuated. At the time Laura had listened in silence to the poems, and after she and Blanche left the room, paused, and looking her friend kindly and frankly in the face, kissed her with a sisterly warmth. But later in the day, Laura quarreled with Blanche, and in relating the latter incident to Mrs. Pendennis, omitted mention of her jealousy, and attributed her indignation to the fact that Blanche had wantonly mistreated one of the maid servants. Here Thackeray again comments, "but Miss Laura did not tell Mrs. Pendennis, perhaps *did not acknowledge to herself* what had been the cause of the altercation."

In these passages Thackeray has pointed out two mental processes which are usually unconscious to us, but which are nevertheless prevalent and powerful in their influence on our actions. The last quoted mechanism, that of displacement, by which we ascribe an affect to one act which in reality belongs to another, or substitute one object for another, or allow part of an object or one of a certain class to represent the whole, is common enough, but rarely entirely acknowledged. The case to follow, while exposing a pathological relationship between mother and son, such as Thackeray intimates, illustrates far more convincingly than the examples quoted from *Pendennis,* at least so I hope, displacements based on purely individualistic thought associations and resulting in unusual somatic manifestations.

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*Read, in part, before the Bellevue Alumni Society.; in part before the Section on Neurology and Psychiatry, New York Academy of Medicine.

History. The patient, to whom I shall refer as Robert C., or Bobby, was born as the first child of comfortably situated, middle class family, in 1885. The father, who had emigrated from Germany to the United States as a boy, was a shrinking, thoroughly reliable, extremely conscientious young man, who, by virtue of these qualities at the time of his marriage, gave every promise of the achievement of a commercial success—which has since been realized. The mother, who had been a school teacher, a prim person with high regard for the conventionalities of life, was no longer very young at the time of her marriage.

It is difficult to estimate just how much love existed between this reserved couple, but it is certain that the woman devoted great attention to the physical comforts of her husband, who rarely remitted his immersion in work. Notwithstanding the increasing prominence which the father's success in the commercial world had brought to the family's name, they remained isolated, with few friends and limited connections. During the last years just preceding her death, the wife, then about fifty-five years old, permitted long cherished desires for wordly recognition to come to the surface, with attempts at the deferred gratification of her social aspirations.

Whether the father ever felt affection for the patient is hard to determine—his prime interests, which were concentrated in his allegiance to a large corporation, left him little time for association with his son. Primarily a methodical man, almost a recluse, the father developed very precise ideas about morals and men. He was punctilious in his habits and dress, subservient in his relations to his superiors, and though reactionarily liberal in religious matters, was puritanical in his liberalism.

For seven years, during which Robert remained an only child, incessant attention was lavished upon him by the fond mother. That his associates might be only well bred children, at six years of age he entered one of the best private schools, where he continued until he had prepared for college. In his studies he progressed with the average, neither extraordinarily proficient nor markedly defective, though at the age of fourteen years he failed of promotion.

Inasmuch as conventionality decreed it a proper procedure for the complete preparation of a young man for life, the family decided that he go away for his college course and selected one well known for its high educational rating—let us say Johns Hopkins. At the university, as at his school, his external life passed in a quiet, unostentatious way. He made few friends, had no vices, passed his examinations when the time came—to his parents a satisfactory record.

A peculiar handicap (a blurring vision), a neurotic symptom upon which we shall dwell later, prevented all participation in the sports of youth. The only activity outside of university work while at Hopkins consisted in several investigations of street cleaning problems and garbage disposal undertaken voluntarily for a civic organization in Baltimore. After his graduation from the university he engaged in mercantile enterprises in this city.

While it will be seen that so far as Robert's intellectual welfare was concerned, every precaution was taken, the sexual aspect of his development received scant attention. In the household propriety developed to such an extent of prudery that any reference to matters of sex was considered improper, and the inevitable little occurrences of a sexual nature the patient was taught to consider as funny. Both parents would pass off such episodes with a constrained laughter which the patient suspects was intended to conceal their own embarrassment. To be naughty was to be funny.

One of the jests which never failed to elicit a smile in the family circle was the exhibiting of a photograph, taken at the age of six years, which showed where the patient had urinated while standing for his picture. At an early age Bobby conceived a certain amount of pleasure from the attention bestowed upon the clever little perpetrator of so funny a performance. This attitude remained with him until at college he was rudely awakened to the conception that to be naughty carried with it no claims to humor in other families.[1]

Notwithstanding the artificial attempts of the parents to ignore sex, the patient's innate libidinous forces revealed themselves early, and masturbation, begun at twelve years, assumed the unusual procedure of lathering the genitals while he was in the bath.

The patient's activities in the bath room gradually embraced an elaborate scope in connection with urination and defecation. Finally masturbation could be produced only after prolonged rhythmical lathering of the genitals. It may be noted here that the patient usually took his bath just before supper and that not infrequently received reprimands for his tardiness in reaching the table. Some form of active masturbatory indulgence continued up to twenty-four years, but he had never indulged in intercourse.

Symptoms. The patient consulted me primarily for a feeling of drowsiness which would come over him in the barber's chair (association of lathering) and overwhelmed him at other inopportune moments, notably while traveling in railroad trains. It soon developed that he also suffered from a host of other neurotic manifestations, of which I shall mention only those to be discussed in this paper. They included, aside from the drowsy periods, a blurring of vision, for which he had been long treated by opthalmologists, inability to cross a street or ride in an automobile, and a feeling of uncertainty in walking which he had attempted to rectify by wearing rubbers almost constantly.

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[1] Freud explains the smile as resulting from energy coming from the relaxation of the hold of a censoring thought over a suppressed wish. Holt, on the other hand, thinks it due to an "overflow of energy from the hitherto suppressed wish into the facial muscles. . . ." "If the suppressed wish is sufficiently relieved by one discharge" (of smiling or laughter), "the joke is forgotten and the smile fades. If the wish has a larger store of pent up energy, the joke lingers in the mind and the smile on the face: it may be for days." (E. B. Holt, *The Freudian Wish and Its Place in Ethics,* 1915, page 2[illegible].) Undoubtedly in the case of the patient, the mechanism corresponds more nearly to the mechanism advanced by Holt. The repeated response in smiling at the same joke or type of joke—for as a rule after hearing a joke once or twice it grows stale, and we no longer respond—indicates, to my mind, the extent and persistence of suppression by the censor in the minds of Robert's parents of their natural sexual interests.

Avoiding the digressions with which it is customary to approach a delicate subject, let us enter into the consideration of the origin of the dreamy states.

The drowsy states.—Though no sense of guilt; on the contrary, a playful spirit (to be naughty is to be funny) accompanied masturbation in the early stage, presently an inevitable conflict arose in the patient's mind between the parental attitude on moral matters, strengthened by terrifying information gleaned from external sources and his increasing adolescent libido.

Shortly after beginning masturbation, nocturnal emissions following erotic dreams often troubled the patient. At fourteen years, however, the family physician, a leading consultant of this city, to whom he was taken for stomach trouble, inquired of the boy whether he masturbated, at which he promptly and stoutly lied. When this query was followed by another in a milder tone as to nocturnal emissions the patient deeming this less reprehensible, confessed, and to his astonishment found that the physician seemed to countenance the circumstance as being quite natural.

After receiving medical approbation, so to speak, for the pollutions, the patient resorted to the expedient of consciously attempting to induce sleep in order to defer erotic gratification until it should find its egress in the dreams accompanying nocturnal emissions and thus relieve himself of responsibility for their occurrence. This compromise not proving satisfactory, on account of difficulty encountered in falling asleep, he substituted a voluntary dreamy, half sleep stage, during which he indulged in fancies of contact and exhibition which might or might not be allowed to culminate in ejaculation.

During the conflict which always preceded masturbation he would usually think of his mother, with the idea that the thought of her purity would enable him to banish his own erotic cravings, but when unsuccessful in curbing the impulse he would intentionally direct his thoughts to a person of inferior social scale—usually a servant girl. Very probably, the thought of his mother, the object of his early infantile sexual fixation—which will become more apparent in connection with the vision symptoms—in itself unconsciously furnished an erotic stimulus, which very natural resistances, engendered through a high ethical sense, forced him to displace into a lower social plane.

Not until he entered college did the drowsy periods occur without conscious knowledge on the patient's part of their connection with sexual activities. Invariably at 3 p. m. he noticed a feeling of drowsiness which he would fight for ten minutes, but he grew more and more sleepy. This was succeeded by a feeling of absolute absence of any mentation—a mental vacuum—for five minutes, from which he would awake with a sensation of general muscular shrinking and a start, which he always attempted to conceal from his classmates. With the exception of slight nausea after such an attack, the patient could continue his classroom work without the slightest impairment of intellectual discernment.

In very recent years, when he had brought himself to fondle the young woman to whom he is engaged, he experienced the same fight and transient drowsiness at the outset, but when ejaculation occurred as a result of his spooning there was no mental vacuum or muscular shrinking of the body.

While it is impossible to adduce many other points on which the following interpretation is based, it would seem that the fight represented the struggle against masturbation; the drowsiness stood for the fancies, the mental vacuum corresponded quite closely to the emission completed, and the feeling of muscular contraction on awakening, to the contraction after ejaculation.

Masturbation had been practically discontinued for over three years, but the drowsy states had increased alarmingly, though their connection with his former habit, as being another form of the same thing, never even occurred to the patient, until an accompanying explosive feeling in the testes caused him to think that his mental lapses might have a sexual significance.

From its analytical aspect it is of some import that shortly after his mother's death, he became engaged to a young woman decidedly his social inferior—a barber's daughter (association of lathering and adjustment of intolerable sexual longings for the mother through debasement of the ideal).

Those who regard with skepticism the interpretation of some of the more obscure symbolic interpretations of psychanalysts may perhaps in the light of the preceding data be inclined to attach a sexual interpretation to the following complaint: Whenever the patient squeezed a paste (such as tooth paste or cold cream) from a collapsible tinfoil tube he suffered from a darting pain in the testes.

Ocular and locomotor disturbance.—A conjoint consideration of the blurring vision previously mentioned and of the difficulty in locomotion is desirable, as the symptoms are so closely connected psychologically.

The eyes.—The ocular symptoms have assumed a predominance among Bob's many difficulties. In this connection it must be recorded with some stress that among his very earliest recollections is his childish curiosity in loitering about the room while his mother disrobed. Although the mother, who was particularly rigorous in such matters, would remove only her waist in his presence, his interest in the procedure developed so obviously that she reprimanded him severely with the threat that he would become blind if he looked at her—a warning which so impressed itself upon the plastic mind of the child as subsequently to form a definite and universal standard for his judgment of morality.

Further confirmation of the responsibility of the eyes as indicators of moral worth occurred at the momentous time of his departure for college, when the affected mother's final admonition as to his conduct after he had passed from her protecting custody, found expression in the hope that he would be able "to look her in the eyes," when he returned.

It was not until he began masturbation that any affection of the eyes was noticed, but then he perceived an inaccuracy in focusing, which the opthalmologist, to whom he was referred by his family physician, diagnosed as a muscular weakness and prescribed glasses. Although the patient wore glasses from his fourteenth to his twenty-sixth year and underwent periodical atropine treatments for his vision, his physician remarked when he revisited him about four years ago, because the glasses no longer seemed suited to his vision, "it may be the eyes and it may be the brain." New glasses, however, were ordered.

At the time that Robert C. originally consulted the ophthalmologist, he was devoting much attention to the examination of the size of his pupils, which he believed became widened and strained after his masturbatory practices. The conviction settled upon him that the eyes were "getting even" with the testicles or more bluntly expressed, "because the testicles made trouble for the eyes, the eyes had made trouble for the testicles."

Thus, to the widened pupil he ascribed his difficulty in focusing, which, in turn, prevented his participation in any game where a quick movement of the eye is required.

As years progressed he interpreted the troubles with his eyes as being a conflict of direction, trying to fix the eyes forward and sidewise at the same time. As a supplementary explanation of his inaptitude in running arose the feeling that he "did not like to go, without seeing where he was going"; that is, he had to glance sidewise before going ahead.

Among other idiosyncrasies with the patient's eyes is the weakness of his left eye only and his ability to wink only with the left eye. Furthermore, it is impossible for him to close the right eye and simultaneously keep the left one open. There is, too, an almost conscious, semivolitional habit of withdrawing his eyes whenever anything is distasteful to him and he becomes distinctly aware of his inability to see. Often, on riding on street cars, for some inexplicable reason, he must close his eyes.

Flashes of light from street lamps have been a source of annoyance to him, because his attention was arrested too long upon them, especially the red and green lamps on the port and starboard sides of a ship. His method of remembering the position of these ship lights is significant.

At the time when sexual activities were engrossing so much of his thought, the red light district investigations, which like religious revivals of the Billy Sunday type flare up spasmodically as consolation reactions against our shortcomings, filled the newspapers with overt allusions as to the immoral symbolism of the red light. The red light represented wickedness.

Transferring this symbolism to the lights of the ship, he argued that right is right, while left is not. The red light is not right and the red light is on the left side of the ship, and the green on the right side. Restating this, the red, which is left, is not right, but wrong, wicked, naughty.[2]

The wrongness of the left, in its deviation from moral rectitude, became further accentuated by the circumstance that he is congenitally left handed, which was regarded by his parents as an abnormality which could only be corrected by constant reprovals. Moreover, he employed his left hand in performing what to his mind constituted his greatest moral transgression.

The feet.—Disregarding for a moment the eye symptoms, I will consider the difficulties which the patient experienced in locomotion, especially the inability to coordinate eyes and feet. When Robert C. emerged from kilts to trousers, the mother noticed that the left foot turned inward when he walked, and to adjust this defect, often scolded him. In view of the incessant censure directed by the otherwise indulgent mother toward the left foot, coming as it did at the time of the reprimands about the blindness (and also the left hand), the patient began to regard the physical peculiarity as a grave defect and his foot as an offender against decorum and propriety, which, like his eyes, would lead him into trouble. Such an inference is quite logical to the child's mind, which cannot judge values with the same nicety as that of the adult's, and which is apt to regard any act arousing the displeasure of authority on the same plane and as of equivalent moral value.

A new and decisive element was introduced into the patient's mental fabric by the feet sinning in another and more direct connection. When at the age of twelve years, his mind was immersed in sexual problems, he received an invitation to play croquet with the fourteen year old daughter of a neighbor, but on going to the house the girl's mother informed him that her daughter would be unable to receive him on account of an injury to her ankle. When his own mother inquired the reason for his immediate return home, he explained that the party had been postponed because the girl had sprained her ankle. Thereupon his mother insinuated that the injured ankle constituted a euphemism for the real cause of the postponement—namely, the girl's menstrual period.

Thereafter "ankles" assumed the same significance to the patient that the term "unwell" does when used in its restricted medical sense as applied to the female. Like many other idiosyncrasies in the narrow life of Robert's family, "ankles" passed into a secret household idiom for menstruation. Thus, the mother, who, in her devotion, corresponded daily with her son while he attended college, would from time to time, in relating household incidents, say, "I have not been quite well for a few days—nothing serious ('ankles')," or "I have been under the weather ('ankles')."

A further extension of the connection of ankles with menstruation and sex resulted through the unusual significance attributed to menstruation itself. Having ascertained from several sources that menstruation consisted of a bloody discharge, he inferred it to be the "issue of the blood" of which he had read in the Bible, appearing periodically. About the same time, with the augmentation of his physiological erudition, he learned that semen was formed from blood, and, combining the two bits of information, concluded that the ejaculation (issue of semen), i. e. (blood), and menstruation constituted identical processes occurring in opposite sexes.

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[2] The common association of red with wrongness finds unconscious expression in many phases of every day life, e. g. The following squib taken from the daily "column" of one of the local papers: "Sir—Red lights mean evil; white lights, good." Oui! Witness the elevator: the white takes you up, the red drops you down."

So, too, the electric sign announcing the play, *The Unchastened Woman*, has the words "the" and "woman" in white lights, while "unchastened" blazes forth in red.

The patient's ejaculations, phraseologically and psychologically speaking, became his "ankles," and as the former invariably resulted from some form of forbidden, remorse engendering, sex activity, they (the ejaculations, ankles) were decidedly culpable. It certainly possessed every advantage for the youthful judge to prefer to inculpate his sinning ankles, which might be openly condemned with every propriety, and, on the other hand, might be more amenable to discipline than the irrepressible sex activities.

With these brief facts at our disposal, let us return to the basis of moral values at which we have already hinted. Three distinct forms of misconduct were impressed upon Robert C. during his early childhood—the eyes, the left foot, and any form of sex indulgence, all of which subsequently became psychologically closely interwoven, but each of which had been originally considered ethically reprehensible. Although independently regarded, each was culpable, masturbation unquestionably twinged his conscience most poignantly, and this, as previously outlined, he attempted to replace by a compromise dream state.

It has been aptly said that compensation is a thing which does not quite compensate, and in this instance, the substitution of dream states, could not completely indemnify Robert's conscience for all the naughtiness of sex activity. So analogous to the mother's delicacy in referring to her daughter's menstrual period as a case of sprained ankle, it carried with it less odium for the patient unconsciously to displace the blame of his own weaknesses to his delinquent eye and impeachable left foot.

Analysis. If we grant that the assumption that displacements, so common in daily life, may take place unconsciously, many of the patient's symptoms are ready for elucidation. In his earlier childhood, when he first attended dancing school, he was conscious of his body, but not of his feet, which at this stage gave him no trouble. At this time the consciousness of the genitals was directed to the torso (the whole representing a part), and in later years this was further transplanted to the psychically associated feet and eyes, which resulted in such stumbling, reeling, and dizziness that he gave up dancing.

According to the patient, his troubles in locomotion are attributable to a tendency on the part of both his feet and eyes to remain anchored. Undoubtedly he describes accurately what he feels, but sensation of ocular fixation is an overcompensation on the patient's part to counteract their tendency to rove. In other words, if his eyes and feet are both fixed, they cannot slip or go in a wrong direction. Thus, the wearing of rubbers on dry days reinforces the tendency to make his progress sure and prevents his foot (ankles) from slipping—that is, tends to preserve his psychically associated sexual and moral equilibrium. Biblically speaking, if his eyes and feet were fixed, it would be a simple matter for him to progress in the proverbial straight and narrow path, from which he possessed so strong an inclination to deviate.

The "left" factor. In crossing a street filled with conveyances, he encounters difficulty because he must fix his eyes on each separate vehicle, but when he has succeeded in traversing one half of the street, he feels himself quite safe. The automobiles in our avenues, as those of us who through necessity or choice venture afoot fully realize, afford a valid source for caution, but, after glancing quickly about, we estimate distances and proceed. Robert C., however, when in any danger, must fix his eyes to prevent their slipping until the danger is passed, for in the presence of danger—immorality—his eyes must not slip (sin), and so he cannot withdraw them from the individual vehicle sufficiently promptly to avoid the next one.

It is striking that in crossing a street like upper Broadway, where an esplanade divides the broad roadway into two practically distinct avenues of traffic of the same width and equally busy, the patient is disturbed in crossing the side where traffic approaches from the left, but feels secure when the vehicles bear down upon him from the right. Both this circumstance and the absence of fear when half way across an ordinary street, is accounted for by the fact that, in America, at least, all vehicles approach from the left, the patient's wicked, naughty, or danger side, and after he has progressed half way he feels relieved, inasmuch as from the right he stands in no jeopardy.

During his visit to London, some four years ago, he experienced, as he expresses it, a "terrible dilemma," for in England traffic keeps to the left. It puzzled him that he was able to start boldly across a street, but, before reaching the opposite sidewalk, fell into a state of panic and trembling. In the light of the analysis this mystery is dispersed, for of course in England his zone of danger was only reached when he had got beyond the middle of the road where traffic began to approach from the left. He successfully avoided this symptom in London, however, by an extravagant use of taxicabs.

The closing of his eyes when in street cars and withdrawing them when anything is distasteful is likewise clear. What Robert C. seeks to avoid is something undoubtedly distasteful to his conscious appreciation, but which probably furnishes him pleasure unconsciously. Upon entering a car his eyes are apt to immediately range down the seats along the aisle in an attempt to determine the height of women's busts, which condition possesses a particular significance for him. High busted women are all intelligent. The origin of this interpretation may be partially traced to the unusually high bust he attributes to his mother (school teacher), who to his mind represented superior intellect, amplified by an inference from the wood cut illustrations in the school geography. In these pictures he noticed that very low busts are characteristic of Hottentot and Ethiopian women savages. His childish conception led to the conclusion that the lower in the scale of civilization a woman, the lower her bust, and, conversely, high busted women represent the intellectual. Now the patient wishes to regale his displaced desires for the intellectual, i. e., the high bust (like his mother's), but as such an action conflicts with his unconsciously elaborated protection against looking, in conformance with the maternal admonitions,[3] he must close his eyes in self defense.

The inability to wink with the right eye, notwithstanding a perfect freedom to do so with the left, seems referable to the naughtiness associated with winking, a function which might perfectly harmoniously be relegated to the offending left eye. So, too, the inability to keep the left eye open when the right eye is closed, seems due to the psychological guardianship which the well behaved right eye exerts over its mischievous, sinister companion, which might be in greater liability of slipping (sinning) if its righteous associate should even temporarily be remiss in its duty.

The function of the glasses now becomes somewhat clearer—the blurring represents a punishment to the eyes psychologically for their misdemeanor in wandering in forbidden fields, and forms a compromise of his mother's warning of punitive blindness and his desire to peek, for he might look, but would not see plainly, not everything, only blurred, half blinded. Thus, the glasses, while ostensibly remedying the defect in permitting him to see more distinctly, at the same time shielded his own eyes from the penetratively detecting gaze of others. Furthermore, the glasses, like the rubbers, yielded a certain security, forcing him to focus straight ahead, acting not dissimilarly from the blinders of a horse, by preventing him through a sidewise glance from running into danger.

As an example of psychophysical displacement, particularly pertinent in this case, I would mention that in the early part of the psychanalytic treatment the patient suffered from noticeable restlessness and frequently winced while standing (he could not sit for a long while in a chair). Subsequently he confessed to me that at every mention of sexual topics he experienced a distinct sensation of having received a stinging blow between the eyes.

Riding symptoms. Another symptom, that of allowing his ankle to slip whenever a horse fell or stumbled in the street, naturally implies some psychological association existing between the patient and the horse or something represented by the horse. In tracing its origin I found its genesis to be a substantiation of one of the most vehemently criticised Freudian theories.

H. von Hug-Helmuth, in *Seelenleben des Kindes,* closely following the tenets of the psychanalytic school, states that possibly the earliest and greatest part of the knowledge of sound and word acquired by the very young child has its origin in anal and urethral eroticism. Whether we accept or reject this apparently extreme theory, it is maintained by the analytic school with more obvious and more readily demonstrable basis, that when a child arrives at the stage of echolalia (babbling) during which it constantly repeats the same sound over and over again, often accompanying it with rhythmical muscular bodily movements, the infant has become possessed of a new and pleasurable stimulus which forms a basis for muscle erotism.

In later years, muscular erotism finds expression in climbing, sliding, and rocking. So long as the child remains the passive object in the swinging and rocking, it receives, in addition to the purely physical pleasure from the regular motion, a certain degree of gratification from the attention which even the very young child realizes is bestowed upon it by the person rocking or doing the swinging.

Among our patient's earliest recollections is the fond memory of the constant practice of riding his mother's or aunt's knee to the rhythmical swing of a well known German nursery rhyme, frequently used in the household as a lullaby, which may be rendered into English almost verbatim:

> Hop—Hop—Hop,
> Horsie runs gallop,
> Over stick and over stone,
> Horsie breaks his left leg bone,
> Hop, hop, hop, hop—
> Horsie runs gallop.

Another favorite which proved very effective in lulling him to sleep was Schubert's well known *Erl King,* which his mother sang with rhythmical chant and a sonorous crescendo. The opening stanza of the *Erl King,* it may be recalled, begins "Who rides so late through night and wind?"

The utilization of rhythmical motion as a soothing pleasure finds further exemplification in the cure of stomach aches which Robert feigned whenever he had "something on his conscience" (retributory displacement for masturbation before dinner time) which he believed did not quite conform with the ethical standards of his parents. The treatment for such stomach attacks, in addition to the medication which he tolerated, included the solace of being rocked and cuddled to sleep by his mother. These attacks, so fraught with comfort, continued until he became ten years old, when riding and rocking ceased.

On at least one occasion, at about the age of nine years, when the gastric pains appeared intractable to the ordinary rocking, he was permitted to revert, in addition to the rocking, to an even more elementary form of pacifying a refractory child—namely, suckling at the mother's breast.

If we consider suckling at this age to be a manifestation of active erotism (which does not appear to me to be far fetched), the lullaby and its accompanying rocking and suckling no longer remains an unconscious source of lust to Robert C., but furnishes a transition to the consciously sexual.

As he grew older, approximately at ten years, through the application of the terminology of some farm yard breeding talk which he had overheard—"the male mounting the female"—he began to conceive of coitus as a purely riding motion. In other words, riding thus became further identified with the sexual act, in which the male is represented as the rider and the female the thing ridden. So firmly had this conception been impressed that at the time of the analysis he believed this to be the position of the bodies in normal copulation.

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[3] The new art of the photo play utilizes and exemplifies graphically the mechanism operative in the mind in such an instance. The possibility of recalling to the mind of the spectator the vital influence of some scene long enacted upon some event years subsequent is accomplished by the "cut back." To impress the interrelationship of effect and cause, the latter of which may have momentarily escaped the spectator, at a critical moment the earlier scene is flashed before his view, obliterating time and juxtaposing the early influence with the late effect. Unconsciously the mind does this, drawing on its limitless fund of scene impressions of varying dynamic force, which it can bring to consciousness "in a flash."

The film producers have also discovered how an isolated feature may serve as the keynote to the entire plot—a particularly long arm, slender fingers, a leer in the facial expression, a wistful smile at saying farewell and the picture is narrowed down to emphasize the potency of such a single aspect. In the mental drama which is under analysis there is an analogous constant psychological use of the cut back and a narrowing of the field of observation to the inevitable eye warning.

It is notable that at fourteen years, after slipping from his horse without injury, he discontinued riding his pony and never resumed this form of exercise.

The extension of this aversion to motion, as exemplified in the more explicitly erotic horseback riding, into other types of movement includes automobiling and motor boating, and we find a strikingly plausible connection between these different forms of motion through bicycle riding which enjoyed great vogue during Bob's adolescent period. As he correctly observes, the bicycle (or machine, as he prefers to designate it) is almost the only machine in which gender comes into consideration, as here we have the man's bicycle and the woman's bicycle which are distinguished by the fact that the man's machine (bicycle) has a middle bar which the woman's machine lacks. Moreover, it is entirely feasible and conventionally proper for a man to ride a woman's machine (bicycle) while the converse does not hold good.

In this connection he recalled an anecdote which puzzled him when he heard it as a child, namely, two machines (bicycles) were stored away in a barn for the winter and the next spring they found with them a little velocipede.

Other investigators on the subject of fear of locomotion have found a close association between repressed desire for rhythmical motion and the fear of moving. Abraham[4] especially calls attention to the point that in cases in which he has been able to make an analysis, the patient possessed a constitutionally exaggerated pleasure in motion which had been artificially fostered. Although I had not read Abraham's report at the time that this analysis was undertaken (1913-1914), I arrived at the conclusion that the unsuccessful attempt at the repression of the patient's penchant for rhythmical motion—in this case so palpably associated with masturbation and coitus fancies—led to the development of a protective neurotic fear against all form of motion.

Applying this line of reasoning to Robert's aversion to riding, the explanation resolves itself into an attempt to overcome any form of the movement associated with rhythm (sex) and the conversion of the primary positive desire into its negative form—i. e., an exaggerated disgust for motion as exemplified by riding. This attempt at conversion, like most endeavors of this kind, did not completely suffice, for the identification of the rider and the object ridden (horse) had become psychologically inseparable. Therefore if the horse stumbled (sin), the rider would slip (sin-indulge in sex activity) and the patient's act of slipping at such times becomes, in this light, the mental equivalent of sexual indulgence.

Robert C., after graduation from Hopkins, completed his education by a trip abroad, during which time he toured extensively in an automobile (or machine, as he was wont to call it). About six years ago, however, after skidding (slipping) he was compelled to give up driving his own car and since then he has felt uncomfortable and nervous whenever he was compelled to ride in an auto.

Robert's aversion to automobiling developed coincidently with his cessation of masturbation. In other words, he could no longer tolerate the association of being occupied with a machine and after allowing his auto (machine) to skid (slip) in public, he felt impelled, from its unconscious association, to prevent the repetition of such an occurrence by relinquishing driving altogether.

In the choice of synonyms for the automobile the patient states that when the automobile is mentioned in the home circle he refers to it as the "car"; during casual conversation with friends or acquaintances it is the "motor"; but when he lapses into casuistic speech and is off his guard, he has noticed that it invariably becomes the "machine."

In the transmutation of what is ordinarily a pleasure into a source of torture, the automobile did not stand alone, for the patient remarked one day, "I cannot get any fun out of my motor boat—I listen to every explosion of the engine—thump, thump, thump—it's a nasty responsibility to run a motor boat when you've only got one cylinder." Some time previously he had complained that he was apt to be troubled by constant erections when in a motor boat, but at the time I had not realized its import.

Supplementary to his irritation at the regular explosion in the puffing of the engine was a fear of striking a rock as he cruised along. Inasmuch as the fear was expressed even when the boat moved smoothly along in deep water, he became the laughing stock of his own guests. As a matter of fact, the fear of striking a rock was really a sort of secondary subterfuge in expressing a more primary and essential fear of losing control of his engine. In his own explanatory phraseology he "would hate to lose control of the engine and run on a rock and come to a sudden stop."

If we pause to reflect, it will be found that the motor boat contains all the disturbing elements mentioned separately in connection with horseback and automobile riding—motion, rocking, and a machine (engine), with the additional element of vibration.

It has already been established that a machine (engine) signified unconsciously to the patient the sexual organs, also that any form of rhythmical movements had become psychologically associated with sexual practices. Masturbation, according to the patient, consisted not only of a regular, modulated lathering movement, but also of a vibratory sensation which began with the erection and continued almost up to the time of seminal discharge. He noticed that just immediately preceding ejaculation there occurred a distinct pause, when all vibration ceased and he realized that when this stage had been reached, he could no longer prevent the discharge. His annoyance at the cessation of vibration impelled the patient to make determined efforts to induce ejaculation before vibration should cease—in other words he disliked being made conscious of his inability to continue control.

If we translate these practices with his own genitals (machine) into the fear connected with motor boating, it would seem that annoyance at the rhythmical explosions of the engine and the vibration is an over compensated disgust for his sexual vibration and discharge, displaced into a more favorable setting.

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[4] Karl Abraham, *Zeitschrift für Aertzliche Psycho-Analyse*, ii. 3.

The fear of running on to a rock—stopping suddenly—is the equivalent of a protection against the sudden cessation of vibration, that is, loss of control, which he tried to prevent in masturbation. Unconsciously the combination of the thought complexes connected with motion, rocking, and vibration, yielded sufficient stimulation to cause the inexplicable erections while in the boat. He rather suggestively amplified in an attempt at extenuation of his fear in boating that "the engine in his boat was a one cylinder affair and you'd be absolutely helpless if anything should happen to that one cylinder."

Perhaps a hint of the reason for the patient's unyielding opposition to his mother's fond hope that he study engineering may also be found in this compensatory dislike for machines.

CONCLUSION.

In following the somewhat involved, apparently speculative, and, I fear, hazy exposition set forth in this paper, the reader may perhaps have transiently lost sight of the fact that we were dealing with a sick person whose symptoms had been actively treated by competent physicians in approved ways. He is no longer under treatment and is as well as the ordinary person would be who is confronted by a serious actual problem which must still be solved, for his father, who furnished him with capital which he invested in a wine importing business which has been destroyed by the European war, irrevocably opposes his marriage to the barber's daughter—to be sure not on psychological, but purely on social and religious grounds. Such a dilemma might be sufficient to disturb a person of less complex mental constitution.

On the other hand, he came to me complaining of the following purely neurotic symptoms: Drowsy states and mental vacuum, the visual defect and the disturbance in locomotion. When he began to comprehend the substitutive nature of the drowsy states and their significance became conscious, he was freed from this source of vexation, so that he can now recline with normal comfort, even in a barber's chair, and travel unhampered on long railroad journeys. Further, after wearing glasses for sixteen years, he finds his vision so clear that their use is unnecessary.

One sleety night after about four months' treatment, he forgot his rubbers on leaving the office and has since discarded them except for the normal use, and although in his present occupation he is compelled to do much outside work as city representative of his firm, he crosses Fifth Avenue of an afternoon in normal safety or jeopardy—as you choose. Last summer he toured extensively in his "machine" and when he came to see me in November, 1915, informed me naively, quite unaware of its significance, that he had celebrated his birthday during the summer by—a moonlight motor boat party down the Great South Bay.

I trust that the presentation has given no offense. It is the result of a serious effort to unravel a serious medical complaint in what seems to me to be the most substantial way. Perhaps I may in justification again refer to *Pendennis* where Thackeray says in the preface, dedicated, by the way, in sincere gratitude to his own physician, Dr. John Elliotson, in part as follows: "Society will not tolerate the natural in our art. Many ladies have remonstrated and many subscribers left me, because I described a young man resisting and affected by temptation. You will not hear—it is best to know it—what is the life and talk of your sons. A little more frankness than is customary has been attempted in this story, with no bad desire on the writer's part, it is hoped, and with no ill consequence to any reader." The publication of this paper was deferred for over a year so that the permanence of the results might be determined.

249 West Seventy-fourth Street.

PERCUSSION IN EARLY TUBERCULOSIS.

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Pulmonary tuberculosis is essentially a disease of intermittent course and of such complex symptomatology that its beginning is generally overlooked, passed over as a slight cold, or diagnosed as influenza, the acute condition subsiding without arousing suspicion. By the time the patient and his family apply to the physician for advice, the condition is fairly advanced and then it is not much trouble to make the diagnosis.

It is highly important, however, that the profession and the public should realize that a plain cold or so called grippe may be in fact the forerunner of a tuberculous infiltration in the lungs, and more time and skill should be devoted to investigation of these conditions and to an endeavor to make the diagnosis of tuberculosis in its incipiency.

Skill depends mainly on two factors: On the mental and manual equipment of the physician, and the amount of time he can devote to the acquirement of the technical dexterity and special knowledge needed to carry out the delicate manipulations and interpret the results.

The mere thumping of a chest wall and resting of an ear to its surface will no longer suffice. There is an enormous increase in the store of medical knowledge and wealth of technic, but there is no corresponding increase in the time, nor even the ambition of the rank and file of the medical profession, especially in this country, in order to keep pace with the increasing demands. This perhaps has tended toward the growing popularity of certain special laboratory tests which bear about them something of the glamour of science and the romance of novelty. This tendency has, in the writer's opinion, helped to retard rather than advance diagnosis, because it fostered neglect of the older methods of physical investigation, methods on which we must still rely, and which demand for successful application the experience which only constant practice can give.

The newer methods of diagnosis, owing to their atmosphere of science and modernity, are often seriously misapplied. These modern laboratory, microscope and x ray methods of diagnosis are undoubtedly valuable, yet we cannot and we should not dispense with the old methods, and it is essential fully to master the subtleties of physical examination. If any skill is required in the investigation of the diseased condition of the chest, no opportunity should be lost in studying the normal in all its manifold and subtle manifestations and phases. It is essential to develop the so called medical instinct, which is based upon the intensification or high specialization of the senses of vision, olfaction, hearing, taste, and tactile sense, which are all indispensable factors for the practice of the art of physical examination, without which equipment the physician has no right to pursue his profession. I mean the art of inspection, palpation, percussion, and auscultation.

PERCUSSION.

The practice of percussion was introduced by Auenbrugger in 1760. He used direct percussion with his gloved finger tips. In 1826 mediate percussion appeared through the introduction of the pleximeter by Priorry. Since then the art has made no appreciable progress until recently.

The experimental investigations and researches of Roehl, Moritz, and subsequently of Goldscheider and others, succeeded at last in bringing before the attention of the medical profession the method of gentle percussion. In the detection of early tuberculous disease of the lungs its acknowledged value seems likely to produce far reaching results, for whereas formerly percussion took only a poor second place in the detection of early tuberculous infiltration, the newer method in skillful hands seems likely to compete with auscultation for a first place in diagnosis. There is no doubt that some change of resonance to gentle percussion accompanies very early lesions in the apex, indeed, it is the writer's experience that some alteration to skilled percussion can be found over every diagnosticable lesion, and that a diagnosis can rarely if ever be made without it.

This is not to deny the fact that the very earliest changes are auscultatory, but the slightest alteration of the breath sound cannot suffice for diagnosis, and other positive evidence is usually first obtainable by percussion. Moreover, in many cases a change of percussion note may precede auscultatory evidence of the disease, and if it occurs it is less open to other interpretation than are the changes in breath sounds, which represent the earliest signs.

An interesting research was carried out by Goldscheider with the help of Levy-Dorn into the comparative value of ordinary percussion, gentle percussion, and auscultation, with the evidence given by the x rays in cases of suspected phthisis. They found that gentle percussion discovered disease and confirmed by x ray diagnosis in many cases where ordinary percussion failed (thirty-eight cases), and that where ordinary percussion discovered changes at only one apex, gentle percussion was able to demonstrate disease confirmed by x rays at both (forty cases); thus demonstrating that cases are not missed by gentle percussion, which to ordinary percussion would have been overlooked. Finally, they found, that though auscultation gave better results than ordinary percussion, yet gentle percussion discovered disease in twenty-five per cent. more cases than did auscultation.

Kroenig says, "It is a very wide spread error to expect to find the earliest physical signs by auscultation." He points out that an auscultatory change depends on the lesion coming into direct relation with the air stream, and this may not occur. Furthermore, if it does occur, obstructed air entry over small areas is obscured by compensatory emphysema, and it is only when the disease has broken into the air tubes or involves so large an area as to cause weak breathing, that undoubted signs appear. Although accomplishment in auscultation must not be neglected, yet there is no doubt that gentle percussion is the easier of the two methods to learn and it gives more certain and fruitful results.

The best method of percussion to adopt for practical purposes is as follows: At first percussion should be very soft and gentle in order to elicit impairment of resonance, and then the force should be carefully and gradually increased in order to find out at what point impairment disappears.

If no impairment is found to fairly gentle percussion, softer and softer percussion must be tried, so as to bring out any possible shade of difference that exists between the two sides, and this must be continued until the note is only just audible. The most delicate change in the percussion note appears only at this point.

The comparison of the two apices is greatly facilitated in a difficult case by first marking out Kroenig's areas of resonance on the two sides. (See below.)

An equal percussion force can be assured only by percussing from the wrist with the weight of the hand. A single finger, the middle one, should be used, and it should be bent in hammerlike fashion. Over the apices gentle percussion alone can be practised and it has been abundantly proved that even the most deep seated parts of the lungs can be reached by soft percussion properly applied.

The pleximeter finger must be pressed close to the chest wall and percussed over the area of contact. The writer places the finger tip of the pleximeter finger obliquely, snugly on the chest wall and percusses over the area of contact. By this method we get information as to the pathological change of a small limited area, that can be covered by the finger tip. The method of placing the entire pleximeter finger flatly over the part to be percussed conveys the tones of a large volume of underlying tissue, and if the diseased area is small these tones will not be accurate enough to interpret all possible minute changes, as the resonant sounds of the surrounding healthy tissue obscure the abnormal note conveyed by the infiltrated area. For instance, if there is a very small area of consolidation, the surface of which is so small that it can be covered by the tip of the pleximeter finger, we get dullness or impairment of resonance percussing by the method described, but percussing by the old method of placing the entire pleximeter finger on the chest we might obtain normal resonance which would obscure the diagnosis.

The percussing finger, as mentioned before, must be bent to a right angle, and descend vertically like the hammer of a piano, or the true resonance is not obtained. Sometimes the writer gets better results by percussing with the tip of the extended finger, descending not vertically but rather in a horizontal or slightly oblique fashion. Only similar points on the opposite side of the chest can be compared.

Comparing the percussion notes of the two sides we should have in mind what to listen for. More or less resonance is confusing, and it is best to fix attention on one of the many component parts of which the resonant note consists. This may be either fullness of note, quantity, quality, duration, or pitch, and of all these the easiest to appreciate is the pitch. We can readily differentiate a high pitched from a low pitched tone. If the finer shades of impairment are thought of as a rise in pitch of the note, or a production of a higher, sharper note (in the musical sense), the problem is greatly lightened and changes will be recognized, which would otherwise be missed.

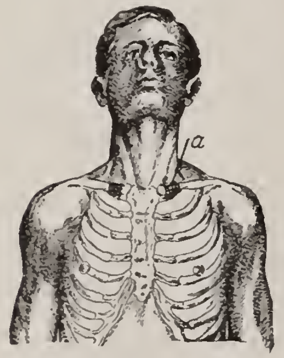

FIG. 1.—Seats of election in phthisis; front.

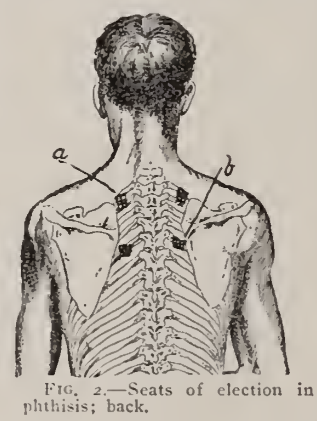

FIG. 2.—Seats of election in phthisis; back.

The front of the chest.—The chest is best percussed with the patient standing. Breathing should be quiet, unrestrained; opposite points should be compared all down the chest and the difference on the two sides noted. In suspicious cases topographical percussion should be first resorted to. (See below.) The clavicles must not be neglected and these should be compared in finger breadths from within outward over their inner half. The seats of election for tuberculous deposits in front of the chest are in most cases behind the inner half of the clavicles (Fig. 1).

If impairment is discovered on one side of the chest, the clearer side must then be percussed from the base to the apex, for there may be impairment in the better apex also, although it has seemed resonant in comparison with the opposite one.

It may happen that the better note will be found to be on the diseased side due to an underlying emphysema. This is apt to occur with a healed or quiescent focus, and the relative impairment on the opposite side may lead to a false impression until other signs are discovered.

The back of the chest.—In examining the back the same proceeding is to be followed out as in front, and here especially each side should be repercussed from the base up. At the back of the chest there are two seats of election for tuberculous infiltration, and these are the apices of both the upper and the lower lobes (Fig. 2).

The upper apex reaches to the first dorsal vertebra and it is near the inner end of the supraspinous region where the signs of early tuberculosis are especially met.

The lower apex reaches up to the third vertebral spine on the right side and the fourth vertebral spine on the left side, and tuberculous deposit is commonly found below these points to about the level of the fifth thoracic vertebra and midway between the scapula and the vertebral column (Fig. 2). Some slight impairment of the percussion note may occur in one or both lower lobes at an early stage of tuberculosis and by their suggestive distribution they supply the most important evidence in deciding the significance of obscure signs at the apices. In percussing the back, we must remember that the note normally rises in pitch from below upward, but this occurs so gradually that we can hardly notice it. The rhomboid muscle runs from the spine of the scapula to its inferior angle, and the thick belly of the muscle is nearer the inner border of the scapula, which may occasion some impairment in the note. But near the spine the muscle is thin and it is not likely to cause an error.

Impairment of resonance in early phthisis. Some authorities may object to this method on the ground that the anatomical tubercle must attain considerable size in order to produce alteration in the resonant note. But such objection has no practical foundation, because as a matter of fact a very small lesion interferes with the lines of communication in the bronchi and vessels, causing considerable surface changes, mainly those of collapse. Birch-Hirschfeld has shown that the first tuberculous deposit occurs in the apical bronchi and causes collapse of the parts beyond. From the clinical point of view Oestreich was able to show, and prove by post mortem findings, that very early lesions produce a shrinkage in the apex.

The teachings of Birch-Hirschfeld are based on thorough investigations of 826 cases of accidental death. A number of the victims had lesions in the apex, and in most of them the tuberculous infiltration occluded the lumen of a bronchus, always the posterior branch and caused collapse of the apex or the wedge of the lung peripheral to it. In practice it is shown that impairment, though slight in degree, is by no means narrow in extent, and it is not easy to explain the reason for this phenomenon. Many factors may enter into its causation; probably a thickened pleura, or changes in the air and blood contents of the surface layer.

Kroenig believes that pleurisy occurs early in pulmonary tuberculosis. There is also a possibility that there is some spasm or rigidity of the muscles of the affected side, causing some impairment of resonance.

Expiratory percussion. Over the normal lung the percussion note is more resonant in expiration than in inspiration on ordinary percussion. In disease the normal change is disturbed, and this fact may be utilized in diagnosis. In tuberculous lesions the impairment of the percussion note is even more accentuated in expiration than in ordinary breathing. Thus expiration may be used in order to enable the examiner to appreciate the difference between the sound side and the diseased one because expiration increases resonance in health and diminishes it in disease.

The patient is directed to let the air out of his lungs and hold his breath while percussion is performed and the note compared on the two sides. Some observers, who fail to recognize any change to ordinary percussion, may readily appreciate it when it is reinforced by this simple method.

Topographical percussion. Careful mapping out of the apex of the lung is a method which will repay time and trouble and should never be neglected in any case where a diagnosis of incipient pulmonary tuberculosis is doubtful. Kroenig, using light percussion, introduced an excellent method by which he mapped out the boundaries of resonance above the clavicle. He attempted to prove this method to be in conformity with the anatomy of the apex, which was found to lie further from the vertebral column than it was previously supposed to be. After much labor on his inner boundary, he was led to map out an outer boundary of the resonant space above the clavicle and he carried these boundaries over the shoulders anteriorly and posteriorly, thus forming an anterior and posterior area of apical resonance united by a narrower "isthmus" (Figs. 5 and 6.) Their determination and comparison form a method which is known under the name of Kroenig's method of topographical percussion.

A diagram of the lungs in their relation to the chest clearly shows the apex in front to lie behind the heads of the sternomastoid muscle above the inner end of the clavicle (Fig. 3), and this can be seen by watching its protrusion at this point in thin subjects during cough, or in wasted infants during crying. Behind, the apex is found to reach the first dorsal vertebra between the spinous process and the origin of the first rib (Fig. 4). The true apex as shown bears no direct relationship to Kroenig's area of resonance. This was pointed out by Goldscheider, in 1907, and he recommended mapping out the apex in front by percussing between the heads of the sternomastoid muscle and behind at the first dorsal vertebra between its spinous process and the origin of the first rib. We have therefore two methods at our disposal: Kroenig's method and Goldscheider's method. Goldscheider teaches how to outline the true apex in front and in the back, and Kroenig's method is concerned with the measurement of a resonant area formed by the projection of the outer surface of the apex in various directions.

As a matter of clinical experience Kroenig's sign is of considerable utility in the diagnosis of early tuberculosis and of other apical lesions. Oestreich was able by its means to detect foci the size of a cherry, in experiments on post mortem material, and he finds a shrinkage of the apex in very early stages of pulmonary tuberculosis. Other clinical authorities have mostly endorsed this opinion. The application of Goldscheider's method in actual practice is much more difficult. The resonance of the apex between the heads of the sternomastoid muscle is very hard to map out, as the apex reaches a little more than a finger breadth above the clavicle. Behind, the true apex of the lung is separated from the surface by a rib and transverse process (Fig. 4), and by a thick pad of muscle lying between these and the vertebral spine, Goldscheider's percussion, as carried out by himself, is an extremely difficult and laborious undertaking.

In addition to marking out the upper limit, he sets out in front to percuss over the first rib above the clavicle, the shoulders for this purpose being raised and loosened, so that the pleximeter finger can dip down to the first rib beneath. Behind he removes the scapula as far as possible from the field of research by seating the patient with the arms thrown forward over a vacant chair. Taking the evidences discussed into consideration, and as a result of practical experience with both methods, the writer would recommend reliance on the following points:

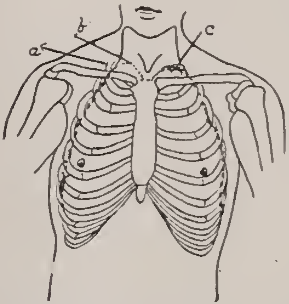

FIG. 3.—The true position of the lung apex in front.

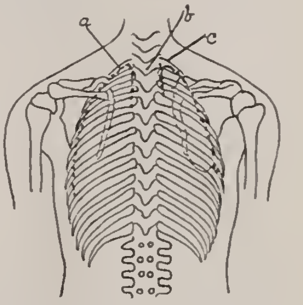

FIG. 4.—The true position of the lung apex behind.

To use Goldscheider's method, the upper boundary of the apex behind is marked out on each side, percussing gently from below upward and the height of the apices on the two sides is compared (Fig. 9). Normally the lungs should reach to the tip of the spinous process of the first dorsal vertebra, and the investigation of this point is easy and furnishes useful information. In front the resonance on the two sides between the heads of the sternomastoid muscle should be compared, but no attempt at measurement should be made.

Kroenig's method is better seen than described, and the reader is referred for this purpose to the accompanying diagrams (Figs. 5 and 6). In order to outline Kroenig's resonant fields, the writer proceeds as follows: The pleximeter finger of the left hand is placed in such a way that the terminal phalanx only touches the middle of the shoulder, and with the tip of the middle finger of the right hand a few very gentle strokes are given at the place of contact, and a sound which is not loud but distinctly audible, clear, and resonant is heard. These strokes are repeated and attentively listened to, and the same clear resonant sound is heard. This is done in order to become familiar with this note. This resonant tone is due to the underlying pulmonary tissue, which is filled with air. The pleximeter finger is moved slightly inward and a few more light strokes are given. The same sound is heard; there is still lung tissue. Gentle percussion is continued in this manner, gradually moving the pleximeter finger until a place is reached where the familiar resonant note is no more heard, but instead, an almost inaudible, dull, and higher pitched sound, which means that there is no more lung tissue to convey the same acoustic vibrations. At the very edge of the resonant area a pencil mark should be made. Gentle percussion is continued outward toward the acromion process of the scapula in the same manner until another place is reached where the resonant sound ceases to be heard, and this place is also marked with a skin pencil. In a similar manner the entire area above the clavicle anteriorly, and as far as the level of the first thoracic vertebra posteriorly, is percussed, the edges being marked with the pencil and carefully verified after they are marked. It must be remembered that the pleximeter finger has an appreciable width, and the whole breadth of the finger must cover resonance before the edge is penciled. The head must be directed straight forward throughout the examination.

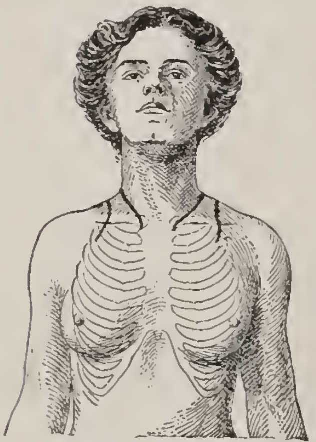
Fig. 5.—Kroenig's areas of apical resonance; front.

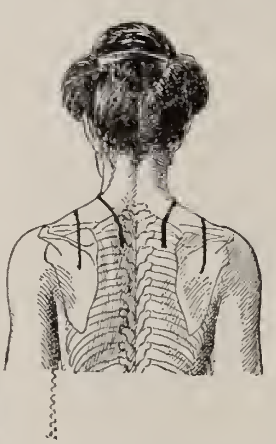
Fig. 6.—Same as Fig 5; back.

It must also be noted whether the edge is sharp and easy to map out, since blurring of the outline, especially on the inner side, is one of the earliest signs of disease (Fig. 7). Where the edge is not sharply defined, an attempt must be made to map out a band of relative resonance within (Fig. 8).

When each side is mapped out, the "isthmus" should be measured, and, if desired, the bases at the clavicle in front and at the level of the first dorsal spine behind. The isthmus in health measures generally about five cm. (two inches) and should not fall below four cm. A diminution in Kroenig's area is an early sign of tuberculosis. Having taken these measurements, the percussion resonance of the two sides should be compared, which is done by finger breadths above the clavicle.

AUSCULTATORY PERCUSSION.

Another excellent method of outlining Kroenig's areas, which verifies the findings of the foregoing method with almost mathematical precision and exactness, as practised by the author, is that of auscultatory percussion.

The stethoscope is placed either in front of the chest immediately below the clavicle, or posteriorly between the upper angle of the scapula and the vertebral column (Figs. 7 and 8). A light tap or stroke is given over the middle of the shoulder. A loud and clear note is audible. This is due to the acoustic vibrations conveyed to the stethoscope by the underlying lung tissue. Then another stroke or tap is given a little higher up, and another loud sound is heard, which shows that there is still lung tissue. And in this manner stroking or tapping is continued until a place is reached where the loud sound is no longer heard, but a distant, low, hardly audible note. This is the inner boundary of the apex, which should correspond with the same found by gentle percussion. In the same manner the outer boundary is discovered, and should also coincide with that found on gentle percussion. This method has the advantage over gentle percussion that it may be practised even in a noisy place, because the binaural stethoscope eliminates all external sounds. It also enables the examiner to verify the correctness of the results found on gentle percussion with almost mathematical exactness.

The earliest changes in cases of tuberculous infiltration consists in a blurring of the outline of Kroenig's area (Fig. 7). This may occur on both outer and inner sides, but it commonly affects the latter at first. This is attributed by Kroenig himself to a change of tension in the lung tissue at the margin of the affected area. He accepts the explanation of Birch-Hirschfeld that the earliest change is in the apical bronchus, the obstruction of its lumen with tuberculous material leading to stasis and absorption of the air in the parts beyond. This blurring of its outline leads to difficulty in marking out the area of resonance, and soon a definite reduction of its surface appears and impairment over it. These changes may precede auscultatory signs, also symptoms such as cough and expectoration. The physical examination of a difficult and doubtful case of phthisis is not complete without the comparison of Kroenig's areas of resonance.

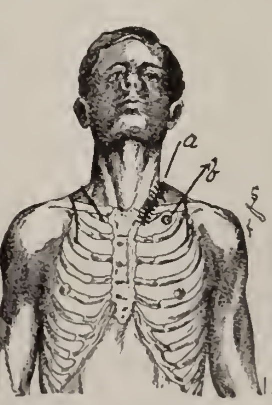

Fig. 7.—Kroenig's area; showing retraction at the right apex and blurring of the inner boundary of the left apex.

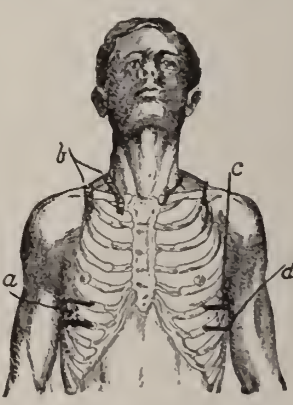

Fig. 8.—Kroenig's area showing boundaries of relative resonance at the right apex.

Tidal percussion. Tidal percussion discovers the excursion of the lung in the complemental pleural space during inspiration and expiration.

At the apex the movement is best measured by marking the highest point of the apex, that is the inner boundary of Kroenig's area (Fig. 5) during

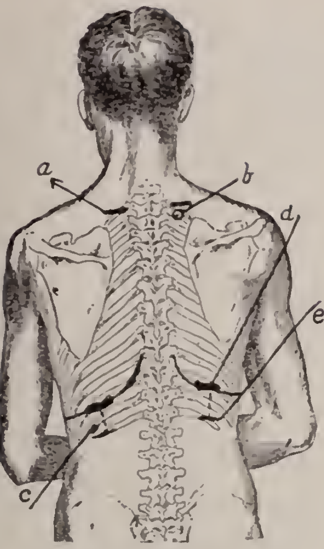

Fig. 9.—Tidal percussion; back.

quiet breathing and again during deep inspiration, and then comparing the expansion of the apex with that on the opposite side. This may be accomplished either by gentle percussion or by auscultatory percussion, or by both methods, one confirming the other.

At the base of the lung, expansion is notably greater and furnishes valuable information. The excursion of the lung is indicated in Figs. 8 and 9. The writer finds that the most convenient points at which to take the measurement are the anterior axillary line and the centre of the base behind (Figs. 8 and 9). The edge of the lung is percussed during quiet breathing and marked with an anilin pencil on both sides. The patient is directed to take a deep inspiration and hold it, and the edge is again found by percussion and marked.

Normally the lung descends quickly and clearly into the pleural space, and a vertical measure, varying with the individual and the vigor of respiration from three and a half to six and a half cm., is obtained. The excursion is generally more in the anterior axillary line than posteriorly, and is apt, in the writer's experience, to be somewhat more on the left than on the right side in health. Moreover, it will be noticed that the base of the left lung lies some cm. lower than that of the right lung during quiet respiration. Allowance in amount of excursion must be made for emphysema, where the movement is minimal but equal on both sides, for advancing age, and for such conditions as chest deformity, pain in the side, ignorance of how to breathe, and other conditions which prevent full expansion on one or both sides. In tuberculosis the excursion of the lung is generally diminished on the affected side, even in early stages. Where disease is well marked the inspiratory movement may be greatly restricted or absent. How far this condition is due to pleural adhesion is doubtful; it is certain, however, that pleurisy occurs at an early stage of tuberculosis, and the influence of adhesion is rendered probable by the fact that limitation of movement is frequently confined to one aspect of the lung, either anterior or posterior. This sign is of value in the diagnosis of phthisis, always remembering that it may be absent or inappreciable and that pleural adhesion may be present without active disease.

As a measure of the extent of pleurisy in any case of phthisis, in order to decide as to the advisability of artificial pneumothorax, the measurement of the degree of the movement or expansion of the lung is of notable value.

CONCLUSIONS.

Impairment of one apex points to an abnormality needing investigation. It may indicate that there is a tuberculous deposit, or local pleurisy in one apex of similar causation, or an apical collapse due to a peribronchial tuberculous infiltration. In order to decide as to the cause and nature of the lesion, which has produced impairment of the percussion note, further investigation must be made. Percussion alone is capable of solving the following questions:

1. Is there impairment of resonance in one apex? This can be discovered by the softest percussion, having in mind the possibility of hyperresonance on the opposite side. Reinforcement by expiratory percussion may be tried in doubtful cases. These cases are often overlooked or missed if ordinary percussion is used.

2. As to the degree of impairment, we may determine it by increasing the weight or force of percussion in order to see if it still persists or at what point it stops.

3. The most important evidence for diagnosis is the finding whether there is any impairment at the other "seats of election" for tuberculous deposits, for instance, in the opposite side or at the apices of the lower lobes.

4. Topographical percussion may supply us with the following information: *a*, Equal resonant areas and of normal extent are evidences of normal lungs (Figs. 5 and 6). The areas of normal measurement, but one being displaced, is a condition described by Kroenig under the name of "physiological heterotopia." It was this condition which led Kroenig to discover his outer boundary. *b*. There may be a blurring of one, or the other, or both margins of the resonant area with or without some general loss of resonance, a condition very suggestive of early tuberculosis. *c*. A difference of the areas and especially in the width of the "isthmus" may be due either to expansion of one side, or retraction of the other (Fig. 7), or both conditions may be present.

Expansion may be due to unilateral emphysema, which is commonly caused by a "healed in" tuberculous focus with scarring. Retraction may be due either to some recent or remote tuberculous change, or to collapse, or to induration as a result of collapse.

5. Auscultatory percussion as practised by the writer, is of notable value for confirmation of the findings by gentle percussion in outlining Kroenig's areas, or mapping out the respiratory excursion of the lung borders, especially when external noise prevents appreciation of the delicate shades of difference in sounds by gentle percussion.

6. The diminution in the respiratory excursion of the lower border of one lung is an early sign of tuberculosis. We must exclude emphysema, old age, pleurisy, pain, inability to breathe, or other conditions interfering with the free movement of the lung in the pleural space without active disease.

7. Fully appreciating the value of all the modern diagnostic methods, I wish to say that the old methods are of primary importance. A capable physician is not he who is able to analyze urine or sputum, or use the microscope, etc., but he who is skill-

ful with the old methods of inspection, palpation, percussion, auscultation, and mainly the taking of a good history. One who relies solely and principally on laboratory methods for diagnosis is making a big mistake. In order to acquire the necessary skill the medical man must have the eye of an eagle to notice and observe all possible changes occurring in health and in disease, he must be able to penetrate into the very depth of human nature; he must have a well trained ear in order to hear, appreciate, and interpret all possible differences of sound, which is most important in auscultation and percussion. He must develop his tactile, olfactory, and gustatory senses, all for the purpose of diagnosis. He must talk medicine and think medicine. In a word he must have the faculty which we call medical instinct, which enables the physician so often to recognize disease at a glance. And above everything the doctor must have a good reasoning power, the gift of observation, quick perception, common sense, and a logical mind in order to interpret the different phenomena and make correct deductions. And only then when he acquires all these essential attributes, he may frequently resort in doubtful cases to the newer, more scientific laboratory tests as excellent aids to diagnosis.

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1318 North Franklin Street.

SALIVARY SUPERSTITIONS.

By Howard D. King, M. D.,
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The habit of promiscuous expectoration is an uncleanly and disgusting one, but how curious it is that it should be environed with so much superstition. In days of antiquity spitting was resorted to in order to ward off danger, and up to the present time luck is wooed and misfortune avoided by the process of spitting. Newborn children are treated to a lavish expectoration by a certain class of midwives; fishermen spit upon their hooks after baiting them. It is considered by some to be absolutely essential before washing in water in which a friend has washed to spit into it, otherwise a quarrel is sure to follow.

But it is in old Europe that the superstition of spitting seems to reach its worst degree. In Oldenburg, for example, the loathsome custom prevails of always spitting three times into the kneading trough before the dough reaches the oven. Again, babies in Hungary are especially singled out as the objects of the superstition; the custom there is to spit into the baby's face in order to bring it good luck. Imagination almost fails to picture the filthiness and danger of such a disgusting act. In Silesia and Bohemia, persons generally spit three times when they meet an old woman, but it is quite difficult to conceive why the presence of an aged female should call for such a profligate evacuation of the salivary secretion. In Sweden a great deal of superstitious spitting also takes place. Persons spit into their beds before retiring; playing cards are spat upon when luck is bad, and every new suit of clothes is made the object of a salivary demonstration.

The widespread belief in the wonderful powers possessed by saliva is, however, not always allied to imaginative superstition, but often seems to savor of empiricism. In parts of Scotland warts on the hand are supposed to vanish with great celerity should they be anointed each morning with the first spittle formed by their owner's salivary glands after awaking. The most extraordinary part of the story is that there seems to be a degree of truth in it. In America the curative power of spittle is vouched for by many of the intelligent classes. The wounds of dogs are said to heal best if treated solely with the injured animal's tongue.

The Gaelic race has ever been deeply absorbed in legendary fancies and mythical creations, many of which are connected with spitting. Ireland is noted for its many evil minded people. In many cases the evil minded person is compelled by the injured man, on pain of bodily damage, to spit upon the object of his pretended admiration, and at the same time to invoke a blessing on it. Admiration from an evil minded person is always regarded as of ill omen. In Connemara a bowl is sometimes sent around the neighborhood, and each person to whom it is presented is expected to spit into it. The bowl is then taken home, and the person or animal overlooked is anointed with spittle. The object of this is to obtain the spittle of the person responsible for the injury without giving him offense or awakening his suspicion, as a direct appeal to him would be certain to do.

In many parts of Ireland thrush in children is cured by having a posthumous child blow into the mouth of the sufferer. The blowing must be done by the operator while fasting, and is generally repeated on three successive mornings. In county Meath the cure of warts is accomplished by first spitting upon the hearth immediately after arising: following this a second installment of saliva is hawked up and applied to the wart. In applying the spittle to the wart the second finger must be used. The use of the first finger would be disastrous. In county Mayo styes are treated by liberal applications of spittle.

In certain parts of Ireland, principally the west, the name Mearnan and spittle are indissolubly linked. A woman by the name of Mearnan with an evil eye made admiring remarks on the limbs of her neighbors. These words of admiration caused all of them to become cripples. One young man whose feet she deformed by her complimentary remarks, compelled her to bless his feet and spit upon them. His limbs were soon restored to their normal condition. One of the Mearnans was so well aware of the blighting influence of his evil eye that upon entering a home to pay a visit he would always spit upon and bless each member of the family before sitting down.

Superstitions are said to die hard; and it would seem from the foregoing facts that the one under discussion has been endowed with a phenomenal vitality. Despite its absurdity, filthiness, and unhygienic character, the salivary superstition has still survived; whereas, on sanitary grounds, it should, without further loss of time, be buried and never be revived.

Medical Building.

SYPHILIS OF THE LARYNX.

With Gumma of the Left Vocal Cord,

By Joseph Weinstein, M. D.,
New York.

The following case is submitted primarily to call attention to a long delay in giving efficacious treatment to a patient, a delay which might have been avoided had a Wassermann been done at the beginning as a routine procedure.

Syphilis of the larynx is a condition infrequently met. Reports vary as to its frequency from 0.4 to thirty per cent. Alfred Bruck, who has made it a practice to examine the throat of every syphilitic patient, places it at 1.5 per cent. It is seen in the secondary or tertiary stage after a lapse of from several months to twenty years after the primary infection. Primary infection in the larynx is most rare; Krashaber reported a case in 1877, and Moure a case in 1890.

Early symptoms of laryngeal syphilis are usually of so mild a character as to go unrecognized by both the physician and patient. The patient frequently has no recollection of the primary or secondary stage or of any infection, hence the value of a Wassermann in all throat infections. In the secondary stage the lesions are usually erythematous or condylomatous in character. Catarrh, hoarseness, and mucous patches should always arouse suspicion. Tertiary lesions are gumma, ulceration, and scar tissue. The gumma is seldom seen. It is dark red in color, protruding, and hard.

Paralysis of the vocal cords is frequently present in laryngeal syphilis and is probably due to an infiltration of the muscles; or it may be due to pressure on the recurrent laryngeal nerve.

Tertiary syphilis may easily be mistaken for tuberculosis or even carcinoma. A diagnosis is rendered particularly difficult if both syphilis and tuberculosis are present. Syphilitic symptoms are usually more acute, the infiltrations breaking down more rapidly. A diagnosis of carcinoma can best be made histologically. Treatment given for syphilis will often clear up the diagnosis, but does not always do so. Syphilis and carcinoma may also be present at the same time.

In syphilis of the larynx, the prognosis is favorable when the patient is seen at an early stage; the results are often brilliant. Where considerable progress has been made by the disease and where scar tissue has already formed, the chances of marked improvement are small. The condition is a grave one, complete and permanent paralysis of the vocal cords, destruction of the cords and of adjacent structures, and serious difficulty in swallowing being some of the complications. In the tertiary stage grave symptoms of stenosis may occur, rendering immediate tracheotomy necessary. In the case below had the condition been allowed to go on, permanent destruction of the larynx would have ensued.

Case. P. R., thirty-seven years old, first seen December 5, 1914. December, 1913, patient noticed slight hoarseness, which entirely cleared up in a few weeks. August, 1914, hoarseness reappeared; gave it no attention, as no other symptom accompanied it. After two weeks noticed that it was becoming daily more difficult to talk. Received medical attention for two weeks with no result. At end of third week, it was practically impossible to talk. Consulted a specialist, who advised no attempt to talk. Was treated for six weeks with no result. Continued the treatment for six weeks longer, however, still with no result, when he consulted another specialist, who pronounced the condition incurable.

December 5th, in my first examination, I found the posterior wall, epiglottis, and all other structures, including the right vocal cord, normal. The left vocal cord was reddened and infiltrated. Was movable. The question as to whether this was a cyst of the cord or a gummatous infiltration was decided when a Wassermann showed a four plus reaction. No history could be obtained of any venereal infection. The patient remembered, however, having had some trouble with his left hand about eight years previously, little sores appearing from time to time, but healing readily under local treatment.

No time was lost in administering antisyphilitic treatment after the Wassermann report. A full dose of neosalvarsan was given at 8.30 p. m. The patient retired at 9.30 and awakened at 1.30 a. m., at which time he noticed that his throat felt free and he spoke at once in his habitual voice and was able to do so without difficulty subsequently. A later examination showed a perfectly normal larynx with slight congestion of the left cord.

The dire results, probable and possible, had a correct diagnosis not been arrived at in the foregoing case compared with the brilliant result obtained *after* such a diagnosis, seem to speak in words sufficiently powerful to show the physician his duty to every patient in carefully considering syphilis in his differential diagnosis.

261 Central Park West.

INTERPERITONEAL ADHESIONS

And Their Prevention,

By R. J. Behan, M. D.,
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Owing to the indefiniteness which exists at the present time in regard to both the cause and the manner of the formation of adhesions in the abdominal cavity, it seemed that a study, with the idea of determining the cause of the intraabdominal formation of adhesions and the manner of their prevention, would be of value. In the routine of the study it was thought necessary to define:

A. If alcohol in the peritoneal cavity can cause adhesive formations.

B. If glycerin in the peritoneal cavity can cause adhesive formations.

C. If denudation of only one or two opposing surfaces will give rise to adhesions.

D. If infection (mild or severe) is necessary for adhesive formation.

E. How peritoneal infection or inflammation produces adhesions.

F. Can toxins or bacteria passing out from the intestine give rise to adhesions?

In studying the prevention of adhesive formation in the abdomen it became necessary to—

A. Determine if petrolatum applied over raw areas will retard adhesive formation.

B. Determine whether wool fat, an organic fat alone, or mixed with some inert or soluble substance, as boric acid, inhibits adhesive formation.

C. Will olive oil in the abdominal cavity retard adhesive formation?

D. Will Russian oil prevent or hinder adhesive formation?

We elected first to study determination B, and later on incidentally to define the causes of adhesive interperitoneal formation.

Of the many methods of preventing the formation of adhesions—such as the injection of mineral and vegetable oils, and even of animal fats, or of solutions of the various metallic and nonmetallic salts, into the peritoneal cavity—none have proved entirely satisfactory. However, in reviewing the methods intended as preventive, it occurred to me that sufficient consideration had not been given to the cause and manner of the production of adhesions.

It seemed that adhesions between coils of intestine must have a cause other than mere abrasion of the serosa. In many cases it was observed during a secondary operation that the peritoneum was in excellent shape as far as adhesions were concerned, when we were sure that considerable traumatism had taken place during the primary operation. Apparently something more than traumatism was necessary for the production of adhesions between two adjacent peritoneal surfaces. This additional factor may be infection of a mild type, possibly due to some bacterium or toxin which has penetrated the intestinal wall.

The previous methods of preventing adhesion formation apparently did not take sufficiently into consideration either the possibility or the presence of this infection: and also discounted that other most important factor, namely that in using olive oil or a mineral oil, such as petroleum or refined oils or petrolatum, a foreign substance was being introduced into the peritoneal cavity. The natural reaction of the peritoneum to this foreign material would be the throwing out of exudate with fibrin deposit and subsequent adhesive formations.

In the hope of deriving some information along these lines we performed a few experiments to determine whether a paste of boric acid (five per cent.) in wool fat will inhibit peritoneal adhesions. The wool fat was chosen because it is an animal fat and would be best tolerated by the sensitive peritoneum. The boric acid was used as antiseptic in order to counteract any mild infection which should occur on the abraded peritoneal surface.

Experiment I. The first experiment was on March 23, 1915. The abdomen of a dog was opened and an enteroenterostomy performed. The omentum was stitched into the lower angle of the anastomotic area because of the difficulty of serosera approximation. At this place there was considerable bleeding. Bleeding was also present in the area of the abdominal wall where adhesions had been separated. In both these areas a sterile preparation of five per cent. boric acid in wool fat was rubbed in. This seemed to control the bleeding to a considerable degree (for this reason it might be used as a hemostatic). The incision was closed.

Experiment II. The abdomen was opened May 14, 1915. Adhesions were entirely absent around the area of anastomosis. The omentum was adherent, but was glistening. No adhesions to the peritoneum at incision margins were found. This compares favorably with the number of adhesions found after the first operation performed on February 28, 1915, for when, on March 23rd, the abdomen was opened, adhesions were everywhere present. The last operation was more careless—there was more free blood in the abdomen at the conclusion of the operation than at the conclusion of the first operation; also, care was not especially exercised to stop the bleeding. The result in this instance may apparently be ascribed to the local application of wool fat and boric acid. The abdomen was closed without the application of boric acid and wool fat.

Experiment III. The abdomen was opened September 20, 1915. Adhesions were marked—especially the omentum to the line of incision. Also stray bands of omentum were adherent to the small intestine. Two opposing surfaces of the small intestine were denuded of peritoneum. On one of the surfaces two silk sutures were inserted as guides. Wool fat and boric acid (five per cent.) was applied to each of the opposing surfaces. The abdomen was closed.

Experiment IV. The abdomen was opened October 22, 1915, with the assistance of Doctor Nealon; the omentum was found tightly adherent to the peritoneum in a wide area immediately beneath the site of the last incision. These adhesions were so dense that they could not be separated. The place on the bowel where the serosa had been scraped off at the previous operation was found. The two sutures were not identified, but the bowel itself was easily identified by the dark color of the serosa at this point. The bowel at this place seemed to be covered by new membrane which was easily rolled between the fingers. On the free margin of the bowel a projecting apron of peritoneum was seen. No other adhesions were observed.

As a means of defining a few of the conditions necessary for adhesion formation, two bowel segments were brought together.

At A, both adjacent peritoneal surfaces were scraped clean.

At B, one peritoneal surface was scraped.

At C, neither peritoneal surface was scraped.

Very slight aseptic precautions were taken; the instruments were sterilized, the towels were not, and the dog's skin was not too clean. The dog was rather restless for a few days, but quickly recovered and then was as active as ever.

Experiment V. On December 8, 1915, Doctor Nealon assisting, the abdomen was opened. The omentum was attached to the parietal peritoneum in a wide area and was very firmly joined. The intestine was matted together by adhesions partly derived from adjacent coils of intestine.

The area of intestine previously prepared was sought, and it was noted that in the upper angle where the two adjacent serosæ had been scraped union was firm; at B, where only one surface was scraped, union did not occur, but a free portion of a pseudoomentum which had been hanging down from the bowel was attached by a thin filamentous band; at C, neither side was attached; the serosa was free.

The experimental area was excised. The intestinal anastomosis which had been performed on March 22, 1915, was found. Adhesions were absent and the serosa was absolutely smooth. This was the area over which wool fat-boric paste had been smeared. Thus even in the presence of profuse adhesive formation in the peritoneal cavity, the application of wool fat and boric acid showed permanence of results.

Encouraged by the results of these experiments, I determined to use the wool fat-boric acid paste in the human abdomen. So far I have used it in fifteen operative cases with good results. Up to the present none of these patients have complained of symptoms which could be traced to adhesions.

though it is not long enough since the first case to determine whether the danger or the tendency to adhesive formation has been entirely obliterated. In all these cases there has been a post operative elevation of temperature beginning within the first twenty-four hours and dropping to normal within a few days. The pulse, as a rule, does not increase in rapidity. The patient complains of but little postoperative pain. Because of the apparent ease it brings to the patient, its seemingly entire harmlessness, and its evident power to inhibit adhesive formation, it has become my routine to use it in all cases where there is a possibility of postoperative adhesive formation. A detailed study of case histories will be published in the near future.

407-409 JENKINS BUILDING.

LABORATORY AIDS IN THE DIAGNOSIS OF POLIOMYELITIS.

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It is well known that sporadic cases of poliomyelitis are frequently seen when no epidemic exists. Because of this fact, during the past six years, it has been the lot of the meningitis division of the department of health to study, both clinically and by means of laboratory methods, many cases of this disease before the present epidemic occurred. Most of the cases seen by us, both before and during this epidemic, have been atypical and we have, therefore, been compelled to consider our laboratory findings with more than ordinary care. As with most such procedures, the answers which the laboratory returns to our questionings, furnish us with evidence that is corroborative only and by no means absolutely diagnostic.

Perhaps one of the most interesting experiments employed in the study of poliomyelitis has been the inoculation of monkeys by means of washings from the respiratory and alimentary mucous membrane. This was first successfully performed by Kling, Pettersson, and Wernstedt, in 1911. It has since been repeated several times. Doctor DuBois, Doctor Zingher, and I obtained washings from the nose and throat from an abortive case two weeks after the incidence of the sickness. With these we produced typical poliomyelitis in monkeys. In sections of the brain, from one of these monkeys, a few globoid bodies similar to those described by Flexner and Noguchi were found. A report appeared in the *Journal A. M. A.* for January 3, 1914.

Another laboratory method of some diagnostic value is the so called neutralization test. In this, serum from the suspected case in the stage of recovery is mixed with a known fatal dose of an active virus. These are incubated and later injected intracerebrally into the monkeys. Failure of the disease to develop indicates that the virus has been neutralized. This test, however, does not furnish conclusive evidence of poliomyelitis, for serums from those known to have been free from a recent attack of the disease have sometimes successfully neutralized the virus. It is, however, quite obvious that laboratory methods requiring the use of monkeys are both too complicated and too costly for ordinary diagnostic use.

A study of the blood picture was exhaustively made by Peabody, Draper, and Dochez, of the Rockefeller Institute. It was shown that there existed a varying increase in leucocytes and a polymorphonucleosis. This is characteristic of so many other diseases that it is of little help in diagnosis.

The procedure which we find to be our most trustworthy and valuable aid in the recognition of poliomyelitis is the examination of the spinal fluid. In the first twenty-four to forty-eight hours after its onset, poliomyelitis must be differentiated from the early stages of epidemic meningitis, or mild purulent meningitis, and also from a meningism accompanying pneumonia or other infection. The clinical pictures presented by these diseases are quite similar, and it is in distinguishing between them that the examination of spinal fluid affords us the most valuable information. In the early stages of poliomyelitis, the spinal fluid is clear, or rarely, it may be slightly cloudy. It often shows a good fibrin web formation. There is a slight to moderate increase of albumin and globulin and also of the cellular elements. The reduction of Fehling's is prompt. Those poliomyelitic fluids which are cloudy present a polymorphonucleosis which may run as high as ninety per cent., but which we usually find to be about sixty per cent. As a rule, however, eighty per cent. or more of the cells are mononuclears. In examining such fluids we have frequently observed the presence of large mononuclear cells which we believe to be in a measure characteristic of poliomyelitis. We are now studying these by means of the various differential stains in the hope that our research in this direction may bring out something of positive diagnostic significance.

Two rare types of spinal fluids sometimes occur in poliomyelitis when the hemorrhagic process has been more than usually extensive. The first of these is of the true hemorrhagic character, the red blood cells being evenly diffused throughout the fluid. When collected in successive tubes, the specimens are all homogeneous, showing no change in the intensity of the hemorrhage. This serves to differentiate it from bloody fluids obtained by the accidental puncture of a vein. The second of these rarer fluids illustrate the so called syndrome of Froin. It has a characteristic yellow color and coagulates spontaneously. As these fluids are found in other conditions they are not pathognomonic of poliomyelitis.

The spinal fluid from early cases of purulent meningitis shows a varying degree of cloudiness, except in very rare instances when it may be clear. A greater increase in albumin and globulin is usually found here than occurs in poliomyelitis with a poorer reduction of Fehling's. The cells in these fluids of purulent meningitis are ninety per cent. or more polymorphonuclears, and the etiological organism is found except in the mildest cases. In certain mild cases of meningitis probably of epidemic variety the meningococci may never be positively demonstrated in the fluid. In purulent meningitis due to other organisms, these practically always appear later as the necessity for further lumbar puncture develops. In one instance, I have seen a clear fluid from an early case of epidemic meningitis. This was of about eighteen hours' standing. Although the cellular reaction was so slight, the meningococcus was demonstrated to be present in the fluid by smear and culture. The fluid in meningism is differentiated by being increased in amount, but it is practically normal in character.

When seen a week or more after the onset, cases of poliomyelitis, especially if they present cerebral symptoms, must be differentiated from tuberculous meningitis. The spinal fluid in both these conditions is clear and increased in amount. The albumin and globulin content of both is also increased, but usually in poliomyelitis, the increase of both elements is not so great as occurs in tuberculous meningitis. The reduction of Fehling's is usually better and, here let me say, that many tuberculous fluids give a good reduction of Fehling's, though the contrary has been stated. The cellular element is also usually less in poliomyelitis. In both conditions at this stage there is ordinarily a mononucleosis, although in some acute cases of tuberculous meningitis there is a polymorphonucleosis. If, however, as *may* happen occasionally, the increase of albumin and globulin is greater than usual, and the reduction of Fehling's is not so prompt, then the determination of the disease must wait upon the results of animal inoculation if it has been impossible to demonstrate tubercle bacilli in fluids.

A detailed study of the fluids of poliomyelitis examined by the meningitis division was made by Dr. H. L. Abramson, of that division, and published in the *American Journal of Diseases of Children*, November, 1915.

In brief, then, a spinal fluid increased in amount and showing a slight to moderate increase in albumin and globulin, a good reduction of Fehling's, and a varying cellular increase mostly mononuclear, makes the diagnosis reasonably certain in fairly early cases of suspected poliomyelitis. A slightly cloudy fluid occurring very early in the disease must be differentiated, as noted above, from a similar fluid in an early purulent meningitis. Fluids from the cerebral or encephalitic type of poliomyelitis may sometimes be differentiated from fluids of tuberculous meningitis only by animal inoculation.

426 East Twenty-sixth Street.

Abstracts and Reviews.

THE NATURE, MANNER OF CONVEYANCE, AND MEANS OF PREVENTION OF INFANTILE PARALYSIS.

By Simon Flexner, M.D.,
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Doctor Flexner made his remarks in language easily understood by the laymen present in the large professional audience. He explained that as the Rockefeller Institute for Medical Research had been appealed to by many physicians and laymen for information and advice on the subject of infantile paralysis, it seemed desirable to relate the facts of present knowledge concerning certain highly pertinent aspects of the disease, together with deductions of practical importance.

Infantile paralysis was an infectious and communicable disease, caused by the invasion of the spinal cord and brain by a virus, a minute, filterable microorganism, distinctly visible under the microscope. This virus existed constantly in the central nervous organs and upon the mucous membrane of the nose and throat and of the intestines in persons suffering from the disease; it occurred less frequently in the other internal organs, and had not been detected in the blood of patients.

Although the microorganism of infantile paralysis was now known, the difficulties attending its artificial cultivation and identification under the microscope were such as to make futile the employment of ordinary bacteriological tests for its detection. Nevertheless, the virus could be detected by inoculation tests upon monkeys, as these animals acquired a disease corresponding to infantile paralysis in human beings. In this manner it had been determined that the mucous membrane of the nose and throat of healthy persons who had been in intimate contact with acute cases of infantile paralysis might become contaminated with the virus, and that such contaminated persons, without falling ill themselves, might convey the infection to other persons, chiefly children, in whom the disease developed.

The virus had, apparently, an identical distribution, irrespective of the types or severity of cases of infantile paralysis. There were so called abortive forms of the disease, in which definite paralysis of the muscles did not occur at all, or was so slight and fleeting as often to escape detection; the meningeal forms in which the symptoms resembled those of acute meningitis with which muscular paralysis might or might not be associated; and the familiar paralytic condition.

Microorganisms which conveyed disease escaped from the body of an infected individual in a manner enabling them to enter and multiply within fresh or uninfected individuals and cause further disease. The virus of infantile paralysis was known to leave the infected human body in the secretions of the nose, throat, and intestines. It also escaped from contaminated healthy persons in the secretions of the nose and throat. As the virus had never been detected in the blood of human beings, it was doubtful if biting insects could withdraw the virus from the blood of infected persons and reinoculate it in the blood of healthy persons.

The virus penetrated to the brain and spinal cord by way of the lymphatic channels after gaining entrance into the body by way of the upper respiratory mucous membrane. It was readily distributed by coughing, sneezing, kissing, and by means of fingers and articles contaminated with the secretion of the nose and throat. The virus withstood for a long time even the highest summer temperatures, complete drying, and even the action of weak chemicals, such as glycerin and carbolic acid, which destroyed ordinary bacteria. Its survival in the secretions was favored by weak daylight and darkness and hindered by bright daylight and sunshine. It was readily destroyed by exposure to sunlight.

The ordinary domestic fly might become contaminated with the virus contained in the secretions of the body and serve as the agent of its transportation to persons and to food with which they came into contact. Domestic flies experimentally contaminated with the virus remained infective for forty-eight hours or longer. So insects fell under suspicion as being potentially mechanical carriers of the virus of infantile paralysis.

Studies carried out in various countries where infantile paralysis had been epidemic, indicated that in extending from place to place the route taken was that of ordinary travel, by water or land, along a simple highway or the line of a railroad, thus connecting the distributing agency intimately with human beings and their activities.

The longest period after inoculation of monkeys in which the virus had been detected in the mucous membrane of the nose and throat was six months.

Not all epidemics of infantile paralysis were equally severe; there was great variation, not only in the number of cases, but also in the death rate. A factor of high importance was the infective power, or the virulence of the microorganism causing the disease, which fluctuated in intensity. Experiments had shown that by passing from monkey to monkey, the virus tended to acquire incredible activity.

Not all children and relatively few adults were susceptible to infantile paralysis, but young children were more susceptible than older ones. The light, or abortive cases indicated a greater general susceptibility than had always been recognized, and their discovery promised to have far reaching consequences in respect to the means employed to limit the spread or eradicate foci of the disease.

The period of incubation was subject to wide limits of fluctuation, being sometimes as short as two days, and sometimes lasting two weeks or longer; but the usual period did not exceed eight days. The period at which the danger of communication was greatest was during the very early and acute stage of the disease. However, this opinion was based on observation rather than on demonstration. Hence cases of infantile paralysis which had been kept under supervision for a period of six weeks from the onset of the symptoms, might be regarded as practically free from danger of infection to others. Infantile paralysis was one of the infectious diseases in which insusceptibility was conferred by one attack, including all the forms, namely the paralytic, meningeal, or abortive, all of which conferred immunity. This immunity rested on the presence of immunity bodies, whose presence in the patient had been detected twenty years after recovery from infantile paralysis.

Experiments in protective inoculation to produce immunity had been unsuccessful, though in some instances, in animals, protection was accomplished and the immunity bodies appeared in the blood. Passively transferred immunity bodies also persisted in the blood, but only for a brief time.

A measure of success had been achieved in the experimental serum treatment of inoculated monkeys. For this purpose blood serum derived either from recovered and protected monkeys and human beings had been employed. The serum was injected into the membranes about the spinal cord, and the virus was inoculated into the brain. The injection of serum was repeated several times in order to be effective. Unfortunately, the quantity of the human immune serum was extremely limited and no animals other than monkeys seemed capable of yielding an immune serum, while the monkey was not a practicable animal from which to obtain supplies.

As the virus of infantile paralysis attacked and attached itself to the central nervous organs, it was reached not only with difficulty, but it had to be counteracted with substances and in a manner that would not themselves injure those sensitive parts. The ideal means to accomplish this purpose was through the employment of an immune serum. The only drug that had shown any useful degree of activity was hexamethylenamine, which was germicidal and had the merit of entering the membranes as well as the substance of the spinal cord and brain. But experiments on monkeys had shown this chemical to be effective only very early in the course of the inoculation and only in a part of the animals treated.

During the prevalence of an epidemic, habits of self denial, care and cleanliness, and consideration for the public welfare could be made to go very far in limiting its spread. The conditions which obtained in a household in which a mother waited on the sick child and attended the other children were directly contrasted with those existing in a well ordered hospital; the one was a menace, the other a protection to the community. All objectionable household insects should be exterminated. Food should not be exposed in shops and food for sale to the general public should not be handled. Protection to the public could be best secured through the discovery and isolation of those ill of the disease and the sanitary control of those persons who had associated with the sick and whose business called them away from home. In the event of doubtful diagnosis, the aid of the laboratory should be sought, since even in the mildest cases changes had been detected in the cerebrospinal fluid removed by lumbar puncture.

A percentage of persons died during the acute stage of the disease, and this varied from five to twenty; the average death rate of many epidemics had been below ten per cent. Of those who survived, a part made complete recoveries in which no crippling whatever remained. The remainder suffered some degree of permanent crippling; in some so small a degree as not seriously to hamper the life activities of the individual; in others it might be minimized or relieved by suitable orthopedic treatment. But even a severely paralyzed child who had made little recovery of function by the time the acute stage of the disease was over might go on gaining for weeks, months, or years, and in the end regain a large part of his losses.

There was at present no safe method of preventive inoculation or vaccination and no practicable method of specific treatment. The prevention of the disease must be accomplished through general sanitary means; recovery from the disease was a spontaneous process which could be greatly assisted by proper medical and surgical care.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD, DRUGS, AND LONGEVITY.

Some Thoughts on Their Relations,

By Leroy D. Swingle, Ph. D.,
Department of Pharmacology, University of Utah.

(*Continued from page 75.*)

It has been stated by eminent authorities that "death is inherent in the somatoplasm" while the "germplasm is potentially eternal." This could not necessarily be true, unless in the process of development all the properties of life were thrown to the germplasm. Yet we know that the germplasm, even in the highest animal, man, does not appropriate all the properties of life at the expense of the somatoplasm, for the latter lives on often for 100 years. Death is no more inherent in the somatoplasm than in the germplasm, from which it develops by a genetic process of cell division. We believe rather that *life is inherent in all protoplasm,* differentiating it from dead matter. Death, we believe, results because the organism is imperfect, owing primarily to an indirect impairment which has come hereditarily through the action of an unfavorable environment and imperfect food upon the germplasm, and secondarily to a direct action of unfavorable environment and imperfect food upon the somatoplasm.

Why, then, does the germplasm live on, while the somatoplasm dies? Because the germplasm produces the somatoplasm, instead of the somatoplasm the germplasm, and because the somatoplasm gets a double dose of adverse environment and imperfect food. If the germplasm was budded off from the somatoplasm after it (somatoplasm) had reached maturity, it would probably be so damaged that it would not live long. The somatoplasm gets the double dose of adverse environment and imperfect food, because it is highly differentiated to perform the functions necessary to its own existence as well as the functions of nutrition and protection for the germplasm, while the germplasm lies dormant and undifferentiated. Being dormant it requires very little food compared with the active somatoplasm which must keep up by constant functioning a favorable environment for the germplasm, maintaining itself also as a buffer between the germplasm and an external unfavorable environment. This composite functioning—locomotion, digestion, respiration, excretion, etc.—which the somatoplasm must carry on both for its own existence and the life of the germplasm, requires large quantities of various food elements. While the somatoplasm has within itself certain powers of protection against injurious environment and unsuitable food materials, yet it is more directly exposed to them than the germplasm. Moreover, since its very existence depends upon a constant activity of its vital organs and a working correlation of their complex functions, its life is much less certain than it would be if it could live on in an undifferentiated condition. These two things, then, the constant direct contact with unfavorable conditions and a high differentiation, requiring a good supply of carefully balanced rations and a constant exercise and correlation of many delicate and complex functions, render continued life for the somatoplasm much more uncertain than for the undifferentiated, dormant germplasm. In fact, the perils under these conditions are so great that on their account alone, and not as a result of bad heredity, a large proportion of individuals lose their lives even before they reach sexual maturity, although their germplasm may be as good, or even better than the average.

Personifying the germplasm, it might be conceived as extremely selfish, maintaining its long life by inhabiting the somatoplasm, making it serve as a protection, a bodyguard, a slave. In order that its own life may be preserved, it takes its leave, abandoning its somatoplasmic slave to death. This takes place fifty or seventy-five years before death is certain to overtake the servant and destroy both. It means that the germplasm insures its own life somewhat like the bandit, Villa. He organizes a band of soldiers, and uses them as a guard and as servants to secure food and plunder for his gratification. He allows them to stand between him and the enemy. When he has obtained the maximum from this company he slips out before his opportunity of escape is menaced by the destruction of the band, and organizes a new one. Thus he allows his men to be sacrificed, while he continues his selfish life, outliving many bands. In a similar manner the germplasm outlives many generations of somatoplasm.

In view of these conditions, the fact that the somatoplasm comes in direct contact with environment, and the fact that it possesses a high differentiation necessitating a constant supply of delicately balanced rations, we arrive at the previous conclusion, namely, that the length of life of the somatoplasm may be increased by rendering the environment and the food supply more nearly perfect. Since our line of argument indicates that these conditions, rather than death inherent in the somatoplasm, explain why the somatoplasm does not live on like the germplasm, the improvement of the environment and the food conditions of the somatoplasm place it in a condition more nearly equivalent to that of the protected and undifferentiated germplasm, to which condition its greater length of life is to be ascribed.

What has been said constitutes a foundation for a more particular discussion of the relation of food and drugs to the longevity of the soma or individual.

There are two ways in which food and drugs may affect the length of life of the individual. They are: First, by directly influencing the somatoplasm which receives them, and, secondly, by affecting its germplasm, and through it, the somatoplasm of the succeeding generations. This means that the doctor must be a physician both of the somatoplasm and the germplasm.

At this point we would introduce certain matters relating more directly to medical practice. It is to be regretted that many doctors "practise medicine," in the primary sense of the term, when they should practise prophylaxis and therapeutics. The practice of medicine suggests the use of medicines (drugs) only. Yet the physician must use, not only drugs for the curing of disease, but among other things, dietetics for both the cure and prevention of disease. We cannot believe that drugs are a panacea for human ills and the prevention of death, though many of the patent medicine advertisers often assert as much. It is hard to believe that the physician would be influenced by such advertisements, nevertheless, from their frequent prescription of such drugs, we are led to conclude that an impression is made by the constant presence of such assertions before their eyes. However, the modern doctor who has had training in experimental pharmacology surely ought to escape any such influence. But, on the other hand, as he observes in the laboratory the marvelous changes drugs may produce in the functions of various organs, is he not apt to develop an inordinate confidence in drugs as therapeutic agents? Certainly he will not fall into the drug nihilist class, rather tending to go to the opposite extreme of relying upon drugs to a partial neglect of more natural means of prevention and treatment, such for example, as dietetics. In this reference to drugs, I do not necessarily include such agents as the glandular extracts, which might be considered as natural means, especially when their administration is not for an emergency. Still, even in the case of these agents, the indication for their use in conditions where they are not properly secreted, may yet be found to be necessitated primarily by improper food conditions.

The irrational treatment of many diseases, with drugs without a proper regard for dietetics, paves the road from the patient to the egotistical, unscientific author of health series or of advertisements of health foods, who may advocate some truly valuable dietetic measures, but who fanatically, unconsciously, and dogmatically condemns truly valuable drug therapy. One of the best examples of such a violation of rational therapeutics is to be found in the doping of babies with drugs when the whole trouble is with the diet. Can anything but injury be expected, even though it may not result in obvious lesions? Some of the disorders of later life might be traceable, were our knowledge complete, to dietetic abuse during the early period of development. Not only may an unwise use of drugs be made to the neglect of natural dietetic means, but some may even recommend a diet which is known to be unsatisfactory, except possibly for a short period, and which will therefore bring on ill health. In a small western city the common practice in baby cases, where artificial feeding is necessary, is to tell the mother "just get a can of condensed milk and follow directions." This she does, and after using it for a couple of months or longer, she wonders why the baby is not doing well. Similar neglect occurs when the physician unscientifically prescribes proprietary foods, or leaves the mother to follow the ridiculous and conflicting advice of the neighbors who drop in, when she should have the advice that goes with scientific training. Truly these violations of the known principles of dietetics must have a direct effect, though silent and unobserved, upon the length of life of the victim, and possibly also upon his developing sex cells.

In speaking against the use of drugs when dietetics is indicated, it is not our intention to depreciate the value of drugs. The thought is that drugs cannot take the place of proper food. The body is an extremely complex laboratory with its different departments wonderfully correlated, and from the raw materials that come to it must be manufactured the numerous substances which are necessary to its automaticity and consequent existence as an organism. It must, therefore, make much difference, the kind, the form, and the quantity of raw materials supplied. If it asks a fish, should we give it a stone; if it calls for bread, should we give it mercury or opium? Yet this very thing is persistently done. Drugs play an indispensable role in therapeutics, but they cannot take the place of food. The rational use of drugs, based chiefly upon pharmacology and experimental therapeutics, is beyond criticism.

Drugs may act either by increasing or decreasing the functions of organs, but they do not change one function into another. For example, pilocarpine produces a greater flow of saliva from the salivary glands, but it does not cause contractile tissue to secrete. Nor will any other drug. To accomplish such a change in function, the drug would have to transform completely the histology of contractile tissue. Certain drugs will completely change the histology of the tissues, but when that is done, the tissues will not function in any manner; they are dead. The kind of function is determined by the morphological character of the tissue or organ, while the degree of function is measured by the chemical activity, and also, if it is a compound function, by the efficiency of correlation. It is these things that are generally modified by drugs administered in therapeutics, even though the drug itself may not enter into any chemical reactions. Although the drug may not produce a lesion or an *apparent* histological change in the tissues, which may completely destroy their function, and although it cannot induce a new function in an organ, and thus upset the balance of functions in the body, yet it may have harmful, remote effects as a result of increasing or diminishing certain functions. Many clear examples of such action might be cited, while other unknown slight effects may exist. Normally all the organs should balance each other in their functions. It would appear that a prolonged use of drugs, which, while bringing nearer to the normal the functions of a deranged organ, may render abnormal the functions of other organs and so upset the balance of functions, might allow the barriers against death to be thrown down earlier than otherwise. Many of the active drugs—and those are the only ones that could possibly have any value—used so extensively in this age of experimental medicine are known to have such untoward effects. Do we appreciate or fully know the ultimate end of these effects? Yet, if the function of the organ to be treated is of more vital importance than the function of the organ which is affected unfavorably, the treatment with the drug may result in a net benefit. But the treatment with drugs generally would not remove the cause of the derangement of the organ, and so how much better it is to use a treatment that would strike at the cause of the abnormality without affecting the normal functions of other organs! In some cases it is certain that dietetics is that other treatment. As investigation proceeds, it will doubtless reveal a direct or indirect relation between other pathological conditions and the diet, so that the treatment of these conditions will become a natural one—dietetic. All will agree that drug therapy is not generally a natural treatment. Let us take the case of asthma caused by a spasm of the muscles of the bronchioles. Atropine, by paralyzing the myoneural junction and thus preventing the passage of nerve impulses to the muscles, may relieve the paroxysm. Nevertheless, the attacks may recur regularly. Atropine is merely palliative. In absence of knowledge or anything better, it might be considered a rational treatment, but it is not a natural treatment. Such a treatment is one that would attack the cause and not only remove the attack, but act as a prophylactic against recurrence. Asthma is a disease that may be due to anaphylaxis, and hence be caused by improper food conditions. Take the disease, diabetes mellitus. Death may be warded off by reducing the acidosis by the injection of large quantities of sodium bicarbonate. This, however, cannot affect the real cause of the disease, though it may temporarily remove the condition. Fasting is held to be beneficial, and hence there may be a causal relation between this disease and food conditions. If so, the natural treatment and prophylaxis would be a proper regulation of diet. This treatment could not be administered without a knowledge of the specific requirements of the individual. Is it possible that food requirements are specific for each individual?

Our point, then, is that drug therapy, while it may be beneficial and even ideal in certain conditions, may in other conditions have ultimate bad effects, because it is not generally a natural treatment. In seeking to avert disease and increase the longevity of the somatoplasm, the more sanguine outlook is along the line of dietetic investigations, rather than pharmacology. An apt illustration of this is to be found in the disease, beriberi. The cause of the disease is found to be the eating of polished rice without a sufficient amount of other kinds of food. Polished rice lacks certain obscure substances called vitamines which are necessary to proper function. It was once thought that the cause of the disease must be a protozoan parasite, and from such a viewpoint the treatment with sterilizing drugs was naturally indicated. The cause having been discovered to be improper food, treatment with drugs is plainly unnatural, even though they may be beneficial.

The practical import to the physician of this line of argument is for him not to be content with drug therapy, but to study the food conditions, especially in relation to diseases which are not known to be due to infections.

(*To be continued.*)

Diet of the Growing Child.—F. D. Strickler (*Medical Sentinel*, June, 1916) says that problems of of digestion, metabolism, nutrition, and growth present an almost endless task to the investigator. The primary fact in feeding the young is that the food consumed has not only to nourish the tissues, but to provide for future growth. Nutrition can only give the growth impulse free play; neither can succeed without the other, but while the former is controllable, the latter is not wholly subject to regulation at will. The feeding of a growing child is not a simple matter of calories, proteins, fats, carbohydrates, and inorganic salts; there is no doubt that the food needs of the growing organism are specific and peculiar. Growth is the manufacture of additional quantities of living matter. Protein in constant supply is necessary for the maintenance of life—fats and carbohydrates being subsidiary—and is the main constituent of protoplasm, but in what form it exists there is unknown. In the light of recent studies, food products do not enter into metabolism unchanged, or slightly altered, the end products of digestion are not peptones or proteoses, but these are further changed by hydrolytic cleavage into simpler crystalline bodies or aminoacids, which assume an increasing importance in the problems connected with nitrogenous metabolism. It is probable that the purpose of protein digestion is to reduce the complex molecule of protein to the form of crystalline products, the absorption of which is normal. The nutritive value of any protein is the character and extent of the aminoacid it contains, of which eighteen are known at present. All proteins do not promote growth under otherwise favorable conditions, and in the absence of lysin the construction of new tissue does not take place readily, or at least proceed at the normal rate. The results of experiments lead us to believe that lysin is indispensable for growth, and therefore that it forms an important part of the diet of the growing child. Proteins like casein, lactalbumin, and egg vitellin, which are in nature concerned with growth, have a relatively high content of lysin. Milk, eggs, beef, mutton, and halibut are foods that contain lysin in relatively large quantities, and should therefore form an indispensable part of the diet of the growing child. Corn, rye, barley, and rice are relatively poor in lysin and should be avoided as an exclusive diet.

The absolute necessity of fats as promoters of growth lacks conclusive evidence. They are absorbed as fatty acids and glycerin, but while they serve as a source of energy, they are not as efficient as carbohydrates as protein sparers. Butter fat, egg yolk, and codliver oil promote growth, though their nutritive value seems to be due, not to the fat, but to some accessory diet factor. It is now recognized that there is a specific requisite for growth, which is known as growth vitamine, the exact nature of which is unknown, although it is found in milk, egg yolk, and codliver oil. Butter fat and codliver oil will not produce growth unless they are combined with a proper proportion of inorganic salts, suitable carbohydrates, and specific protein. These facts give a rational basis for the feeding of the growing child, whose diet should contain a liberal amount of milk products, eggs, and meat in order to stimulate or promote normal growth.

Editorial Notes and Comments

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THE DUCTLESS GLANDS AND MALIGNANT GROWTHS.

Whatever the exciting cause of malignant growths may be, there is no question that the predisposing factors reside in the body of the affected individual, and are in all probability associated with metabolism. It is natural, therefore, that investigators should turn their attention to the influence of certain foods and more particularly to the effect of the ductless glands. The effect of meat, vegetables, salt, and other food stuffs on the predisposition to cancer has been investigated by a number of authors with, however, conflicting results. Yet the very fact that in experimental sarcoma, the administration of certain food stuffs had a marked influence on the susceptibility of the animal to inoculation, is of great significance. The experiments of Negre showed a lessened susceptibility to experimental cancer in mice fed for long periods on food to which table salt was added. The salts of potassium, on the other hand, increased susceptibility.

This latter observation was confirmed by a number of investigators. The salts of calcium and barium diminished susceptibility in the experiments of Rosenthal and Goldzieher. Decreased susceptibility to sarcoma in rats and chicks fed on polished rice was observed by Funk, while Danysz and Skrzynsky found an increased susceptibility in animals fed exclusively on vegetables. Similar observations carried on with different foods by a number of investigators, showed undoubtedly that certain foods diminish while others increase the susceptibility of the animal to experimental cancer or sarcoma.

Broadly speaking, a malignant growth may be regarded from two standpoints: First, a sudden tendency to localized formation of new tissue, a sort of perverted parthenogenesis; and, second, a lowered resistance on the part of the surrounding tissue to the invasion of the new growth. Both these phenomena must be influenced by the metabolic activities of the cells concerned in the process. This being the case, it is not astonishing that the ductless glands with their secretions and hormones should exert such an influence to a marked degree; and this is borne out by a large number of clinical observations and experiments by various authors.

Recently, Korentchevsky (*Roussky Vratch*, February 6, 1916) has contributed a lengthy article on the subject, recording his experiments on animals inoculated with sarcoma. In one series, dogs were either castrated or subjected to thyroidectomy, or both. In this series it was noticed that the largest number of successful inoculations as well as the largest growths were obtained in animals that were either castrated or had had their thyroids removed. Those on which both operations were performed showed greater resistance to the new growth. In these animals the growth underwent retrogression much more quickly than in the controls or in those which were either castrated or thyroidectomized. In another series of experiments, rats were inoculated with sarcoma, and received then varying doses of ovarian extract, luetin, and autolysin. Not only was the growth of the tumor inhibited, but in many cases, when small doses were employed, the growth disappeared altogether.

In still another series of experiments, the spleen was removed, either alone or together with the reproductive glands. In all these cases the susceptibility to the formation of sarcoma was increased and the tumor itself grew larger, the effect being more marked when the spleen alone was removed. In another series, the administration of thyroid extract, notably in small doses, inhibited the growth of the tumor.

The conclusions drawn from these experiments by the author are interesting. He maintains that the sex glands, the thyroid, the thymus, and the spleen, contain substances which inhibit the development of malignant growths, and furthermore, this inhibition may be obtained by the internal administration of dried extracts of glands. The evidence seems conclusive that the ductless glands play a very important role in the production as well as the growth of tumors, and further investigations may not only throw light on this phase of the etiology of cancer, but show the way to a more successful therapeutics.

THE DIAGNOSIS OF SYPHILITIC PHLEBITIS.

To corroborate a diagnosis of early luetic phlebitis, a methodical examination of the limbs of syphilitic subjects who present primary and secondary lesions must be made. When, in a syphilitic presenting cutaneous or mucous lesions, an indurated cord following the anatomical course of the superficial veins of a limb is detected, a specific phlebitis is evident and diagnosis becomes an easy matter.

Mistakes are possible, particularly when the secondary accidents are so mild as to escape notice, while on the other hand a patient is more than likely to avoid mention of former specific affection. The torpid type, without rise in temperature, undergoing evolution in from six to eight weeks, without complications, but with a decided tendency to diffusion, relapses, or perhaps spontaneous resolution may enlighten the diagnosis.

It is more difficult to make a diagnosis between a phlebitis and lymphangitis of luetic origin, because the latter lesion produces a superficial cord, sometimes painful and accompanied by red cutaneous lines, but a knowledge of the anatomical course of the veins and the results obtained by compression of the limb over the indurated cord, will furnish clues.

In spite of the evidence offered by these means, mistakes have been frequent. The diagnosis is made in conditions quite different when, as in certain cases of early luetic phlebitis, particularly in the later types, the physician discovers a limb to be the seat of a white, painful edema with a collateral circulation. Under the circumstances a diffuse phlegmon may be suspected, but the redness, blisters, and swelling *en masse* of the entire region involved, give the limb an entirely different aspect. Then, too, palpation does not reveal a deep seated induration along the venous tract, while the general symptoms are much more evident in phlegmon.

In some cases the diagnosis of arteritis has been made. The absence of pulsation, the lowered temperature of the limb, and a tendency to gangrene should at once prevent the diagnosis of phlebitis. Coexistence of the vascular lesions has been recorded, however, e. g., a syphilitic obliterating phlebitis and arteritis of the popliteal vessels. In this case the arteritis had been diagnosticated, but the phlebitis was discovered only after microscopical examination of the specimen.

In considering the diagnosis it becomes evident that the gouty and rheumatic forms of phlebitis need not be considered, as their etiology will be evident. In difficult cases it is merely a question of recalling that luetic phlebitis is to be encountered, and that when a case presents itself in which the diagnosis is not quite clear, the Wassermann reaction or specific treatment will indicate the correct diagnosis.

ALCOHOL AS A PUBLIC HEALTH PROBLEM.

Significant of a changed attitude toward the use of alcohol on the part of the medical profession is the announced policy of the New York board of health which is attacking this problem from the standpoint of the public welfare. This policy is thus outlined (*Bulletin,* February 19, 1916): "The department of health has no sympathy with and will take no part in legislative or police restrictions or attempts to limit personal liberty in the use of alcoholic beverages. The spread of accurate information among the people as to the effects of alcohol can be depended upon to accomplish more than laws restricting its manufacture or sale. In the long run compulsory prohibition will not prohibit until the public is ready to cease using alcohol, when restrictive laws will be superfluous."

In pursuit of this policy a recent bulletin of the department presents two timely papers in popular style. The first is on the sociological aspects of the alcohol question, by Donald B. Armstrong, director of the department of social welfare of the New York Association for Improving the Condition of the Poor. After reviewing the actual knowledge available of alcohol and its effects, Armstrong summarizes the arguments against its use under the indictments that it is a disease producer, both direct and indirect, that it is a vice and crime promoter, that it is a factor in economic waste. To meet these indications for action against alcohol, he recommends, first, a realization of the facts regarding alcohol with a careful avoidance of overstatement and prejudice; second, the radical and ultimate control of the problem by national prohibition of the manufacture and importation of alcohol; third, public education; fourth, the realization of the social point of view, recognizing the fact that the good of society as a whole is greater than the preference of its individuals and that society has an obligation for the success of a "social program involving a more efficient social organization, the elimination of unnecessary human waste, and the provision of an environment which will make it possible for every individual to serve as best he may."

The second paper referred to is on life insurance and drinking habits, by Arthur Hunter, actuary of an important life insurance company. After reviewing the experience and statistics of a number of the large insurance companies in regard to the effect of alcohol on the insurance value of persons using it in varying degrees, Hunter concludes from the opinions of the medical directors that insurance companies do not favor applications from persons who drink freely, even though not to the point of intoxication, nor applications from those who formerly drank heavily but have stopped. Statistics prove that a higher rate of mortality is to be expected in those using alcohol, and that the rate is proportional more or less to the amount of alcohol consumed. He cites the experience of seven of the large American companies, which shows that abstainers have from ten to thirty per cent. lower mortality than nonabstainers. In short, it is conclusively shown that alcohol has an unfavorable effect on longevity and that total abstention materially increases longevity.

The course laid out by the New York health department, to consider the use of alcohol along educational lines, as a public health problem, might well be imitated by other health organizations as well as by private concerns.

THE PREMATURE BURIAL OF BABIES.

When the effort of the narrator is to portray the acme of horror, a tale of premature burial has ever been a favorite. Poe even says that such tales "are too entirely horrible for the purpose of legitimate fiction. . . . To be buried while alive, is, beyond question, the most terrific of these extremes (of agony) which has ever fallen to the lot of mere mortality." The intense suffering attendant upon such a fate is more mental than physical, depending upon the realization of the hopelessness of the situation. This physical horror obviously cannot be present in the case of infants, which is perhaps why the possibility of their premature burial has not received as much attention as the same accident to adults.

An Italian writer, Professor Baculo (*Giorn. internaz. d. sci. med.*, XXXVII, 625, 1915) has lately called attention to a case of his own where a two months old child was for a half hour in a state of suspended animation, closely counterfeiting death. He cites various causes of sudden death in infants which may produce such a condition, diseases of the endocrinous glands for example. Many physical signs exist, such as the depletion of the retinal arteries and the invisibility of the optic disc. There is also Icard's method of the subcutaneous injection of fluorescein solution, which will turn the conjunctiva yellow and the skin green if the patient is still alive.

It would seem that in any institution where death occurs frequently and these delicate tests are not a matter of routine, there should be some safeguard against premature burial; not perhaps such an elaborate system as was formulated by the hero of Poe's story, but one more in the nature of the suggestion put forward by Baculo. The principle of this is a lever in contact with the sternum, any movement of which makes an electrical contact and causes a bell to ring. This is certainly better than the practice of piercing the heart with a needle, which is now and then made an ante mortem request.

THE ROENTGEN RAY IN DIAGNOSIS.

Considered at first to be merely of academic interest, the Röntgen ray has been gaining favor steadily as an aid to diagnosis. Its earliest use was to ascertain the presence or absence of a fracture. As machines then could not deliver much energy, the lack of power had to be made up for by long exposure, and this weakness in a way led to many unfortunate results to both operator and patient. Of the pioneers who blazed the way, some gave up their lives and so taught those who followed how to protect themselves. As time passed, many improvements were made in both machines and tubes, and operators acquired greater skill. As more power became available, the time of exposures for plates was decreased, and on account of the greater penetration thicker portions of the body could be examined with satisfactory results.

Then, too, more accurate methods of measuring the rays were elaborated until it became possible to regulate the amount of energy employed and by so doing to obtain röntgenographs even of soft tissues of varying density. In the past few years great advances have been made in diagnosis; methods are employed every day that until recently were unheard of. Probably the first field in which modern methods became useful was the gastrointestinal. The discovery that insoluble salts of the heavy metals could be used in test meals and colon injections gave a wonderful impetus. The early diagnosis of cancer or of gastric ulcer soon became an accepted fact, and today the Röntgen ray examination has become almost a routine procedure.

Yet it is by no means in abdominal cases only that so much has been accomplished. Many thoracic conditions are being revealed to the eye that heretofore were either guessed at or remained unrecognized. Lesions of the heart, aneurysms, calcified aortas, mediastinal tumors, abscesses of the lung, and tuberculosis, both in its early and late stages, are now diagnosed; cerebral conditions and changes in the bones themselves are rendered visible.

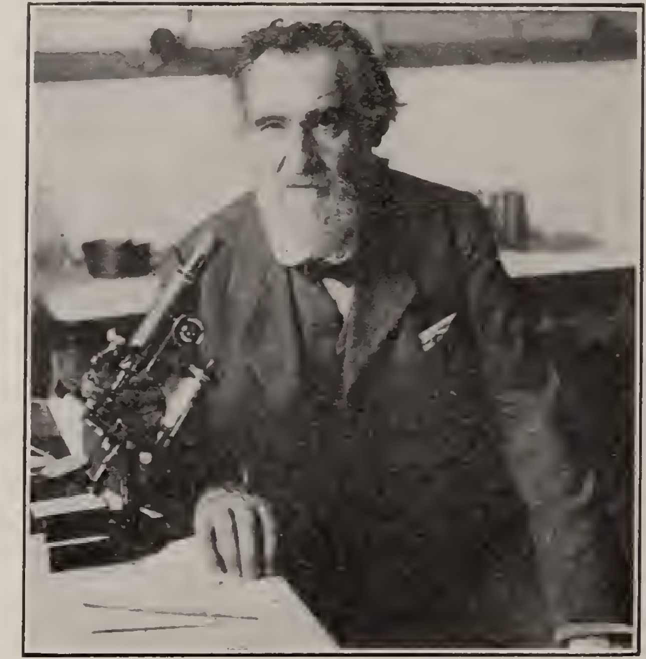
Although the röntgenograph is most useful and even indispensable in many instances, there is little doubt that the fluoroscope is being relied upon more and more. The examiner can get much information that otherwise could be obtained only by taking innumerable plates. He can get views from many different angles and in that way receive an impression of the case that otherwise could not be procured. Like many another laboratory product, the Röntgen ray has reached a stage where its use is considered essential to the proper practice of medicine. A physician may make a diagnosis of syphilis without having a Wassermann made, or he may make a diagnosis of cancer or ulcer of the stomach without a Röntgen ray examination, but in neither case will the diagnosis be as accurate and satisfactory as if he had had use of all the means at his disposal.

Obituary

ELIE METCHNIKOFF, M. D.,

of Paris, France.

Professor Metchnikoff died on July 15th in an apartment of the Pasteur Institute, Paris. He was born in 1845 in Kharkov, Russia, where he began his studies. These were continued in a Russian university and in Giessen and Munich, until 1870, when he was appointed professor of zoology in Petrograd and Odessa. In 1882 he resigned, and while studying along the shores of the Mediterranean, formulated his theory of inflammation and announced his discovery of the role of the leucocytes in disease. Metchnikoff succeeded the founder of the Pasteur Institute as director in 1895, and began his studies of longevity. In 1909 he promulgated his famous theories on the proper length of life for human beings, having decided from investigation in the Balkan country that the extensive use of sour milk as a beverage was the secret of the numerous centenarians living in that region. His book on the subject was of a mystical cast, however, and his thesis was bolstered up by quotations from the Bible. As we pointed out at the time, he misinterpreted the peculiar antiphonal nature of the *Psalms* in order to be able to cite them in support of his ideas. He was called an atheist; but in a Roman Catholic country, as France is supposed to be, this often means no more than continued absence from church services. In 1912, he announced his discovery of the glycobacter in the intestine of the dog, the inoculation of which into the human being he believed would go farther than sour milk in the prevention of senile breakdown. These theories concerning long life may be said to be still on trial. Later on, Metchnikoff announced a cure for diabetes and a theory concerning cancer, which he attributed to a microbe. In 1915, on his seventieth birthday, he received a "golden book" autographed by famous coworkers. His published works include *The Nature of Man*, *Immunity in Infective Diseases*, *Prolongation of Human Life*, and *Optimistic Essays*. In 1908, he divided the Nobel Prize for medical research with the late Dr. Paul Ehrlich; despite his poverty, he devoted the $20,000 received to scientific work. There is no doubt that he owed much of his success to his quenchless enthusiasm.



THE LATE PROFESSOR METCHNIKOFF.

News Items

A Base Hospital Unit at the German Hospital, in New York, is being organized under the American Red Cross Society. Its director is Dr. Frederick Kammerer, who has just withdrawn from active service with the medical corps of the German army, and brings to his task the valuable knowledge gained at the German front in the European war zone.

Personal.—Dr. Thomas A. Storey, director of physical training in the College of the City of New York, has been appointed State inspector for physical training of the Military Training Commission for New York State.

Mr. Hugh M. Foster, son of the late Dr. Frank P. Foster, for many years editor of the NEW YORK MEDICAL JOURNAL, has been appointed secretary to Dr. Haven Emerson, commissioner of health for the city of New York.

Dr. William H. Welch, professor of pathology at Johns Hopkins University, Baltimore, has received the honorary degree of doctor of laws from the University of Chicago.

A Directory of City Health Officers.—The United States Public Health Service recently sent to the health department of every city in the United States having a population of 10,000 and over in 1910, blank forms requesting the name and official title of its health officer. The information obtained constitutes a fairly complete directory of city health officers throughout the United States. It is published in the June 30th issue of *Public Health Reports.*

Merger of Philadelphia Medical Schools Postponed.—Announcement is made that the members of the United Medical Committee in charge of the administration of the medical department of the University of Pennsylvania and the Jefferson Medical College of Philadelphia have agreed that it is advisable to postpone the consummation of the union agreed upon by the trustees of the two institutions, in order that further opportunity may be afforded for considering a number of important matters relative to the mode of administration of the new school. The schools will be conducted separately, therefore, during the college year, 1916-1917.

Medical Preparedness League.—This is an organization whose interest in military medicine is that which pertains solely to the betterment of the United States in times of peace and medical efficiency in times of war. The object of the league is to make instruction in military medical matters available to the practising physician whose duties and ties are such that he cannot devote the necessary time to camps of instruction. It has for its headquarters Room 416, St. Francis Hotel, San Francisco. Dr. Benjamin Jablons is chairman, Dr. W. S. Johnson secretary, and the following are honorary members: Dr. P. K. Brown, Dr. J. H. Graves, Dr. W. S. Graves, and Dr. Harry M. Sherman. Those who are interested in the work of the league should communicate with the secretary for further particulars. There are no monetary obligations involved in membership.

Mental Dispensaries in Michigan Advocated.—In an address delivered at a conference of the superintendents and trustees of Michigan State Hospitals, held in Kalamazoo, Thursday, July 20th, Mr. George A. Hastings, executive secretary of the Committee on Mental Hygiene of the State Charities Aid Association of New York, advocated the establishment in Michigan of a statewide system of free dispensaries for the earlier discovery and treatment of mental disease, similar to those operated in connection with State hospitals in New York. Mr. Hastings pointed out that the clinics in New York had informed the people more adequately about the nature, cause, and prevention of mental diseases and established a more intelligent public attitude toward such disorders. He said that State hospitals would reach their greatest value and usefulness when they gained the confidence and understanding of the districts which they served, and he believed that by means of such dispensaries and broader educational work the State hospitals would become centres of mental health as well as places for care and treatment.

American Electrotherapeutic Association.—The annual meeting of this society will be held in New York, September 12th, 13th, and 14th, with headquarters at the Hotel Martinique. Dr. Jefferson D. Gibson, of Denver, Colo., is president of the society, and other officers are as follows: Vice-presidents, Dr. J. Willard Travell, of New York, Dr. Frank B. Granger, of Boston, Dr. William L. Clark, of Philadelphia, Dr. Sidney A. Twinch, of Newark, N. J., and Dr. William Martin, of Atlantic City, N. J.; treasurer, Dr. Emil Heuel, of New York; secretary, Dr. Byron Sprague Price, of New York; registrar, Dr. Frederick M. Law, of New York. Board of trustees: One year, Dr. Charles Rea Dickson, of Toronto, and Dr. Edward C. Titus, of New York; two years, Dr. George E. Pfahler, of Philadelphia, and Dr. Frederic de Kraft, of New York; three years, Dr. Frederick Harris Morse, of Boston, and Dr. John W. Torbett, of Marlin, Texas. Complete programs and further information regarding the meeting may be obtained from the secretary, 65 Central Park West, New York.

Workmen's Compensation and Tuberculosis.—The New York workmen's compensation law provides for compensation for "accidental injuries arising out of and in the course of employment and such disease or infection as may naturally and unavoidably result therefrom." A workman in the State of New York jumped into a river to save himself when a timber broke. He "contracted a heavy cold and pleurisy, which developed into tuberculosis." The New York Industrial Commission awarded compensation to the workman, and the State Supreme Court affirmed the award. The opinion is published in the June 30th issue of *Public Health Reports*, page 1719.

A Hospital Ship Torpedoed in the Black Sea.—National Headquarters of the American Red Cross in Washington have just received a cablegram from the Central Committee of the Russian Red Cross in Petrograd, stating that on July 8th the hospital ship *Vperiod* of the Russian Red Cross, having all the external marks required by The Hague Convention, was torpedoed and sunk about thirty-two leagues from Batum near the village of Vitse, on the Black Sea, by an enemy submarine. There were eight deaths and seven wounded among the crew and sanitary personnel of the ship. All hostile governments had been notified of the equipment of the *Vperiod* as a hospital ship, and the possibility of a mistake is excluded.

Appointments and Promotions at the Rockefeller Institute.—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announces the following promotions and appointments: Dr. Alphonse R. Dochez, hitherto an associate in medicine, has been made an associate member. Dr. Henry T. Chickering has been appointed resident physician in the hospital, to succeed Doctor Dochez. The following have been made associates: Dr. Louise Pearce, pathology and bacteriology; Dr. Frederick L. Gates, pathology and bacteriology. The following have been made assistants: Dr. Oswald Robertson, pathology and bacteriology; Mr. Ernest Wildman, chemistry. The following new appointments have been made: Dr. Rhoda Erdmann, associate in the department of animal pathology; Dr. Rufus A. Morrison, assistant in medicine and assistant resident physician; Dr. John Northrop, assistant in the department of experimental biology; Dr. Jean Oliver, assistant in the department of pathology and bacteriology; Dr. Ernest W. Smillie, Fellow in the department of animal pathology; Dr. William D. Witherbee, assistant. Mr. Hardolph Wasteneys, hitherto an associate in the department of experimental biology, has accepted an appointment as associate professor of pharmacology in the University of California.

Clinical Lectures on Poliomyelitis.—The present epidemic of poliomyelitis affords an unparalleled opportunity for clinical study and observation. The department of health of the city of New York, through the cooperation of various hospitals which are treating a large number of cases of poliomyelitis, has arranged a series of clinical lectures open only to physicians, to be conducted by men who have had an unusual opportunity to study this disease. Physicians are cordially invited to attend any and all of these clinics and the department hopes that advantage will be taken of this exceptional opportunity to study the disease. These clinics are to be conducted during the week beginning Monday, July 24th, at the following hospitals: Willard Parker Hospital, Dr. Philip Van Ingen and associates, 4 to 5 p. m., Monday, Tuesday, Wednesday, Thursday, and Friday. Kingston Avenue Hospital, Dr. Louis Ager and associates, 4 to 5 p. m., Monday, Tuesday, Wednesday, Thursday, and Friday. Mount Sinai Hospital, Dr. Herman Schwarz, 4 to 5 p. m., Monday, Tuesday, Wednesday, Thursday, and Friday. Bellevue Hospital (Isolation pavilion, Ward 32), Dr. J. S. Ferguson, 4 to 5 p. m., Tuesday, Thursday, and Saturday. Babies' Hospital, Dr. Charles Gilmore Kerley, 4:30 to 5:30 p. m., Tuesday and Thursday. Swinburne Island (Quarantine Station), Dr. Frank Clark, 4 to 5 p. m., Thursday and Friday.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Department of Biology, Olivet College.

Twenty-ninth Communication.

PILOCARPINE.

The alkaloid, pilocarpine, has much the same kind of restricted use in provoking hidrosis as eserine has in the production of catharsis. Each is usually efficient for the purpose, but in the same drug field each has adequate competitors with less marked reactions, so that the more powerful drug is best reserved for grave emergencies.

On the central nervous system pilocarpine acts as a depressant affecting some of the lower centres only, the mental confusion and hebetude following toxic doses being largely secondary to the severe systemic exhaustion.

The chief action of pilocarpine is on glandular tissue and unstriped muscle, each of which it markedly stimulates by irritation of nerve terminals, thus acting like atropine, but with directly contrary effects. This selective activity results in a series of curious phenomena. Contraction of the bronchial muscles lessens pulmonic circulation, and thereby renders breathing slow and somewhat dyspneic. The heart is slowed (usually in lower animals) by direct action on the terminals of the vagus; although frequently in man there ensue acceleration and palpitation, the mode of induction of which is obscure, although reflexes from the intestinal tract probably exert some influence. The blood pressure is raised through action of the vasoconstrictors throughout the body.

Stimulation of the unstriped muscle receptors of the bowel produces an active or even violent peristalsis, similar to that brought on by physostigmine, soon resulting in copious, watery stools, colic, and tenesmus; this may be accompanied by nausea and vomiting, both as direct effect and as reflexes from the sharp intestinal irritation. This hydragogue effect is accentuated by the action which pilocarpine has on the secretory glands of the intestine, whereby a profuse secretion is promptly produced.

Other secretory glands are affected early, including the lacrymal, mucous, and ceruminous; but the most evident effect is on the salivary and sweat glands, which respond vigorously, the salivary glands giving a constant reaction, the sweat glands, however, not always responding.

There is increased leucocytosis, due probably to splenic stimulation, and considerable augmentation in the output of carbon dioxide.

These marked reactions of the system to the drug make the therapeutic utilization of pilocarpine questionable, for any desired result will be so complicated by attendant phenomena as readily to make the second condition of the patient worse than the first, especially if there is aroused a too severe intestinal reaction. As noted in the preamble, in most cases simpler drugs or means are nearly always at hand. Even in cases where a free sweat seems indicated, a minimum of depression will follow hot air treatment, and this is to be preferred to a maximum produced by pilocarpine. Yet there are grave emergencies, like acute cerebral congestion or uremic poisoning, where a quick acting depleting agent seems demanded, and in these cases no one drug seems so satisfactory in its temporary manifestations as pilocarpine. But the practitioner using it, shoulders the wholesome necessity of watching carefully the effects of the drug for some time. Fortunately, adverse symptoms, as well as therapeutic reactions, may be promptly controlled by the cautious use of atropine.

Treatment of Throat Inflammations.—Capitan (*Bulletin de l'Académie de médecine,* May 30, 1916) reports on 417 cases of throat inflammation observed and treated since the outbreak of the European war. The cases are grouped into, 1, those of simple angina, often that of scarlet fever, measles, or mumps, showing, upon bacteriological study, principally streptococci or staphylococci, 256 cases; 2, those of Vincent's angina, showing spirillar and fusiform organisms, forty-three cases, and, 3, those of diphtheritic angina, 118 cases. All these cases were in soldiers aged nineteen to forty-five years, and recovery took place in all. Stress is laid on the fact that a clinical differentiation between cases of the three groups referred to was only exceptionally possible. Each of the groups exhibited varying and identical appearances of the throat, ranging from erythema, with or without swelling, to the formation of a whitish, grayish, or yellowish, more or less thick and variously distributed exudate, with or without pain, glandular enlargements, edema of the tongue, uvula, or the peritonsillar tissues, paresis of the velum palati, fever, etc. Treatment, to be rational, must therefore be based on bacteriological study. Awaiting the bacteriological diagnosis, Capitan, in the first twenty-four hours, has the patient gargle with the following:

℞ Acidi salicylici,	50 grams;
Sodii boratis,	100 grams;
Aquæ,	1,000 grams.

Fiat solutio.

One half to one gram of quinine is given and a watery ten per cent. solution of collargol applied to the throat two or three times. If the general condition is poor the following stimulant is given:

℞ Sparteinæ sulphatis,	0.1 gram;
Extracti cinchonæ (Codex),	2 grams;
Alcoholis, Glycerini,	āā 20 grams;
Aquæ,	100 grams.

Fiat solutio.

Treatment corresponding to one of the three groups of cases above mentioned is not undertaken unless the symptoms are grave and definitely suggestive of one of these groups. Next day, the bacteriological diagnosis having been made, patients of the first group receive sodium salicylate internally and externally for pain, often with the tinctures of belladonna and aconite internally, and the ten per cent. collargol solution, or the following mixture of Moure applied to the throat three times a day:

℞ Zinci chloridi, ...3 grams;
Acidi hydrochlorici, ...1 drop;
Glycerini, ...30 grams;
Aquæ destillatæ, ...70 grams.
Fiat solutio.

Where the indication presents copious lavage of the throat with hydrogen peroxide solution diluted one in four, or a five per cent. solution of sodium borate is carried out.

In cases of Vincent's angina a ten per cent. solution of arsenobenzol with glycerin is applied two or three times daily in the depths of the ulcerations; in serious cases, pure arsenobenzol may be used with advantage. Healing uniformly follows, usually in from twelve to fifteen days. Mouth washings, gargles, cinchona, and sparteine are also administered, according to indications. Diphtheritic angina sometimes shows only local redness, some dysphagia, with or without fever or glandular enlargement. In these cases results from diphtheria antitoxin were practically nil. Treatment like that of simple angina, supplemented by the measures indicated for diphtheria carriers gave excellent results in these instances. In diphtheria with false membrane, however, Capitan always gives antitoxin in large doses. In diphtheria of intermediate severity he injects sixty c. c. of antitoxin in the abdominal wall and administers the sparteine-cinchona-alcohol combination, with the addition of four grams of calcium chloride, every day until the throat is completely free. Further daily injections of thirty to sixty c. c. of antitoxin are given, according to indications. Sometimes injections on the first two days are sufficient; the fifth injection is rarely required. On the average, 180 to 210 c. c. of serum are injected, in four days, the least being fifty c. c. and the most 270 c. c. All the author's cases ended in recovery. Where diphtheria bacilli persist after disappearance of the false membrane Capitan applied a ten per cent. solution of arsenobenzol with glycerin two or three times a day, with good results. Insufflations of powdered antidiphtheritic serum into the throat and nasal fossæ twice daily were also employed, with marked success, the carriers being rendered sterile in four to six days. The insufflations may be discontinued as soon as a negative culture is obtained.

Gunshot Fractures of the Femur.—E. W. Hey Groves (*British Journal of Surgery*, April, 1916) summarizes this subject as follows: The treatment of gunshot fractures of the femur requires the limb to be immobilized at the earliest moment, and that the immobilization shall not interfere with frequent dressings. This is best accomplished by a wire cradle sling splint constructed on the principles of the double inclined plane. When the wounds have been opened thoroughly and drained by judicious transverse incisions, and have taken on a healthy character, weight extension should be applied and maintained until union is firm. While weight extension may be applied by adhesive plaster or by transfixion, the latter is by far more trustworthy, but is attended by certain risks of septic infection of the soft tissues, and particularly of the knee joint. When treated according to the foregoing principles, the results are as follows: Loss of life, ten per cent.; loss of limb, 6.6 per cent.; good form and function in limbs saved, seventy-four per cent.; delayed union, sixteen per cent.; delayed healing, six per cent.; deformity, four per cent. The most important factor in the determination of the foregoing results is the presence and degree of sepsis. Comminution, apart from sepsis, is no hindrance, but rather a stimulus to rapid union; the removal of pieces of comminuted bone is unwarranted, and is the most potent cause of nonunion. While all types of metal sling splints may give good results, those which like the Thomas require a fixed ring round the thigh of the broken leg should only be used for transport, and then only if the wire cradle splint is not available, for the thigh ring becomes soiled by feces and wound discharges and is a source of great discomfort to the patient. While the Hodgen, the Balkan, and the wire cradle splint all are correct in their principle of holding the leg in a position of semiflexion of the hip and knee, only the last is self contained, and can be used for transport; furthermore, it gives greater facilities for massage and movements than the other. The position of flexion of the thigh entails the risk of encouraging pus to track up the limb, but this can be prevented by thorough opening of the infected area, or, if not prevented, it must be met by the use of a hinged splint which keeps the limb horizontal except for dressing, when it is elevated by a strut.

Treatment of Gunshot Wounds of the Chest.—J. L. Menzies (*British Journal of Surgery*, April, 1916) says that such wounds must be watched carefully from the time of injury. The immediate symptoms generally improve when the patient is kept quiet. Hemoptysis ceases spontaneously in nearly all cases. At the time of injury morphine may be given, and any bleeding from intercostal arteries should be arrested but, as a rule, no further treatment is necessary beyond keeping the patient quiet. On admission to hospital, when there is no effusion into the pleural cavity, no special treatment is necessary, and recovery is rapid. When effusion is present the chest should be explored at an early date and the fluid examined bacteriologically. If the fluid is found to be sterile, it may or may not be removed. In cases where the effusion is large, with marked dyspnea and much displacement of the mediastinum, it is always advisable to aspirate the fluid; but when the effusion is not large it may be aspirated or left alone, and when a hemothorax is found to be infected it should be aspirated or drained early. It was found in this series that resection of a portion of rib, and drainage by tube, gave most satisfactory results. When definite pus is present the pleural cavity should be drained at the earliest possible time by the resection of a portion of a rib and the insertion of a large drainage tube. Where a large empyema cavity exists, weak iodine body baths were found beneficial, or gentle lavage of the pleural cavity through a tube without pressure was employed.

Causation and Cure of Certain Forms of Lunacy.—Rupert Farrant (*Brit. Med. Jour.*, June 24, 1916) has made careful comparative studies on over 3,000 sections of the pituitary, pineal, thyroid and sexual glands from normal and insane persons and has come to certain conclusions regarding the relationship of these glands to some forms of insanity. All of these glands react to certain toxemias by hypertrophy and later by atrophy. Atrophy of the pineal, pituitary and thyroid were found in primary and secondary amentias, while in dementia præcox the alteration in these glands corresponded to the duration of the disease. Changes were found in the thyroid, pituitary and sexual glands in some cases of acute confusional insanity, melancholia, and manic depressive and other forms of insanity. Abnormality of the thyroid was frequent in insanity in children, adolescents and adults. Changes in the sexual organs were often found in association with altered mentality varying from mania to exhaustion psychosis. From these observations two forms of treatment are suggested: If there is hypertrophy and overactivity of one or more of these glands attempts should be made to locate the primary toxemia and cure it. This will most commonly be found to be in carious teeth and intestinal stasis. When there is atrophy of the glands their secretions should be artificially supplied, and good results should be expected from such treatment if undertaken before definite cortical brain lesions have developed.

The Process of Repair in Wounds of the Small Intestine.—John E. McWhorter, A. P. Stout, and Charles C. Lieb (*Surgery, Gynecology and Obstetrics*, July, 1916) summarize wound repair in small intestines thus: 1, The noninfected suture line in the small intestine in dogs was very resistant to internal hydrostatic pressure, for at one hour after operation and any time thereafter the area of operation was capable of withstanding a hydrostatic pressure of over one pound per square inch without leakage. 2. The clinically infected specimens leaked at minimum pressures. 3. To obtain perfect results a proper technic was essential. For it was seen that in a dog recently killed the intestine, when properly sutured, was capable of withstanding a pressure of nearly two pounds per square inch without leakage. 4. Imperfect technic resulted in a defensive suture line. The defects, if not too extensive, might be sealed by the coagulum which probably prevented leakage. 5. The smooth muscle of the divided and sutured intestine retained its viability and segmenting function to within five mm. of the line of suture. 6. In an infected case with gangrene around the suture line, no segmentation occurred within fifteen mm., while sixty mm. away contractions were powerful and well defined. 7. Repair in sutured intestinal wounds began at once with the coagulation of the extravasated blood, which filled in the space between the two approximated serous surfaces. The union became permanent in from seven to ten days with the replacement of the coagulum by connective tissue. 8. Repair of the mucosa was first seen after twenty-four hours beginning with a line of syncytial epithelial tissue extending from the edge of the viable mucosa over the denuded surface of the infolded cut edges of the intestinal coat. 9. The denuded surface might be covered with an immature mucosa as early as the fifteenth day (Mill), but it was usually not completely covered until twenty-three days after operation. 10. Regeneration of the mucosa was complete after two months. 11. Complete anatomical regeneration of the muscularis did not occur. A realignment of the infolded muscular fibre occurred, but it was always interrupted by a thin line of scar tissue. From the foregoing data they concluded that fluid and food might be given immediately after operation without danger of leakage into the sutured small intestine.

Prevention of Amebic Dysentery.—J. Gordon Thomson and D. Thomson (*Brit. Med. Jour.*, June 24, 1916) advise that every effort should be made to prevent the patients from becoming chronic cyst carriers, and that this is best accomplished by thorough emetine treatment. The intermittent use of small doses of emetine should be avoided and the continuous administration of one grain daily for seven to ten or more days should be practised. The results of treatment should be controlled wherever possible by examinations of the stools soon after treatment and at some time later. Cyst carriers may be rendered noninfective by the administration of emetine combined with a dose of two drams of magnesium sulphate every four hours. Usually the cysts will be cleared out after ten grains of emetine have been given in this manner. Microscopic examination of the stools is necessary to be certain of the cure. The prevention of the disease can best be accomplished by strict attention to the disinfection of the stools, by keeping flies away from them, by destroying flies, screening the houses and by covering all foods so as to make them fly proof. All fruits and vegetables usually eaten raw should be thoroughly washed and immersed for a few seconds in boiling water before being eaten.

Concerning Operations for the Craniocerebral Wounds of Modern Warfare.—Harvey Cushing (*Military Surgeon, July*, 1916) comes to the following conclusions: There is a fairly universal agreement that almost all cranial wounds produced by projectiles, even though they appear trivial, require surgical investigation, with the possible exception of certain of the tangential longitudinal sinus injuries, which according to Sargent and Holmes, have a high degree of spontaneous recoverability and which when investigated present unusual surgical risks, and of certain of the fractures of the base due to perforating wounds, owing to their inaccessibility. There is, however, a wide divergence of opinion as to when and where these operations should be performed. It is recognized that cases treated immediately at a field ambulance appear to do well for a time, but are apt to suffer from complications after their evacuation. These complications are often ascribed to the patient's transportation, whereas in greater probability they are due to the fact that these early interventions of necessity are hurriedly undertaken and imperfectly executed, and that the wound must often be evacuated at about the time when complications from sepsis are likely to occur. With the exception of the more serious injuries with extensive hemorrhage, in which surgical measures are practically unavailing, craniocerebral wounds as a rule present no immediate urgency, for as a tissue the brain is notably tolerant of contusions and infections. Hence a delay of two or three days in forwarding this class of wounded with expedition to a suitable base is preferable to the delay of two or three days in having them recover from the effects of an incomplete procedure before transportation. We can rarely tell from the external appearance of these wounds how serious a matter the intercranial exploration will prove to be, and if the procedure is abandoned after a trifling crucial incision with a possible trepanation and the removal of a few fragments of bone and clot followed by a gauze pack, a herniation, fungus and infection will often ensue.

Avoidance of Crutches after Amputation.—Depage, at a meeting of the Société de chirurgie, Paris (*Presse médicale*, May 25, 1916), advised strongly against the giving of crutches for ambulatory purposes to patients recently subjected to leg amputation. The crutches are harmful in that they alter the static conditions of the body, immobilize the stump, and often induce muscular paresis of the arms through pressure on the brachial plexus. Instead he recommends the use of a provisional artificial limb made of plaster in which are imbedded strips of metallic netting, such a limb provided below with a wooden shaft moulding itself exactly to the stump and answering all requirements for locomotion under normal static conditions. The apparatus can be easily renewed at intervals as the stump undergoes the usual changes in size and shape, and when the ultimate, permanent condition of the stump has been attained may be replaced by a true artificial limb of one of the customary varieties.

Duration of the Immunity Produced by Antitetanic Serum.—L. Bérard and A. Lumière (*Bulletin de l'Académie de médecine*, May 30, 1916) lay stress on the necessity of administering a fresh injection of tetanus antitoxin, regardless of the possibility of serum disease, before any operative procedure is carried out in patients suffering from infected wounds, even several weeks or months after the injury. Most of the twenty cases of tetanus recently under their care could have been prevented if this precaution had been taken. A question arises as to the duration of immunity after the first preventive injection. According to the animal experiments of Roux and Vaillard, this immunity begins to wane on the fifteenth day and disappears in forty to fifty days. In man, an effectual immunity lasting twenty to thirty days after two ten c. c. injections of serum has been considered the average result. The authors now report, however, four cases in which the development of tetanus showed that protection was no longer sufficient seven or eight days after a single serum injection. Persistence of immunity cannot, therefore, be counted on for more than six days. In badly infected wounds it is consequently advisable to repeat the serum injection even if only five or six days have elapsed between the first injection and the surgical procedure to be carried out. It is shown, furthermore, that a single serum injection is insufficient to protect against tetanus. Two injections should always be given in cases with wounds presumably infected, the second from the fifth to the eight day after the first.

Vomiting in Infancy.—J. Epstein (*Medical Record*, June 24, 1916) divides causes of vomiting in infancy into four classes—improper feeding, improper food, congenital pyloric stenosis and rumination. Pyloric stenosis has three chief symptoms—persistent projectile vomiting, persistent constipation and persistent loss in weight, while the three chief physical signs are visible gastric peristalsis, palpable gastric tumor and gastric retention of food.

Operative Treatment of Osteoarthritis.—W. I. de C. Wheeler (*Lancet*, June 24, 1916) reports the case of a young woman, the victim since childhood of a marked metastatic osteoarthritis, to show the exceedingly good results which may be secured from operation in cases of this type. She was completely crippled in both lower extremities. At two sessions the new bone was chipped off the tibia of the left side and full motion was quickly regained; then a ring of bone was removed from the region of the neck of the right femur with equally good results. In both instances the operation not only restored the possibility of free motion, but also relieved the pain at once. Subsequent massage and exercise led to restoration of function in both lower extremities and there has been no recurrence of the disability since the operation in 1912.

Pediculosis pubis.—Douglass W. Montgomery (*Canadian Practitioner and Review*, June, 1916) states that the common use of blue ointment seems unwarranted both on account of its uncleanliness and because it is particularly liable to give rise to a severe dermatitis. A more satisfactory and entirely clean method of treatment consists in the application of a lotion of the following composition:

℞ Xylol, ...50.0;
Ætheris, }
Alcoholis, } ....āā 25.0.

M. et Sig. Rub into the affected regions with a wad of cotton.

This application kills instantly all of the adult pediculi as well as the nits, but it has the disadvantage of being quite painful for a short time after its application. Perhaps a better method, because not painful, is the application of the tricresols, for which purpose creolin is satisfactory. This may be made into a salve as follows:

℞ Creolini, ...10.0;
Petrolati, ad....................................100.0.

M. et fac unguentum. Sig. Apply with thorough rubbing once daily.

In addition to killing the parasite this application has the great advantage of being antipruritic and curative of any eczema which may have developed as the result of scratching. If it is desired, a five per cent. ointment of betanaphthol may be used in place of the foregoing, but there is some danger of systemic poisoning from the latter preparation. The nits may be removed from the hairs by combing with vinegar.

Miscellany from Home and Foreign Journals

Direct Traumatic Arteriovenous Aneurysm.—Soubbotitch (*Bulletin de l'Académie de médecine,* May 30, 1916) states that among forty-two cases of traumatic arteriovenous aneurysm met in the Serbian army in the last four years, and all operated in by him, twenty-four were of the direct type, artery and vein being in immediate communication. The common carotid artery was involved in three instances; the subclavian in one; the brachial, two; external iliac, three; femoral, thirteen, and popliteal, two. Often no hematoma around the affected vessels was found. Symptoms generally began only a few days and sometimes one or two weeks after the injury, the most characteristic sign being an audible thrill originating at the point of communication of the vessels and transmitted centrifugally along the artery and centripetally along the vein. At operation, especially in cases of external iliac or femoral involvement, a pronounced dilatation of the vein at and above the point of communication was noticed; likewise, a narrowing of the arterial trunk below this point. Thus, a part of the blood brought by the artery, entering the vein, is transmitted by the latter, not in a peripheral, but in a central direction, toward the heart. The centripetal transmission of the thrill along the vein and the absence of peripheral varicosities are thus accounted for in these cases of direct arteriovenous aneurysm.

Agglutination Reactions with Normal Serums.—T. R. Ritchie (*Lancet,* June 24, 1916), in order to gain a correct appreciation of the facts regarding the agglutinating powers of serum from normal persons toward the typhoid and dysentery groups of organisms, studied serums from 800 persons who, so far as could be determined, had never suffered from any of the diseases concerned and who had not been in intimate contact with such cases. In addition the reactions of others who had been exposed to the organisms of these diseases, but who had not been ill, were tested. The latter group included hospital habitués, laboratory workers, physicians, nurses, and orderlies. A simple and accurate technic was developed and used throughout the observations. The conclusions were that suspicion should be aroused: Of typhoid, when there was complete agglutination in a dilution of one to sixteen; of paratyphoid A or B, when complete agglutination occurred at a similar dilution; of dysenteric infection, when the Shiga bacillus was completely agglutinated at a dilution below one to sixty-four; and when the Flexner organism was agglutinated below one to 128. The reaction should be regarded as diagnostic of the corresponding infection, when B. typhosus or B. paratyphosus A or B, was agglutinated completely in a dilution of one to thirty-two or higher; and of the dysenterics, when the agglutination was complete at or above the dilutions stated as being the upper limits of suspicious reactions. It was found that only a small proportion of strictly normal individuals—in the restricted sense of being free from previous infection or inoculation—gave suspicious reactions to any of the organisms, and closer investigation of the suspicious cases often suggested the previous occurrence of a mild unrecognized infection by the organism in question. On the other hand the proportion of suspicious reactions found was relatively much higher among the hospital and laboratory workers and the hospital class of patients. A further point of interest was, that women showed a much higher proportion of high dilution positive reactions for all of the types of organisms than did men. This is in accord with the registrar's statistics for epidemics, which show that the proportion of men infected considerably exceeds that of women.

Etiology of Uterine Prolapse.—Gibbon Fitzgibbon (*Surgery, Gynecology and Obstetrics,* July, 1916) observes that: 1. Prolapse of the uterus and cystocele are due to damage of the pelvic fascia in the region of the lateral fornices and in front of the cervix. 2. Prolapse of the uterus must be clearly differentiated from cystocele; they may exist separately or may be combined. 3. Laceration of the perineum and levator ani muscles has no part in the production of prolapse. Laceration allows an increase of cystocele when this is the primary defect. 4. Retroversion of the uterus has no tendency to produce prolapse. 5. Prolapse of the uterus and cystocele are analogous to abdominal hernias through scars due to defective union of the fascia. 6. The cure of prolapse may be effected by reuniting the fascial diaphragm across the pelvis. 7. The fascial diaphragm may be repaired without interfering with the function of the uterus or dislocating the bladder. 8. The condition may be treated in exactly the same manner before and after the menopause. 9. Atrophy of the uterus has no influence upon its support. 10. Amputation of the cervix, other than the removal of an hypertrophied lacerated vaginal portion, is not necessary.

Cerebral Rheumatism.—J. Colombe (*Paris médical,* May 27, 1916) reports the case of a man twenty-seven years old, who, since the age of ten years, had suffered from repeated more or less severe rheumatic attacks. In the last attack, after involvement of various joints in the extremities, treated satisfactorily with salicylates, the spinal column became affected, becoming painful and rigid, at first in the lumbar region. Persistent temporal headache then followed, together with agitation, mental torpor, jerky speech, tremor of the lips and tongue, carphologia, photophobia, Kernig's sign, exaggerated knee jerks, and a positive Babinski on the left side. The heart showed enlargement and a double murmur. In spite of treatment, bilateral epileptoid oscillations appeared, with marked torpor, incontinence of urine, progressive emaciation, pupillary inequality, low delirium, albuminuria, and ultimate high fever and death. Lumbar puncture on three occasions during the course of the disease yielded a slightly turbid fluid, issuing under low pressure, with numerous polynuclear cells, a few mononuclears, and occasional lymphocytes and erythrocytes. Repeated cultures and guineapig inoculations gave negative results. The case is recorded as one of acute meningitis developing in the course of articular rheumatism. Thus, the cases grouped under the term, cerebral rheumatism, apparently include instances of a meningeal localization of the rheumatic poison, whether this is manifest in the customary cellular reaction, as in the present case, or in a hemorrhagic process, as in cases already reported by Moutard-Martin, P. Weil, Robin, and Lyon-Caen.

Diagnosis of Dextrosuria and Pseudolevulosuria.—P. J. Cammidge (*Lancet*, June 17, 1916) finds that the presence of pseudolevulose is not uncommon and often leads to the mistaken diagnosis of glycosuria. If Benedict's solution is used and a positive reaction appears only after cooling, the presence of pseudolevulose is suggested. The presence of this substance may be determined with certainty by Seliwanow's reagent. Tests are also given for the determination of both dextrose and pseudolevulose when present together. The importance of this differentiation lies in treatment, diabetes requiring the restriction of carbohydrates, and levulosuria the restriction of protein and the use of an abundance of carbohydrates.

Condyloma acuminatum.—A. Ravogli (*Jour. A. M. A.*, July 8, 1916) reports two cases of this condition, occurring in the anal region of the male, because of relative rarity and the existence of doubt as to its relation to venereal disease. Close study of these two cases led the author to the conclusion that these papillary acanthomas were only indirectly related to venereal disease—the latter merely being the primary source of the irritation which led to the exposure of the cutaneous papillæ to excessive stimulation by irritant secretions, such as purulent material, sweat, etc. The two cases reported arose in syphilitic patients, but in neither case was the condyloma related in any direct way to the action of the syphilitic organism and neither case showed the histological picture of syphilitic inflammation. Neither case responded to antisyphilitic measures, so far as the condylomata were concerned. The proper treatment of these warty growths is their appropriate surgical removal with cauterization of the remaining base.

Intestinal Disturbances in Congenital Syphilitics.—Gaucher (*Bulletin de l'Académie de médecine*, May 23, 1916) finds that the father of "delicate" children, chronically afflicted with digestive disturbance and enteritis, is generally a former syphilitic. The intestinal disorder in these children is characterized by constipation lasting several days, with much gas formation and tympanites, followed by diarrhea with glairy, mucomembranous, occasionally bloodstained stools. Abdominal pains accompany both phases of the disturbance. The skin exhibits an earthy tint, the limbs are thin, and the abdomen is protuberant. Careful examination of such children not infrequently reveals undoubted stigmata of inherited syphilis, such as slight cranial or facial asymmetry, slight convergent strabismus, a prognathous lower jaw, and dark, fragile, and badly aligned teeth. Intestinal digestion later improves gradually, but attacks of enterocolitis recur throughout childhood and adolescence. Some of these children acquire appendicitis, of which the enterocolitis is often but a prelude. Adenoid vegetations not infrequently coexist, the reticular tissues of the appendix and pharynx having alike been affected by the syphilitic virus. Treatment in these children should consist, under pretext of applying antiphlogistic or tonic measures, in mercurial inunctions on the abdomen or injections of mercury. The preparation may be dispensed by the druggist under some name other than mercury. Astonishing and excellent therapeutic results will thus often be obtained which will confirm the suspicion of syphilis as a predisposing factor.

Proteose Intoxication.—G. H. Whipple (*Jour. A. M. A.*, July 1, 1916) states that the intoxication occurring in intestinal obstruction is due to the development and absorption of a primary proteose which may be isolated in pure form and which upon injection into animals is capable of reproducing the typical symptoms. The observations have now been extended to include peritonitis and acute pancreatitis, and in both of these conditions the same proteose has been demonstrated to be the cause of the toxic symptoms. In all of these conditions one of the most characteristic features is a marked rise in the noncoagulable nitrogen of the blood. Precisely the same condition can be produced in dogs with established nitrogen balances by the injection of small amounts of the isolated proteose. The rise in the blood nitrogen is marked and must be taken as indicating an action leading to the destruction of some of the tissue proteins. The proteose which has thus been found to be concerned in the production of the intoxication in these conditions is resistant to digestion by the ferments of the intestinal mucosa and the pancreas. An interesting feature of its action is that if an animal survives a dose of this proteose it will be found to have become tolerant to further injections of this or of other proteoses.

Skin Affections in Military Practice.—Milian (*Paris médical*, May 6, 1916) observes that tuberculous skin lesions and vesicular eczema have proved uncommon in the military hospitals, doubtless in part owing to the process of selection exercised in admitting individuals into the army. Phthiriasis has been the chief dermatological affection encountered, and has presented itself in the otherwise rare acute form, in which parasitic invasion is so extensive that almost the entire body is covered with small, edematous, almost urticaria-like papules of about the size of a pinhead. These are especially marked just below the posterior margin of the axilla—a feature distinguishing phthiriasis from scabies, in which the anterior aspect of the axilla is chiefly involved. The immediate care given these cases has prevented their passage into the chronic state, excoriations and melanoderma being therefore infrequent; ecthyma of the lower extremities, however, has been an almost universal complication of phthiriasis in soldiers. Scabies has been relatively uncommon, and when present, has almost always been preceded by coitus, the mode of life in active warfare being unfavorable to transmission of the disease. Impetigo, ecthyma, and trichophytosis have been frequent, the last named occurring sometimes in epidemics. "Trench foot" is a newly observed affection, now thought to be of microbic origin. Prophylaxis consists in measures to avoid prolonged wetting of the feet and curative treatment in hot foot baths two or three times daily, special movements of the feet, and light moist dressings with hydrogen peroxide solution diluted to one in ten, or wrapping the feet in cotton at night.

Importance of Method in Isolating Organisms of the Typhoid Group.—C. H. Browning and L. H. D. Thornton (*Brit. Med. Jour.*, May 13, 1916) call attention to the importance of discovering the largest possible proportion of actual carriers of the typhoid group of organisms among suspects, and several methods for the isolation of these organisms from the stools are discussed. The use of brilliant green gives the most satisfactory results, but several tubes, containing different concentrations of the dye, should be inoculated instead of trusting to the use of a single tube containing the supposed optimum concentration. The further addition of varying amounts of telluric acid to some of the tubes containing the dye adds materially to the certainty of isolation in doubtful cases.

Parenchymatous Disease of the Liver as a Cause of Rise in Portal Blood Pressure.—C. F. Hoover (*Jour. A. M. A.*, July 1, 1916) has encountered difficulty in determining the cause of the increase in portal blood pressure and its secondary manifestation of ascites in cirrhosis of the liver. This is particularly true since post mortem there does not seem to be any demonstrable interference with the flow through the liver vessels. From close observation of a specially favorable case Hoover is able to bring forth much evidence to support the belief that one of the causes of increased portal blood pressure in such cases may be the occurrence of a parenchymatous inflammation of the liver. Such inflammation is usually subacute and often transitory, and this is generally true in cirrhosis with ascites which alternates with periods of freedom from swelling. In Hoover's patient the occurrence and subsequent subsidence of parenchymatous inflammation and edema of the liver could be discovered clinically with little reason to doubt the accuracy of the observations. The proof of the elevation of the portal blood pressure coincident with the attack of enlargement of the liver and tenderness over it was derived from the study of the circulation in the enlarged superficial abdominal veins and the alterations in a murmur present, coincident with the changes in the state of the liver.

Dermatitis cupoliformis.—Aldo Castellani has noted this affection (*Journal of Tropical Medicine and Hygiene*, February 15, 1916) for several years in Ceylon; he also terms it "tropical ecthyma." It begins with several superficial, dusky red, slightly itching spots, generally follicular and perifollicular, and as a rule situated on the feet and legs. Some of these spots enlarge, become raised and hard, without vesication or pustulation, and often somewhat cupped, reaching the size of a pea to that of a small cherry. After a time an ulcer forms with reddish fundus and often undermined edges. Spontaneous cure seldom occurs in less than ten to twelve months. It affects mostly young European men. Castellani has isolated from the lesions a special organism which he has termed Streptococcus tropicalis, with which he has reproduced the disease by inoculation. The nodules are most often mistaken for oriental sore, but the absence of the Leishmania is distinctive. In true ecthyma the initial lesions are pustular. The condition is also to be differentiated from pyosis tropica, purulent folliculitis, Barkoo rot, ulcus infantum, blastomycosis, syphilitic ulcers, and veldt sore. Treatment with bichloride or peroxide lotions, followed by balsam of Peru ointment, is of some slight use, but acts very slowly. By far the best treatment is the use of an autogenous vaccine, which may cure a previously obstinate case in two or three weeks.

Relation of Ductless Glands to Blood Pressure.—J. G. Sweet (*International Abstract of Surgery, Gynecology and Obstetrics,* June, 1916) concludes that in hypoplastic conditions, such as status lymphaticus, and after chronic infective conditions and acute intoxications commonly met in surgery, the chromaffine system is not normally productive. If we agree with Cannon that this product is a reserve for times of stress, we find a basis in theory in addition to the teachings of common humanity, for the avoidance of all preoperative influences which tend to cause fear or excitement; if we agree that ether creates an abnormal demand for this chromaffine product, we have a basis in theory for the use of gas oxygen; in any case in which a hypofunction of the chromaffine system is suspected, or in which an extraordinary demand for this substance may be expected, the use of small amounts of adrenaline continuously administered in saline solution during the operation is indicated.

Influence of Tonsil and Adenoid Abnormalities upon Health and Oral Development.—W. F. Clevenger (*Lancet-Clinic,* June 10, 1916) states that perhaps more real harm is done by the apparently innocent, small, imbedded, diseased tonsil than by the conspicuous type, the latter presenting an open surface from which drainage is far more likely than it is from the organ submerged and covered by the pillars. Enlarged crypts, acting as receptacles for bacteria, greatly favor absorption of toxic material and usually may be considered the source of acute or chronic retrotonsillar abscesses. The tendency toward chronic posttonsillar infections and resulting more or less chronic systemic disturbances is much greater in adults than in the young. Thyroid hypertrophy is often due to infection of tonsillar tissue, and childhood torticollis, even of months' duration, may be similarly caused. In addition to joint, heart, and mastoid affections, nephritis may in some instances be traced to throat infection. Chronic abscess cavities between the tonsillar capsule and constrictor muscle are most potent factors in the often encountered and wrongly diagnosed low grade septic states. Even after the removal of tonsils and adenoids, imperfect breathing due to structural deformity of the upper maxilla often results in permanent nasal deformities in adult life. Many children after the tonsil and adenoid operation therefore require reference to an orthodontist, for correction of the maxillary deformity.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Special Meeting to Discuss the Subject of Infantile Paralysis, July 13, 1916.

The President, Dr. WALTER B. JAMES, in the Chair.

President's Address.—Dr. WALTER B. JAMES, president of the New York Academy of Medicine, introduced the speakers in turn with appropriate explanation of their particular authority to speak on the subject they chose. At the close of the meeting he invited all present who were interested in asking questions of those recognized as authorities on the subject of the evening, to convene at the Academy, where this could be done while taking light refreshments. He congratulated Doctor Emerson on the work of the department of health, and the efficacious manner in which the epidemic had been handled, and expressed the gratification of all that in spite of the great heat of the last few days, the daily number of cases reported had diminished, indicating that the epidemic was probably now under control.

What We Know About the Transmission of the Disease.—An abstract of this paper, by Dr. SIMON FLEXNER, appears in this issue of the NEW YORK MEDICAL JOURNAL, page 168.

The Clinical Types of the Disease.—Dr. HENRY KOPLIK said that poliomyelitis was primarily an epidemic disease, and as a sporadic condition had attracted very little notice. All the epidemics which had thus far been recorded resembled each other very closely. An attempt to connect this disease with the occurrence of cases of cerebrospinal meningitis had developed into a belief that poliomyelitis was an entity, clinically occurring in epidemics in the late spring to late autumn, and following the regular sporadic occurrence of the disease in limited numbers in the months following the winter and reaching into the late spring up to the time of the epidemic outbreaks. Epidemics of this disease had been known to skip a year and always to crop up in the place of its original occurrence, which should give the thoughtful a hint as to its cause and epidemiology. In all the epidemics thus far recorded, the symptomatology and clinical types had been much the same.

Though most of the scientific knowledge of the clinical types of poliomyelitis was borrowed from Swedish and Norwegian observers, Medin and Wickman, the first inkling of the epidemic nature of the disease was voiced by Colmer, an American physician, who in 1841 observed some form of paralysis in a child and obtained the history that in the locality in which the patient lived several similar cases had occurred, most of them ending in recovery. Following him, Caverly, in 1894, described an epidemic in Vermont; Taylor and Chapin later on observed the epidemic nature of the disease. Aside from these observers, much of the clinical knowledge at present was due to Medin, who described the clinical types of acute epidemic poliomyelitis in 1884 before the International Congress, much to the astonishment of most pediatrists, who still retained the simple picture as given in older textbooks, of poliomyelitis anterior as a simple, infantile paralysis. In all, forty-two epidemics had been observed in America and on the Continent, and this alone would establish the tendency of poliomyelitis to occur in epidemic form at certain seasons and remain sporadic until the time arrived for a new outbreak.

The disease selected the young as its victims. Out of 886 cases in the epidemic of 1907, 571 were in children below three years of age, 771 below five years, and three were under six months of age. In the present epidemic, the youngest patient the author had seen was a baby four and a half months old and absolutely breast fed. The most susceptible period was from one to three years of age. There were four principal types which could be clinically fully described and proved by laboratory methods: the abortive, the bulbospinal, the cerebral and meningeal, and the bulbopontine types. Wickman also described a neuritic type. These types could all be understood when poliomyelitis was regarded from the standpoint of an acute, infectious disease, involving certain parts of the general nervous structures, causing certain definitely marked pictures and stopping there, or going on to involve at one stroke the whole cerebrospinal axis and in this way causing a *débâcle* of the whole substratum of the nervous economy.

It was through the abortive type of the disease that these cases were spread to others. This type did not go on to paralysis, recovered, and did not leave the host injured as to the muscular motor apparatus. This type could be recognized so as to leave no doubt as to its distinct identity. A child of five years of age was attacked with a headache, slight malaise, and vomiting lasting five days, intense pain in both lower extremities radiating to the soles of the feet and worse at night, slight pain in the nape of the neck; lassitude, cerebellar gait on walking, increased reflexes in the lower extremities, rectal temperature rarely above 100.5° F. In ten days the pains disappeared, the child was well, and wanted to go out and play. The abortive cases presented prodromata, such as headache, weakness, diminished reflexes, and pain in the nape of the neck, with or without vomiting and fever, and still did not present paralysis, and recovered.

The spinal, or bulbospinal type was the most common and gave the disease its name. The patient had an attack of vomiting and slight fever and within twenty-four hours the mother observed the child could not move one or the other extremity. These forms might have no fever, but it was possible in giving the history the mother might have overlooked the symptoms of fever, malaise, and such indisposition as peevishness, which might have preceded by a few days the paralysis. In other cases, the paralysis appeared gradually. Pain might continue to be severe, especially when the extremities were moved. The paralysis might spread and involve not only the remaining lower extremity, but the upper extremities, the muscles of the back and respiratory muscles of the thorax, and possibly the muscles of the abdomen. As a rule, in the purely spinal cases, the paralysis appeared and did not spread. In others, it might spread from the extremities and involve the whole trunk, even causing bulbar paralysis of the respiratory centres. But after the tenth day, paralysis was not apt to spread to the bulbar medulla, though cases had been known to be fatal after the fifteenth day.

Both the meningitic and cerebral types should be combined because of the cerebral symptoms which gave rise to a picture closely simulating meningitis. The meningitic form of poliomyelitis ran its course with cerebral symptoms. A child of three years was taken with vomiting for forty-eight hours, followed by rigidity of the neck with pain on flexion of the head, Brudzinski sign and reflex, Kernig, sopor, and Macewen's sign which might be slightly marked; also diminished knee reflexes. Some patients might improve after a day or two, the fever might abate, and they might even be about and then have a recrudescence of fever, sopor, rigidity, delirium, irritability, extreme hyperesthesia, and pain in the nape of the neck. In some cases the only palsy might be ocular; in others a slight facial palsy might be present combined with weakness in one or other extremities. After a week, the patient became brighter. There was still, however, marked ataxia and Romberg's symptom. As convalescence was established, the ataxia was the last symptom to disappear. The hydrocephalus and abnormal mental state might remain for some time after the temperature was normal. On recovery, there was a slight strabismus, ataxia, optic neuritis. In one group of cases the writer had seen unilateral ophthalmoplegia with hemorrhages into the retina. In lumbar puncture lay the differentiation in the form of poliomyelitis from cerebrospinal meningitis.

The bulbar or pontine type of the disease deserved notice as a distinct form. An infant, breast fed, thirteen months of age, was attacked with fever and vomiting. The fever continued into the afternoon of the following day, when the mother noticed a flatness of the right side of the face. The temperature continued at 102.4° F., the infant was bright, laughed and played in the crib, but there was a tired look about the face and eyes. The knee reflexes were increased, otherwise there was no paralysis that could be demonstrated. In another case, ten days before the patient, aged twenty-one months, was seen, he was taken with high fever and vomiting, and there were some green movements. The fever continued, in a less degree, to the ninth day, when the mother noticed that the right side of the face was flat, there were tremulous movements of the head and arms, and the patient was restless. There was constant jactitation of the head and insomnia; rigidity of the neck, but no palsies of the extremities; on the contrary, the patient exhibited great strength in both the upper and the lower. In other cases, the outcome was not so favorable; there was an involvement of the nuclei which controlled deglutition and respiration. In these cases the patient might be lost by paralysis of the respiratory centres. The neuritic type included cases in which pains in the extremities became a leading feature of the clinical picture. In some of these cases paralysis developed; in others it did not. They were referred to in this paper under the head of abortive cases.

The symptoms given justified a lumbar puncture in order to establish the character of the fluid which in poliomyelitis showed a lymphocytic cytology, and an increase of globulin. The examination of the blood was very uncertain.

As to prognosis, the low mortality of ten per cent. applied to children below eleven years of age and twenty-seven per cent. among older children and adults. Twenty per cent. of all cases ended in complete recovery, and the younger the child, the better the prognosis.

Abortive and Nonparalytic Cases; Their Importance and Their Recognition.—Dr. George Draper, of the Presbyterian Hospital, said that if the cases of poliomyelitis progressing to paralysis were typical of the disease, the term, abortive, was incorrect and should be replaced by atypical; but as a matter of fact, the cases which fortunately escaped paralysis were just as truly cases of the disease as those which did not and were in reality more dangerous to the community.

At this time, there was no way of knowing accurately the proportion of those having the disease who were nonparalytic and those who were paralytic. In one of Wickman's groups, at autopsy, out of four cases, three were not paralyzed. In another group of four, two were not paralyzed. In Muller's group of three cases, one was paralyzed, in one the reflexes were lost, and the third was negative. In general, all abortive cases fell into groups: those with gastrointestinal symptoms, those with respiratory symptoms, those with febrile symptoms, and those with symptoms of meningismus. There were also cases with possibly transient paresis. The paralysis cases might have the prodromata of any of the first four groups mentioned. The intensity of the symptoms was no guide to prognosis.

The cases of poliomyelitis with gastrointestinal disturbances might easily, from the symptoms, be diagnosed as other than the true condition. The respiratory cases complained of influenzalike aches and pains. In the febrile cases, careful watch would disclose transient weakness, local muscle tenderness and the spinal flexion sign. On the slightest suspicion, spinal puncture should be done at once. This should be done also in the cases of meningismus, when a positive differential diagnosis from tuberculosis or epidemic meningitis could be made.

No doubt many abortive cases existed. It was absolutely necessary that they be recognized, for a double advantage would result; as moving sources of contagion they would be controlled, and patients who were otherwise destined to be paralyzed would be recognized to be in danger in the preparalytic stage and, when a specific remedy was finally discovered, probably cured without subsequent crippling.

Dr. Louis C. Ager, visiting physician to the Kingston Avenue Hospital, Brooklyn, said the city might well be proud of the way it had handled this epidemic and of the adequate hospitalization of such a large number of cases. Many valuable data on the subject of poliomyelitis were now being carefully gathered, and later, when the heavy clinical work had lessened, would probably prove of infinite value, as the only other large epidemic of this disease, in 1907, had not been recognized until it was over. In regard to the hospitalization of the cases, too much could not be said in praise of the way the emergency had been met. This would be better appreciated when it was recalled that from June 20th until July 12th the Kingston Avenue Hospital alone cared for 320 cases. The resident staff were thus brought suddenly face to face with a large number of serious problems, and an immense amount of work to be accomplished. A specific incident would illustrate this more fully. On July 3d there were eighty-nine cases admitted to the hospital. During that day the ambulance surgeons had only three hours sleep and no meals.

That hospital care was advantageous was apparent in the change observed in many of these little children as a result of the facilities offered for making them comfortable. Put in cool, clean, comfortable beds, with fresh air blowing in from windows on each side of the ward, it was wonderful to see the almost immediate effect. There had been some difference of opinion as to the infectivity of the disease, and this had not yet been decided. Doctor Draper had spoken of the large number of abortive cases, and in this class there was more proof of the infectivity of poliomyelitis than there was before the epidemic of 1907. The speaker reported the two following examples: On July 2nd, a child was taken sick with convulsions, vomiting, and fever and recovered; on July 3d, another child in the same family was stricken with the acute fulminating type of the disease and died within forty-eight hours; on July 4th, an older member of the family manifested the disease. A second group of cases was as follows: On June 28th, a child became ill with an abortive type; on June 30th, a second child came down with the fulminating type and death followed; on July 5th, a third case occurred in this same family which in this instance was followed by paralysis. There must be a large number of abortive cases that were not recognized. In the Kingston Avenue Hospital there were at least eight series of cases where there had been two or more victims in the same family. A great many more instances of this kind would have been found if there had been more complete statistics in 1907. About the only statistics on this point were those published by Wickman and Medin in Europe.

It had been remarked by some observers that blond rather than brunette children had been the chief victims of poliomyelitis; on this point the speaker did not care to give an opinion, but he could state positively that there must be few cases among negroes as among the 350 cases in the Kingston Avenue Hospital there had been no colored children. Some investigators had tried to find a relationship in the incidence of the disease to light complexioned people, but such relationship had not been traced. The incidence of the disease was likewise practically the same in all nationalities.

In reference to the affection of the liver and spleen in this disease, it could be stated that in this respect, so far as the clinical signs were concerned, there was no enlargement of these organs, except in some fulminating cases. This was a systemic affection and, like tuberculosis in small infants, involved the entire system. Only two instances of an enlarged liver were found in sixty-seven cases.

The age incidence in the present epidemic was practically the same as in the epidemic of 1907. It was peculiar that in epidemics in this country the age incidence was lower than in those on the other side. Of eighty-seven cases, forty-six occurred between the ages of two and five years; twenty-two between the ages of one and two years; eight between the ages of six and twelve, and three between one and six months. There were two adult cases in this group; one in a woman twenty-eight years of age and one in a pregnant woman of twenty-one years.

As to the types of the disease, in the clinical work three had been distinguished: the encephalitic, the myelitic, and the meningitic. Perhaps this classification was not scientific, but it had been found valuable for bedside work. It was found, as usual, that the lower extremities were most frequently paralyzed; in a group of sixty-four cases examined, the lower extremities were involved in thirty-nine, in seven instances the upper extremities, in five there was facial paralysis, and in thirteen cases the only definite symptom was paralysis of the muscles of the back. There were two typical ataxic cases.

The fulminating fatal cases gave the most pronounced symptoms. There was one peculiar and unusual case of a boy of eleven years, who was well nourished and well developed. He was brought in when his only symptom was labored breathing. There was a slight blur in his speech and he could not swallow milk on account of pharyngeal paralysis. His diaphragm was completely paralyzed, and the labored breathing was accomplished by the thoracic muscles alone. He could stand in bed and use his arms and hands, and his back showed no evidence of paralysis. He gradually became weaker and died five hours after entering the hospital. Another case of the fulminating type showed a general paralysis; practically all the skeletal muscles were affected, and there was marked respiratory paralysis. In both of these cases the heart was not affected and continued to beat for some time after respiration had ceased. Immediately after death artificial respiration and oxygenation were tried and kept up for some time. In some instances, artificial respiration had succeeded in bringing back the color after death had apparently set in, and it was still hoped that in some cases something might be accomplished by this method. The apparatus which Doctor Meltzer used at the Rockefeller Institute was employed.

In regard to the meningitic type, there was in the hospital a boy who was wildly delirious, had complete paralysis of one leg and one arm, and was totally blind. There was an alteration in his condition from deep meningeal coma to active maniacal delirium. He died in two days. An interesting thing that occurred in this epidemic might be noted here. One of the hospital interns on responding to croup calls on six different occasions found the patients had respiratory paralysis and poliomyelitis.

As to prognosis, it was sometimes extraordinary to see the rapid improvement in cases of this kind. The speaker had seen small bottle fed babies who were unable to take their milk at first, but in a short time were able to hold the bottle and feed themselves. There was often improvement in a few days, in the hospital, and this had strengthened the conviction that this was the best place for such cases unless the hospital conditions could be reproduced in the home.

Laboratory Aids in the Diagnosis.—This paper, by Dr. Josephine B. Neal, of the Department of Health Laboratory, appears on page 167 of this issue of the Journal.

The Importance of the Present Epidemic.—Dr. Haven Emerson illustrated his remarks with charts showing tabulated records of 1,557 cases and 311 deaths in the present epidemic, but admitted that the records were not accurate, as thus far they only showed the date on which the cases had been reported instead of following the usual plan of giving the date of the onset of the disease. For instance, in May only five cases were reported, while in July fifteen cases were reported that had had their onset in May, and obviously there was no means of knowing how many abortive cases had existed. On June 20th, the rapidly rising incidence of the disease began, until the highest point was reached on July 11th. Since that time, in spite of the great heat, there had been a recession which it was hoped would prove permanent.

At the onset of the outbreak the health department could choose between alternative courses. One was secrecy and the possible control of cases without publicity. The other was publicity and hospitalization, which seemed to offer a better prospect of real control of the disease; this plan was followed. As a result there had been undue fright on the part of the public, which seemed unwarranted when it was considered that a study of the death rates for the city as a whole, of diphtheria, scarlet fever, measles, whooping cough, and diarrhea during the last six years, and for the first six months of this year, showed that in comparison the deaths from poliomyelitis had been few. During the first six months of 1916, there were 884 deaths from diarrheal diseases and only fifty-seven from poliomyelitis. The community looked with complacency on the former, while it was panic-stricken over the latter.

This was probably the first epidemic of poliomyelitis in this city in which the disease had been made reportable and also the first in which there had been an effort at complete hospitalization. It was acknowledged that the present method of trying to control the disease was frankly an experiment. Reporting cases was new, placarding was new, and hospitalization was new. In 1907, it was not until November that the epidemic, then drawing to a close, was studied. At that time vital statistics were not as complete as now and so, while that epidemic was in progress, no study was made of it. In that epidemic there were probably 2,500 cases; there were 700 cases accurately studied by the sections in pediatrics and neurology of the New York Academy of Medicine in November, 1907. The mortality was twenty-seven per cent. During the present epidemic about 2,600 cases had been reported, but only about 1,600 of these had proved to be true cases. It was estimated that the total death rate in the epidemic of 1907 was five per cent.; during the present epidemic it had been 18.7 per cent.

The most important factors in dealing with the disease were early diagnosis and putting all cases under early orthopedic and neurological observation which might save the individual and the public from the future burden that permanent crippling implied. The early recognition of the condition was the most important factor in preventing the spread of the virus among the healthy.

During the time of this epidemic, the first opportunity had been taken to make use of the concerted action of the hospitals. This would no doubt result for cooperation in the future and would favor scientific advance in the study of the disease. It would be of advantage to have a staff suited to meet the requirements of these patients, including a laboratory diagnostician, a neurologist, an orthopedist, and a pediatrist. It seemed advisable to urge hospitals likely to have these cases to have a staff of this type for dealing with an epidemic. Social service organizations could also be made use of to a greater extent than in other conditions. There was need of concentrated follow up work in the homes of all patients, which would be a great need for years after they had left the hospital.

Splendid cooperation had been shown by the private hospitals of this city, and adequate provision had been made in the City, Metropolitan, Bellevue, Nose and Throat, Babies', Lebanon, Presbyterian, Willard Parker, St. Francis, German, St. Vincent's, Orthopedic, Mt. Sinai, Ruptured and Crippled, Neurological, and Nursery and Child Hospitals, in Manhattan; the Greenpoint, Kings County, Kingston Avenue for Contagious Diseases, Long Island, Methodist Episcopal, St. Mary's, Norwegian, Lutheran, and Samaritan Hospitals in Brooklyn, St. Vincent's Hospital in West New Brighton, and St. John's Hospital in Queens. Quarantine and the services at Ellis Island had also been placed at the disposal of the health department in case it should be required. This cooperation was a notable contribution to the city's benefit and would probably result in some permanent plan that might be put to service on such occasions in the future.

The necessity for accurate knowledge of the whereabouts of every case in the city was illustrated by the following incident. In the routine course of inspection a limping boy met the health officers and led them upstairs in a house where another small boy, also limping, was found. The baby, which was sick, had been sent outdoors in its carriage. The mother had called in no physician, though all three children were in the acute stage of infantile paralysis. She explained that she did not think they were very ill because they were active in moving about.

The speaker could not close his address without paying a tribute to the degree to which men of the medical profession would sacrifice themselves to the public health. Many instances had arisen where physicians had for the time being lost their entire practice because they had been taking care of cases of infantile paralysis and their other patients had been afraid to come to them. Other physicians would no doubt see that these men did not suffer because of their willingness to sacrifice themselves for the welfare of those having need of their services, and it was hoped that wherever this attitude of fear of patients toward their physicians was met, it would be discouraged.

In closing, Doctor Emerson appealed for early diagnosis and a willingness to report cases on the part of the medical profession, for no health department, however efficient, could otherwise control an epidemic and secure proper police enforcement of its regulations.

Dr. **Walter B. James** recognized a doctor from one of the infected districts, who asked if some one present could give in detail the proper modern treatment for poliomyelitis.

Dr. **Henry Koplik** replied that, as the cause of the disease was still under investigation, it was not yet possible to speak of a specific treatment which at this time, instead, could only be systemic and symptomatic. The patient should be isolated and above all should be kept absolutely quiet. Any one in attendance on a patient should wear a gown and protection for the mouth and nose, and, on leaving the patient, should carefuly clean his hands and face. A German physician in Munich had recommended that the patient be placed in a Bradford frame to insure absolute rest. He should have plenty of fresh air and an easily assimilable diet. The bowels should be attended to. Medication was confined to those drugs having an effect on the general nervous system. Lumbar puncture had three advantages; in the first place, the mere mechanical removal of a certain amount of fluid which might be toxic might be of benefit; in the second place, the examination of the fluid itself helped to establish a diagnosis; and in the third place, it relieved pressure. In paralytic cases, a cast might be applied to prevent contracture. If the contracture persisted after removal of the cast, the patient should be referred to an orthopedist. Anodynes relieved symptoms referable to the nervous system, but opium should not be administered unless absolutely necessary. Intramuscular injections of strychnine could be given as soon as the pain and fever had ceased. One fortieth of a grain daily might be given over a period of thirty days, selecting different groups of muscles for the injections. Warm baths sometimes proved a great blessing, except in the neuritic cases, if given without moving the patient too much. Massage in some instances relieved pain. In some cases iodide of potassium seemed to have an anodvne effect. In no case should operations for adenoids or tonsils be performed.

Dr. **William H. Park** said that as the hour was so late his remarks would be very brief. If there was time, he would emphasize in detail all that Doctor Flexner had said, as in his opinion this review of the situation had been both valuable and interesting. It looked as if, with the efforts of such men as Flexner and Noguchi, the subject of infantile paralysis would shortly be clearly understood by all, and a specific cure discovered. He wished to draw attention to one point as so many of the speakers had done, and that was to the abortive cases; in every instance where it was possible to follow the infection from its source, it had been observed that the sixth person in line of infection had been the one to suffer most. The carrier spread it abroad to unknown places and in cases where there was the least suspicion, there should be isolation. The infection might be thrown out by dust; there were no known carriers, though it was known that the sick person and carriers threw out the contagion. If insects were found to be carriers, it would probably be in a subordinate way. It was difficult to believe that any given carrier or doubtful case was infectious through bacteria, as in cerebral meningitis. But if a diagnosis could be made through a culture, they could not act differently in handling the epidemic. It was of value to know that a case, whether doubtful or well developed, was the greatest source of danger to others, and that the carrier went out through the family or visitors to the bedridden, so culture or serum diagnosis was not necessary for the safety of others. If every carrier were labeled, it would have been impossible to do more in checking the epidemic than the health department was doing now. It was to be hoped that, basing the work on what had been done, it would soon be possible to announce the discovery of a specific vaccine.

Dr. **Leon Louri**, of Brooklyn, said that in half the cases he had seen there were no symptoms of paralysis. In a few, he had noticed a very interesting occurrence. They were taken ill with slight sore throat, slight febrile manifestations and malaise, and were treated by the usual iron mixture. In twenty-four hours the temperature was normal and the child went about as usual. On the third day, unmistakable symptoms of poliomyelitis developed with definite paralysis. If the disease could be recognized on the first day and the child placed in bed and kept quiet so that the nervous system would not be traumatized, the virus would not develop to the extent it did later. Early treatment was most important applied in abortive cases. A healthy person who had no disease in his family, might travel through an infected district and carry thence with him the virus of the disease and implant it elsewhere. The duty of every one was to call in medical men early to diagnose any case where there was the least suspicion of the presence of the virus, and not take lightly those symptoms which represented the so called types of poliomyelitis.

Dr. **Samuel J. Meltzer**, of the Rockefeller Institute, had decided to confine his remarks to one essential phase touched on by only one of the speakers of the evening, and that was the treatment of the disease. The discouraging fact was present that at this time there was practically no specific treatment for poliomyelitis, but he desired to bring forward three promising therapeutic measures based essentially on his personal work: Any inflammatory focus was surrounded at the periphery by zones of hyperemia, exudation, and edema. Thirteen years ago, in experimenting upon rabbits' ears, he found that an injection of adrenaline reduced the entire inflammatory swelling to a very small focus in the centre. The peripheral zones of edema and active hyperemia disappeared completely for some time. Several years ago, he and Doctor Auer found that an intraspinal injection of adrenaline into monkeys produced a lasting effect upon the blood pressure, longer than by any other method of administration; more than one hour might pass before the blood pressure returned to normal.

On the basis of these observations and on the further plausible assumption that the early stages of the paralytic effects in poliomyelitis were not caused by the chief inflammatory focus, but by the peripheral zones of active hyperemia, exudation, and edema, the speaker induced Doctor Clark, then working under Doctor Flexner at the Rockefeller Institute, to make the following experiments: Monkeys dying from experimental poliomyelitis received intraspinal injections of adrenaline. The beneficial effect was most striking. Animals which were paralyzed and moribund at the time of the injection, were seen several hours later eating bananas which they held themselves; the paralytic conditions were strikingly improved, and the life of the animals in some cases was prolonged for several days. The animals finally died; but in this series of Doctor Clark's experiments, all animals received surely fatal doses of the virus.

If the exudation and edema could be removed for some time, the life of a few, or of many children might be saved, that is, if in these cases it happened that the ascending progress of the actual inflammation became fixed. On the basis of these facts and considerations, the speaker recommended the intraspinal injection of adrenaline in every case of infantile paralysis, the injections to be repeated in from four to six hours. The procedure might save life and, in surviving cases, it might reduce the extent of the final lesion. There was no danger in this procedure. Monkeys stood well as large a dose as two c. c. in a single injection. However, in human infantile paralysis the injections should be begun with a dose of 0.5 c. c. of adrenaline until more was learned about the effects.

He wished to make two other suggestions in regard to treatment. One was the administration of artificial respiration by means of the Rockefeller apparatus for pharyngeal insufflation, as soon as the patient showed a degree of unconsciousness and respiratory insufficiency. This was an easy and trustworthy procedure. The second suggestion was to administer oxygen under pressure in a respiratory rhythm by an apparatus which the speaker had recently devised and used on human beings in several instances. It rapidly abolished cyanosis and might save life. It might even act specifically on the virus of poliomyelitis. It was impossible at this time to describe either of these apparatus or the mode of application or the results of experiments, but this would gladly be demonstrated at the institute if a number of physicians would signify their desire in this direction and arrange for a definite appointment.

Letters to the Editors.

QUININE IN POLIOMYELITIS.

New York, *July 15, 1916.*

To the Editors:

In the course of twenty-eight years of active practice, I have been using quinine in small doses for prophylactic purposes in many infectious diseases, with most gratifying results. I have used quinine in typhoid, diphtheria, scarlatina, etc., epidemics and sporadic cases, and have never seen a patient contract any of the foregoing diseases while taking small doses of quinine, notwithstanding direct contact with such patients. I have also been using quinine in almost unavoidable puerperal sepsis, and have never seen the expected sepsis take place. I have therefore come to regard quinine as decidedly inimical to microbic life, either by possessing direct germicidal powers, or by stimulating phagocytosis, or both. Hence, I feel quite confident that in the present epidemic of poliomyelitis, which is of undoubted microbic origin, the administration of small doses of quinine to children, no matter how immediately or remotely exposed to the infection, would be found of great service in checking its spread. As is well known, this remedy in small doses is absolutely harmless (except for some very rare idiosyncrasies), simple, and inexpensive.

Although my theory is lacking in scientific proof, and may not be verified by laboratory experiments, yet from a long, practical experience, and close observation, I am compelled to adhere to it, and I may add that there is a vast difference between laboratory inoculations and ordinary natural infection or communicability, and while a certain prophylactic may not resist inoculation with millions of microbes, it may successfully fight off a few invaders in the natural process of infection.

I would also strongly suggest the application of the same treatment to poliomyelitic patients, but with considerably larger doses of the quinine, combined with appropriate doses of phenacetin and caffeine citrate.

FOR PROPHYLACTIC PURPOSES.

For children of from six months to one year, one quarter to one half grain, three times a day.

For children from one year to three years, three quarters to one grain, three times a day.

From three years to fifteen years, one grain to one and one half grain, three times a day.

In order to disguise the bitter taste of the drug, I usually combine it with licorice powder or syrup of yerba santa. The following prescriptions are examples:

FOR A BABY OF ONE YEAR.

℞ Quininæ sulphatis, ... gr. xv;
Syrupi yerba santa, ... ℥ij;
Syrupi tolutani, } Aquæ, ... } .... āā, p. æ. ad. ℥iv.

M. Sig. One teaspoonful, three times a day.

FOR A CHILD ABOUT THREE YEARS OLD.

℞ Quininæ sulphatis, ... gr. xxx;
Pulveris glycyrrhizæ, ... ʒj;
Sacchari albi, ... ʒij.

M. Fiant pulveres No. 30. Sig. One powder three times a day in water.

B. Scheinkman, M. D.

AMMONIUM SALICYLATE IN POLIOMYELITIS.

New York, *July 15, 1916.*

To the Editors:

As a postscript to my special article on anterior poliomyelitis, published in your issue for July 15th, page 128, I would advise that whenever a child has been exposed to the disease, or even as a general preventive, a dose of ammonium salicylate be given three or four times in the twenty-four hours for several days. It could do no harm and I am hopeful that it might accomplish a great deal of good. To my mind the present epidemic has certain marked features which connect it with epidemic grippe. Last winter I had remarkable success in the latter disease from ammonium salicylate combined with caffeine. The liquor alkalinus antisepticus, well diluted, should be used freely as a throat spray. I believe that this combined treatment may be at least most welcome to alarmed mothers, to whom little has been offered so far in this epidemic except vague generalities.

It does not seem to me that injections of adrenaline, as advocated by Doctor Meltzer, have any advantages over the use of ergotin hypodermically, as advocated many years ago by Althaus. Counterirritation to the region of the spine, by a liniment, such as equal parts of soap liniment and spirit of turpentine, is indicated. Also, insistence "during the early days of the disease, upon a prone position, varied occasionally by laying the patient on his side. The dorsal position, which favors congestion of the vessels within the spinal canal, should, if possible, be avoided." This citation is taken in substance from *Disease in Children*, by Eustace Smith (3d ed., 1886, p. 378). We are apt to forget things of long ago and take up others which are really not so valuable. I would not burden you again so soon, but somehow I feel I may be useful.

BEVERLEY ROBINSON, M. D.

A SUGGESTION IN THE TREATMENT OF ANTERIOR POLIOMYELITIS.

BETHLEHEM, PA., *July 17, 1916*.

To the Editors:

During the slight epidemic of infantile paralysis, in 1911, I was called upon to treat several cases. Medical literature gave nothing definite, so I thought no harm could be done by trying something unusual. Considering the possible pathology, I concluded that something which decreased the primary congestion of the cord would aid somewhat in preventing further destructive changes.

Upon this theory and the possibility that the parathyroids were upset, as is sometimes the case in infantile gastrointestinal trouble, which is often one of the early symptoms of infantile paralysis, I gave one of the calcium salts, chosen for no other reason than that it was easier to administer to young children, i. e., calcium chloride in the elixir. The action of calcium chloride is different from adrenaline chloride in that it produces an increase in fibrin, thereby increasing the coagulability of the blood. It is more lasting in action than adrenaline, which produces only a local anemia of the part of short duration, followed by a secondary increased congestion. It has no action upon the parathyroids and may be dangerous by increasing blood pressure and overtaxing a diseased heart.

I may say that all my cases made a complete recovery. I insisted upon absolute rest, the child to remain in bed and not to be moved for at least three days. This I give for the sole purpose of asking others to try this treatment, and trust that it may be of some benefit.

CARL F. WELDEN, M. D.

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Aftertreatment of Operations. A Manual for Practitioners and House Surgeons. By P. LOCKHART-MUMMERY, F. R. C. S. Eng., B. A., M. B., B. C., Cantab., Senior Surgeon, St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum; The Queen's Hospital for Children, London, etc. Fourth Edition. New York: William Wood & Co., 1916. Pp. viii-275. (Price, $2.25.)

No subject in surgery requires such explicit directions as aftertreatment of operations, and no subject is so neglected in the textbooks. Any book by an experienced surgeon on this part of surgical technic should be welcomed by those into whose hands the details of aftertreatment fall. This is true, not so much of the general surgeon and special surgeon, who requires no textbook to instruct him in this subject, but rather the general practitioner and hospital intern. That a want has been felt for a book of this kind is shown by the appearance of this fifth edition. New chapters of special interest in the present volume are those on the treatment of gunshot wounds and on surgical shock. Both have been brought up to date, and represent the prevailing views and practice of today. The book covers the most practical and common operations of general surgery. All unnecessary references to the literature and the practice of other than the author's clinic have been wisely eliminated.

A Textbook of Fractures and Dislocations. With Special Reference to Their Pathology, Diagnosis, and Treatment. By KELLOGG SPEED, S. B., M. D., F. A. C. S., Associate in Surgery, Northwestern University Medical School; Associate Surgeon, Mercy Hospital; Attending Surgeon, Cook County and Provident Hospital, Chicago, Ill. Illustrated with 656 Engravings. Philadelphia and New York: Lea & Febiger, 1916. Pp. viii-888. (Price, $6.)

The subject of fractures has for many years been in such a transition period, particularly as regards treatment, that any new work covering this field is of special interest. The subject has become so broad and the details of diagnosis and treatment are so complicated, especially since the advent of the x ray and operative methods, that it has become a specialty in itself. The author brings to the present work a great deal of study and practical work, and the book has a distinctly personal character. The practice of others is given in lesser detail, while the author's methods, which he has found useful by experience, are described minutely. His views on the present status of the operative treatment of fracture are stated clearly and with authority.

The subject of dislocations is treated in conjunction with fractures, which seems a better arrangement than putting them in another part of the book, as the two are frequently combined in traumatisms. The drawings from x ray plates and other illustrations are clear and helpful. The x ray plates themselves are not as numerous as we should like.

Transactions of the College of Physicians of Philadelphia, 1915. Edited by WALTER G. ELMER, M. D. Volume 37, Third Series. Pp. 500.

The volume contains the papers read before the College from January to December, 1915, inclusive, the annual address of the president and a list of the Fellows of the college. The various articles are well written, the authors being among the foremost of the medical profession in the United States. Every branch of medicine and surgery, as well as public health work and military hygiene, is dwelt upon. The proceedings of the section in ophthalmology are given in full. The appendix contains the annual report of the library committee for the year, and a list of the prizes and lectures.

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Interclinical Notes

In the *Outlook* for July 19th there is a letter in which it is stated that even a jellyfish will fight; the most harmless looking of the tribe seem to be able to sting most severely. The writer's idea was probably that although we, as a nation, look harmless, we could, on occasion, deliver most lethal blows. But while we were trying to prepare, zeppelins would be destroying our powder plants and gun foundries, would they not? Again, if you fight the jellyfish with a stick, you run no danger of shock.

* * *

Current Literature for July begins with a survey of the mysterious expedition to the Mexican border of our militia, and then proceeds to discuss the candidates for the next presidential election. After a glance at European politics, there are biographical sketches of Schiff, Hellferich, and Jonescu, an extract from *Youth*, "a dramatization of the young dramatist," an allusion to Indian music and to new European music, the latter being most revolutionary. Science and Discovery, Religion and Social Ethics, Literature and Art, and the Business World, the usual departments of this invaluable monthly, are entertainingly filled and will afford the reader the interest and instruction to which he is accustomed.

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The *Survey* for July 8, 1916, describes the new school for the study of tuberculosis established at Saranac Lake in memory of the late Dr. Edward L. Trudeau. Universal State reciprocity in the practice of medicine is also discussed under the heading, Interstate Shingles for the Doctors. It gives a list of the physicians appointed by the late Dr. William L. Rodman to form an interstate board of examiners. They were: Admiral W. C. Braisted, surgeon general of the navy; Commander E. R. Stitt, of the navy;

Surgeon General W. C. Gorgas, of the army; Colonel L. A. LaGarde, of the army, treasurer; Surgeon General Rupert Blue and Assistant Surgeon General W. C. Rucker, of the Public Health Service; Dr. Herbert Harlan, representing the Federation of State Medical Boards; Dr. Isadore Dyer, of New Orleans; Dr. Victor C. Vaughan, of Ann Arbor, Mich.; Dr. Henry Sewell, of Denver; Dr. Louis B. Wilson, of Rochester, Minn.; Dr. E. Wyllys Andrews, of Chicago; Dr. Horace D. Arnold, of Boston, and Dr. Austin Flint, Jr., of New York.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the United States Public Health Service for the seven days ending July 12, 1916:

Collins, R. H., Scientific Assistant. Directed to proceed to Union City, Tenn., for duty in studies of rural sanitation in Obion County.

Eager, J. M., Surgeon. Granted one month's leave of absence on account of sickness, from July 7, 1916.

Frances, Edward, Surgeon. Directed to proceed to New York city for duty in investigation and suppression of poliomyelitis.

Frost, W. H., Passed Assistant Surgeon. Directed to proceed to New York city for duty in investigation and suppression of poliomyelitis; granted three days' leave of absence from July 4, 1916.

Harralson, M. F., Scientific Assistant. Ordered to proceed to Greenville, S. C., for duty in studies of rural sanitation in Greenville County.

Hunter, Edward R., Scientific Assistant. Ordered to proceed to Liberty, Mo., for duty in studies of rural sanitation.

Lavinder, C. H., Surgeon. Directed to take charge of Service operations in aid of the State and municipal health officers in the investigation and suppression of poliomyelitis in New York city.

Leake, J. P., Passed Assistant Surgeon. Directed to proceed to New York city for duty in the investigation and suppression of poliomyelitis.

Lumsden, L. L., Surgeon. Directed to proceed to Birmingham, Ala., for conference with health authorities relative to the typhoid situation in that city.

Oakley, J. H., Surgeon. Bureau letter dated June 14, 1916, granting three days' leave of absence from June 17th, amended to grant two days' leave of absence from June 17th.

O'Brien, Henry R., Scientific Assistant. Directed to proceed to Liberty, Mo., for duty in studies of rural sanitation.

Parran, Thomas, Scientific Assistant. Directed to proceed to Liberty, Mo., for duty in studies of rural sanitation.

Pettus, W. J., Surgeon. Granted leave of absence for one month and six days with pay from July 17, 1916, and twenty-four days without pay from August 23, 1916.

Reuter, F. A., Scientific Assistant. Directed to proceed to Liberty, Mo., for duty in studies of rural sanitation.

Ridlon, J. R., Passed Assistant Surgeon. Directed to proceed to New York City for duty in the investigation and suppression of poliomyelitis.

Rucker, W. C., Assistant Surgeon General. Directed to proceed to New York for conference relative to preventive measures to be taken against the interstate spread of poliomyelitis.

Sanders, Morris B., Scientific Assistant. Directed to proceed to Union City, Tenn., for duty in studies of rural sanitation in Obion County.

Sayers, R. R., Assistant Surgeon. Directed to proceed to Jefferson City, Mo., for duty in studies of rural sanitation in Clay County.

Stewart, P. M., Assistant Surgeon. Directed to proceed to Liberty, Mo., for duty in studies of rural sanitation in Clay County.

Stiles, C. W., Professor. Directed to proceed to New York for conference with health authorities with respect to the influence on health of certain articles of food.

Wilson, J. G., Assistant Surgeon. Ordered to report to Surgeon C. H. Lavinder for duty in the investigation and suppression of poliomyelitis.

Promotions.

Passed Assistant Surgeon Francis H. McKeon, promoted and commissioned as a surgeon, effective May 13, 1916.

Passed Assistant Surgeon E. A. Sweet, promoted and commissioned as a surgeon, effective May 10, 1916.

Assistant Surgeon C. L. Williams, promoted and commissioned as a passed assistant surgeon, effective May 23, 1916. July 3, 1916.

Boards Convened.

Board of commissioned medical officers reconvened at the Bureau, Washington, D. C., July 10, 1916, for the examination of applicants for appointments as assistant surgeon. Detail for the board: Assistant Surgeon General W. C. Rucker, chairman; Surgeon E. A. Sweet, member; Passed Assistant Surgeon J. R. Hurley, recorder. Surgeon John S. Boggess and Passed Assistant Surgeon B. H. Earle detailed for duty on a Coast Guard Retiring Board at the Marine Hospital, Port Townsend, Washington, July 17, 1916. Surgeon J. A. Nydegger and Surgeon C. W. Vogel detailed for duty on a Coast Guard Retiring Board at the Marine Hospital, Baltimore, Md., July 10, 1916.

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Births, Marriages, and Deaths

Born.

Grant.—In Seattle, Wash., on Monday, June 26th, to Dr. and Mrs. E. E. Grant, a daughter.

Talbot.—In Brookline, Mass., on Tuesday, June 27th, to Dr. and Mrs. Fritz B. Talbot, a daughter.

Married.

Herrick-Dickson.—In Santa Rosa, Cal., on Tuesday, June 27th, Dr. Albert B. Herrick, Jr., and Miss Helen Dickson.

Parris-Smith.—In Brookline, Mass., on Wednesday, June 14th, Dr. Roland O. Parris and Miss Julia Estes Smith.

Richards-Gibbs.—In Salt Lake City, Utah, on Monday, July 3d, Dr. Ralph Richards and Miss Rhoda Gibbs.

Upshaw-Campbell.—In St. Louis, Mo., on Tuesday, June 27th, Dr. Harry I. Upshaw and Miss Flora Caroline Campbell.

Young-Ewen.—In Barre, Vt., on Thursday, June 29th, Dr. George A. Young and Miss Clara Ewen.

Died.

Baker.—In Owego, N. Y., on Sunday, July 9th, Dr. Merritt T. Baker.

Barnes.—In Stratham, N. H., on Thursday, July 6th, Dr. Edward M. Barnes, aged fifty-eight years.

Bonnett.—In Leroy, Ill., on Friday, July 7th, Dr. J. Y. Bonnett, aged forty-three years.

Carter.—In Hartford, Conn., on Tuesday, July 4th, Dr. Henry Carter, of Manchester, aged forty years.

Dean.—In Atlanta, Ga., on Tuesday, July 4th, Dr. E. W. Dean, of Hiram, Ga.

Denny.—In Kingston, N. C., on Saturday, July 1st, Dr. W. W. Denny, aged eighty-three years.

Gale.—In Roanoke, Va., on Wednesday, July 5th, Dr. Joseph A. Gale.

Gray.—In Batavia, N. Y., on Thursday, July 6th, Dr. Clarence V. Gray, aged fifty years.

Henderson.—In Detroit, Mich., on Tuesday, July 4th, Dr. Thomas Henderson, aged sixty-one years.

Henry.—In San Jose, Cal., on Wednesday, June 28th, Dr. Joseph W. Henry, aged forty-seven years.

McDonald.—In Concordia, Kan., on Friday, June 30th, Dr. W. H. McDonald, aged seventy-two years.

Phillips.—In Port Arthur, Tex., on Monday, July 3d, Dr. J. C. Phillips.

Roan.—In Jones, Ga., on Friday, June 30th, Dr. James T. Roan, aged sixty-four years.

Selvage.—In Newark, N. J., on Friday, July 7th, Dr. Charles Edwin Selvage, aged thirty-two years.

Sorrel.—In Washington, D. C., on Friday, June 30th, Dr. Francis Sorrel, aged eighty-nine years.

Smith.—In Auburn, Me., on Saturday, July 8th, Dr. Roscoe Smith, aged eighty years.

Winkler.—In Applecreek, Ohio, on Thursday, July 6th, Dr. W. H. Winkler, aged seventy-two years.

New York Medical Journal

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Original Communications

MEDICAL WOMEN,

In History and in Present Day Practice,

By Mary Sutton Macy, M. D.,

New York,

Neurologist, Demilt Dispensary.

Ever since Eve was sufficiently philanthropic to share the legendary apple (which some say has proved to be a lemon) there have been more or less heated and strenuous arguments anent "woman's place" in one or another field of activity, and the year 1915 A. D., not to be outdone by its predecessors, has furnished a more or less acrimonious discussion on "woman's place in medicine." One of our medical brethren from the Athens of America, is reputed to have cast unchivalrous reflections upon the capacity of women for other than social service, and about his remarks, as reported in the daily press, has waged a war of words in which, strange to relate, the women have been noted for their silence. It was not my intention to break this strange and unnatural feminine silence, in which I may admit I was taking an unholy joy, as I knew the fires were smouldering beneath, but at the earnest solicitation of the editor of the New York Medical Journal I have consented to attempt to comply with his request, i. e., "we should like to publish an original communication showing what women physicians have accomplished since they first began the study of medicine." Being convinced that the editor had asked for more than he meant to, I tried to escape on the plea of the antiquity of women—a curious anomaly surely—in the medical world, but, being a true sportsman, the editor refused to let me off on any such excuse, and so the following account must be credited to its true origin and not blamed on the daughter of Eve who awards the apple.

In his essay on the history of medicine, Jurisconsult Tiraquean says: "There have been a large number of physicians who have been numbered among the saints; several pontiffs, emperors, and kings have practised medicine; also queens and other women of quality," and at the conclusion of his essay he gives particulars of the standing of such persons as have been devoted to medicine, arranging the list in alphabetical order. To this interesting and instructive list those who are genuinely concerned as to the standing of the "antique women" in medicine are most cordially referred. For our purpose we may begin the narrative with the historic daughter of Aetes, King of Colchis, who practised in her father's court, 1228 B. C., making a specialty of antidotes for poisons, which undoubtedly was one of the most important, if not the most important specialty of the age. Hygeia, later deified in Greece, was a daughter of Æsculapius and presided over the temple devoted to the sick at Epidaurus. So long as the practice of medicine formed a part of the priestly functions, as in ancient Egypt, the crafty guardians of superstition sedulously concealed their superior knowledge from the ignorant people. Yet there were priestesses in the Egyptian temples and the story of Moses shows that female gynecologists were not unknown to the Egyptians of his time. Coming down the centuries a little, an Athenian maiden, Agnodice, born 506 B. C., calls for special attention as an illustration of how curiously history sometimes repeats itself. Agnodice was very desirous of becoming a doctor, but even in those days there were obstructions, not dissimilar to those met by the women of later days whom we refer to as pioneers, such as Elizabeth Blackwell in America, Miss Jex Blake and Mrs. Garrett Anderson in England, and others. Agnodice, of Athens, was duly informed, and seemingly impressed, by the fact that her sex was an insuperable obstacle and, being unable to force her way into the medical professsion of her native Athens, tried another plan. Artfully disguising her sex, she found no difficulty in being taught midwifery by a very eminent anatomist and physician of the day named Herophilus, but her story only begins with her success in gaining her education and the privilege of practice. Trusting in the loyalty of her sisters she is reported to "have whispered her secret to her shrinking patient" always when called to a case. That her confidence in women was not misplaced was speedily proved; her secret was kept inviolate and her practice grew with such astonishing rapidity that her confrères became jealous—verily; how history does repeat itself—and finally they accused her of corrupt practices and brought her to court. Agnodice had gained confidence with her success, she frankly revealed her sex to the Areopagus and it was promptly recognized as the reason for her large connection among women, who naturally preferred a woman near them at such a time. As a result of her trial, a law was immediately passed allowing all free born Athenian women to learn midwifery. So the battle was won in Athenian days.

Not all the women in medicine of antiquity were

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of the type of Agnodice, however; one of the most distinguished, certainly the most infamous, and perhaps, therefore, the most famous woman of the ancient medical world was Cleopatra, Queen of Egypt, who lived about a half century before the Christian era. She was a most accomplished, a learned, and, according to accounts, a beautiful woman to whose toils of grace and attractions of person, Julius Cæsar, Mark Antony, and other men of her day fell easy victims. She is reported to have compounded cosmetics and to have written on the art of preserving beauty. Galen is authority for the fact that she wrote books on the diseases of women. At least she gave her name to them, and while it is probable that she wrote them, she declared in their prefaces that they were written by her sister Arsenoe—whom Antony, at his mistress's bidding, caused to be put to death. Be that as it may, the volumes have not come down to us and we cannot therefore judge of their professional value.

The medical school of Pythagoras was carried on, after his death, by his wife with the aid of her two sons, and she was the author of several medical treatises which were authoritative for many years. Pliny, in his natural history, mentions Olympias the Theban, a woman who was the author of many well known prescriptions; Salpe, another woman who wrote on remedies for the diseases of women, and Sotira, a woman to whom is attributed a prominent treatise on the treatment of fevers.

No fewer than four saints, who were also physicians and women, are mentioned as living before 500 A. D., and two of these, St. Zenais and St. Philomela lived in the first century. They were natives of Tarsus, but left their home and devoted their lives to medical science and the conversion of their patients to Christianity. They were kinswomen of St. Paul the Apostle; the tradition says that that chronic woman hater was always attended in his many illnesses by St. Zenais.

Galen mentions Antiochus especially, who lived in the second century and whose statue was found in the ancient town of Tlos in Asia Minor, bearing this inscription: "To Antiochus, daughter of Diodotos of Tlos, the council and commune of the town of Tlos, appreciating her medical skill, raised this statue to her at their own expense."

Among other medical women of early Christian times in Rome are found such as Aspasia, who as Herrgott points out, was the originator of podalic version, Theodosea, mother of St. Procopus, who practised general medicine and was executed about 312 A. D., and Fabiola, A. D. 380, a medical woman not lacking in analogy to Florence Nightingale, and the founder of hospitals in Italy, during the time of the Emperor Julian, to whom this honor is, therefore, usually credited. Speaking of medical women saints, it is not possible to omit mention of St. Hildegarde, who lived in Germany, 1098-1179, and of whom Herwegen gives an interesting characterization. She wrote two medical books, *Liber ismplicæ medicinæ*, and *Liber compositæ medicinæ*. Schott, of Strassburg, in 1533, edited the first, under the title, *Physica St. Hildegardis*. This was discovered by Doctor Jessen in the library of Wolfenbuttel, and later he obtained from Copenhagen the manuscript entitled, *Hildegardis curæ et causæ*, which he was convinced, after a careful examination, was the second medical work of the saint. It is in five books and treats of general divisions of created things; of the human body and its diseases; and of the causes, symptoms, and treatment of illnesses.

In Norse saga and Teutonic legend many women are celebrated as surgeons and physicians, and the parting gift recorded of the Queen given to Princess Ysolde, when she "leaves her native Ireland to become the wife of Cornwall's King," is a chest of drugs, philtres, and poisons; and it was Ysolde's fame as a physician which indirectly brought her to the attention of King Mark. Under Mohammedan rule, in the Middle Ages, women were placed in excessive isolation, and we find that several women were skilled in attending to the requirements of their sex. Albucasis, of Cordova, one of the most skillful surgeons of the twelfth century, secured the services of several women properly instructed as assistants and placed them in charge of operations on women, especially gynecological operations. Avicenna, writing of remedies for the eye diseases then so common, mentions a collyrium compounded by a "woman well versed in medical science." In Madrid in 1587 appeared a learned medical work entitled *Nueva Filosofia de la Naturaleza del Hombre* by a woman physician named Olivia del Sabuco.

The edict of the faculty of Paris, which forbade the practice of medicine to all who were not members of that body, to which only unmarried men were admitted, was such a dead issue as long ago as 1292, that eight women physicians were established in Paris at that time. The archives of Frankfort-on-Main mention fifteen women—three of whom were oculists—as established between the years 1389 and 1497. In the southern part of Italy, where Grecian influence was strongest in the Middle Ages, at Salerno, was founded the first medical school of modern times. Here the department of diseases of women was entirely handed over to women physicians, and we have a number of distinguished women professors who wrote textbooks, thought, and taught in the school. One of them, Trotula, was the author of a work entitled *De passionibus mulierum ante, in et post partum*, in which she describes perineorrhaphy and advocates its performance immediately after labor. She became famous all over Europe in her time. Among other Salernian medical women were Abella, Costanza Calendula, Mercieriade, author of several treatises, Rebecca Guarna, and Adelomota Maltraversa. Another Salernian woman physician of great prominence was Marguerite of Naples (or of Sicily), who was called to Poland and practised in the court of King Ladislaus (who died in 1414). Of this period of medical practice Doctor James J. Walsh has aptly said: "It would be easy to think that after all feminine education in medicine must have meant very little at this time, for the generation did not know much medicine. Anyone who thinks so, however, has the privilege of another thought after looking into the subject. That thought should come after due information. The surgery of Salerno particularly—and it is in this that most of us would be sure that the old times was very backward—is an unending marvel. . . . The textbooks describe operations on the skull for tumor and abscess, on the thorax for fluid, on the abdomen for wounds of the intestines; they were treating hernias in the exaggerated Trendelenberg position and they had three methods of anesthesia, one of them by inhalation, and were using strong wine as an antiseptic and boasting of getting union by first intention."

In England, as long ago as the days of King Edgar (959-975), women were entitled by law to practise medicine, but in 1421 their male competitors petitioned Henry V, begging most piteously that women be not allowed to practise physic, and consequently the former laws were repealed, and we hear little more of medical women in England until Lady Anne Halkett (1622-1679).

After the so called Middle Ages the number of women physicians appears to have diminished everywhere, except in Italy where two women held professorships at the University of Bologna. One of the prosectors of Mondino, who is often called the Father of Modern Dissection, was a young woman, Alessandra Giliane, to whom must be credited the first attempts to inject anatomical specimens in order to preserve them. That her preparations might be more valuable and studied for a longer time, she colored the tissues variously, especially the arteries and veins. She died of blood poisoning, probably contracted in some accident in her carefully detailed dissection work. It is to another woman of Bologna, Anna Morandi Mazzolini, that must be credited the introduction of wax models into medical study, and she held the chair of anatomy at Bologna for nineteen years, and discovered the exact point of insertion of the oblique eye muscles, and though she received tempting offers from other Italian universities and even from England and Russia, she preferred to remain in her native city of Bologna. She enjoys the distinction of being the first "to reproduce in wax such minute portions of the human body as the capillary vessels and the nerves." Her collection of anatomical models is still to be seen at the Institute of Sciences. Contemporary with Anna Morandi Mazzolini was Laura Caterina Bassi, who studied physiology and medicine with Taccone, mathematics with Manfredi, and natural philosophy with disciples of Gassendi. She was appointed to the chair of physics and a medal was struck in her honor by the Senate. She held her professorship for twenty-eight years, marrying in the meantime a physician, J. J. Veratti, to whom she bore twelve children. She died in 1778 at the age of sixty-seven years.

In 1799, Maria Della Donne appears as professor of medicine and obstetrics at Bologna, and although a number of prominent women should be noted at other Italian universities throughout the Renaissance period, we have space to mention only a few. Dorotea Bocci (1436) succeeded her father in the chair of philosophy at Bologna, and also in the practice of medicine: Zaffira Ferretti, M. D., Marie Petruccini, Maria Sega, M. D., Novella Calderine, and Madalena Buonsignore should be mentioned among the numerous women graduates of Padua, Pavia, Ferrara, and other Italian universities. While women studied everything else at the Italian universities, as well as medicine, the custom evidently did not obtain in the north and west, apparently because Paris, whose influence meant so much to the others, was disturbed in its normal progress by the incident of Abélard and Héloise. The doors of the Paris school of medicine remained closed after this until opened in 1867 by Mary Putnam, later famous as Dr. Mary Putnam Jacobi. The Italian universities were never closed to women and by state decree, in 1876, all of them (fifteen in number) were *formally* opened to them.

In England, as we have said, the earlier liberal laws were repealed in 1421, but women appear to have continued in the practice of midwifery and gradually to have acquired a certain amount of recognition in the medical field, because in the seventeenth century, Anna Wolley and Elizabeth of Kent were occupied with the preparation of drugs and each of them published works on medical subjects. About this time, too, Elizabeth Lawrence, wife of the Reverend S. Berry, of Bristol, was living and admirably instructed in anatomy and medicine.

In this century, Peter Chamberlain introduced midwifery forceps and their use required the calling of a trained physician by the midwives. We are told that the first personages of the land consulted Lady Anne Halkett (born 1622), at this time, who became celebrated both for her proficiency in the theory of medicine and her skill in surgery. She cared for the wounded after the battle of Dunbar (1650) and was thanked by the King. Her reputation spread and reached Holland where she was also in demand. A staunch loyalist, she, with her family, suffered much in the cause of Charles I, but, notwithstanding her practice of medicine, her fame, and her misfortunes, she found time to write and have published no fewer than twenty-one books. In 1642, women were licensed as midwives at Chirurgeon's Hall after they had passed three examinations, but later in the same century they were referred to the Doctor's Commons for their license and thus lost their official connection with the medical world. It is of interest, however, to note that Victoria was the first English queen to depart from the royal custom of employing women midwives. Her reason for so doing was a generous one; many women objected on religious and other grounds to the alleviation of labor pains by the use of chloroform, and the Queen decided to lend the weight of her example in favor of its use. As its administration required a fully qualified doctor, and there was none such among the women midwives of the day, Victoria departed from the time honored royal custom and employed a medical man.

By special decree of Frederick the Great, the University of Halle, in 1754, granted a medical degree to Frau Dorothea Erxleben—said to be the first in the history of any German university—and later Giessen granted degrees as doctor of obstetrics, in 1816, to Frau von Siebold, who officiated at the birth of Queen Victoria of England, and, in 1809, to Frau von Heidenreich, the daughter of Frau von Siebold. While women in medicine were wanting in France from the days of Héloise to the present era (1867), there were two women workers in anatomy there and many midwives such as Louise Bourgeois, Marguérite de la Marche, Madame La Chapelle, and

Madame Boivin, who wrote extensively and after publishing a work on *Hydatid Mole* was made an honorary M. D. by the University of Marburg.

The Countess of Cinchona, a medical woman, wife of the Viceroy of Peru, will always be remembered as the introducer in 1640 of quinine for the treatment of malaria. And it was a Swiss woman, Madame de Hilden, who first removed a piece of steel from the eye by the use of a magnet, and she also planned many other operations whose technic is followed today. She assisted and advised and finally replaced her husband in his surgical work.

Turning to the American colonies, we should hardly expect to find women practitioners of much fame in a community where there were no medical colleges, and even the best of men were of little account prior to the Revolutionary War. Doctor Martha Wollstein says: "In the American colonies the history of medical women began deplorably, for it is recorded that the first person to be executed in the colony of Massachusetts Bay was one Margaret Jones, a female physician accused of witchcraft." Mayhap, however, the name Jones was too much for the unfortunate woman, or else Massachusetts became more tolerant later, for we find a woman practitioner obtaining fees, which must have been enormous for those days, if we are to believe the account book of one Reverend Timothy White, of Nantucket, who under date of June 21, 1749, writes: "Pd. to Mary Barnard, Doctr., £5 1s 8d, and for Physick then had 2 shillings." In the famous blue laws of Connecticut occurs the following entry under date of March, 1638: "Jane Hawkins, the wife of Richard Hawkins, had liberty till the beginning of the third month called May, and the Magistrates (if shee did not depart before) to dispose of her; and in the mean time shee is not to meddle in surgery or phisick, drinks, plaisters, or oyles, nor to question matters of religion, except with the Elders for satisfaction." On the other side of the picture in Connecticut we learn that the town of Torrington, in Litchfield county, had as early as 1773 two women, Mrs. Jacob Johnson and Mrs. Huldah Beach, who were greatly honored on account of their remarkable skill as accoucheuses. Mrs. Johnson, or Granny Johnson as she was called, "rode on horseback, keeping a horse for the special purpose, and travelling night and day, far and near," and was as thoroughly known and trusted as was ever any physician in the town. The celebrated Anne Hutchinson began her career as a midwife, and in the town records of Rehoboth is mentioned the arrival, on July 3, 1663, of Dr. Sam Fuller and his mother, he to practise medicine, she as midwife, "to answer to the town's necessity, which was great." Thomson's *History of Vermont* sketches the career of Mrs. Thomas Whitemore in the town of Marlboro, in 1765, who is described as being "possessed of a vigorous constitution and frequently travelling through the woods on snow shoes from one part of the town to another by night and by day, to relieve the distressed." "This sturdy woman," says Dr. Mary Putnam Jacobi, "lived to be eighty-seven years of age, an ironical comment on the theory of necessary deficiency of endurance in the female sex."

During the colonial period the medical profession of the country remained disorganized and there was no effort made, for more than 150 years after the first settlement, toward improving the medical practice of the country or the education of physicians. Thatcher says: "No medical journal was published in America until toward the close of the eighteenth century. . . . The first anatomical dissection was made in New York in 1750." During the Revolution the medical conditions were shocking, but it served to bring the profession out of obscurity, encouraged and stimulated foreign travel for the purpose of study, and breathed into the American fraternity the first breath of medicine as a science. Dr. Mary Putnam Jacobi quotes from the *Remarks of a Boston Physician of 1820:* "It is one of the first and happiest fruits of improved medical education in America that females were excluded from practice." Verily again history repeats itself, even Boston history! Or can it be possible that there is something in the atmosphere of that Hub of the Universe which so distorts the masculine vision? Dr. James J. Walsh, of New York, has said: "Flinders Petrie, the great English Egyptologist, has suggested that there are seven great phases of culture in humanity in which men reached a climax of achievement and intellectual power and then decadence began. In each of these phases we are able to trace a significant development of feminine influence. . . . As women become interested in the intellectual life, they have been prone to withdraw more and more from the simple, natural, womanly duties which they must assume, or they will not be fulfilled. Only women can be mothers, and unless they are mothers the race does not go on. Whenever women have become much interested in the intellectual life, first, there has developed a sad disinclination to matrimony. Apparently, woman only needs to know man well not to think much of him. . . . Then the intellectual women who marry have ever smaller and smaller families." This reflection of Doctor Walsh's may serve as a partial excuse for the present day attitude of our "Boston brother," but it would hardly do for the Boston physician of 1820 when large families of children were still the rule throughout the country, the "bachelor maid" was as yet unheard of except under the less chivalric title of "old maid," and even the woman suffrage movement was in the germ. Incidentally Doctor Walsh's attention might be called—though the case may be an isolated one—to the family which Professor Laura Caterina Bassi bore to her medical husband, J. J. Veratti, in the eighteenth century (*vide supra*). "If this be treason!"——

Allow me a further quotation from Dr. Mary Putnam Jacobi: "A startlingly long step was taken at a stride, when, thirty years after the pæan of victory had been sounded over the complete suppression of female midwives, so that not even this corner of possible medicine might remain in possession of women—that then, half a dozen women, unknown to each other, and widely separated in this immense country, should appear almost simultaneously upon the scene and demand the opportunity to be educated as full physicians." Doctor Jacobi goes on to speak of these women. Harriet K. Hunt, of Boston, who, refused permission to attend lectures at Harvard in 1847, made a second application there in 1850, on which five out of the seven members of the faculty voted "that Miss Hunt be admitted to the lectures on the usual terms, provided that her admission be not deemed inconsistent with the Statutes," and a week later the president and Fellows of the university announced that the statutes of the medical school offered no obstacle to the admission of female students. At a general student meeting, however, resolutions were adopted remonstrating against the "amalgamation of sexes and races"—a few colored students had been admitted at the beginning of the session—and the faculty, fearing, perhaps, that the majority of the students might withdraw to Yale, bowed to the storm and advised the "female student" to withdraw her petition, which she did. Thus we see another chivalric instance—and, strangely, again it is from so close to Boston—and the odd idea is advanced "that whenever a woman should prove herself capable of intellectual achievement this latter would cease to constitute an honor for the men who had previously prized it. Hence the urgent necessity of excluding women from all opportunity of trying." The Blackwell sisters were led to the study of medicine practically from economic reasons which compelled them to do something to earn their daily bread, and as Dr. Emily Blackwell subsequently explained, "We realized the infinite narrowness and pettiness of the avenues open to women and the crowds of competitors who kept each other down in the struggle. We determined that we would endeavor to open a new door and tread a fresh path rather than push for a footing in one already filled to overflowing." It was in 1845 that the plan of studying medicine became a settled resolution with Elizabeth Blackwell, and she was thus the real originator of the idea and movement in America. Marie Zakzrewska, a young German woman and a favorite pupil of Doctor Schmidt, one of the State examiners of the Berlin School of Midwives, was the fourth woman of this group of the advance guard of women physicians in America, whither she came in 1853, and through the kindness of Elizabeth Blackwell learned English and secured admission to the medical school at Cleveland. After obtaining her degree she was associated for a time with the Blackwell sisters and then went to Boston, where she subsequently became identified with the second hospital in this country to be conducted by medical women, i. e., the New England Hospital founded in 1862. The fifth of this group of pioneers was Anne Preston, a Quaker lady of Philadelphia, who was identified with the movement to create a woman's medical college in Philadelphia, and the sixth annual announcement of the school mentions Doctor Preston as professor of physiology. Dr. Emmeline Cleveland, a graduate of this Philadelphia school, went to the Paris Maternité to fit herself to lecture upon obstetrics, thus repeating for the women, nearly a century later, the careers of Dr. James Lloyd, of Boston, and Doctor Shippen, of Philadelphia (in 1752 and 1762 respectively), who went to England to obtain knowledge from which to lecture on obstetrics and returned to organize the science for the men of the colonial medical profession. The sixth of this pioneer group, Sarah Adamson (the second woman in the United States to receive a medical diploma), married one year after her graduation a Doctor Dolley, of Rochester, N. Y., in which city she at once settled and practised successfully for thirty-eight years, from 1852 till 1890, after which she retired. Doctor Dolley, like the Blackwell sisters, died only within the last few years, much beloved and honored by the women who have followed in the path they blazed so ably and at such great personal cost.

It is not possible in an article such as this to give a history of all these splendid pioneer women and what they have accomplished. Many abler pens have written the histories of their lives, which to a great extent were paralleled a few years later in England. The story is perhaps most briefly told by Dr. Martha Wollstein, from whom I cite many of the following facts: "The history of women in medicine since 1849, when Dr. Elizabeth Blackwell graduated at Hobart College, Geneva, is a familiar tale that cannot be told too often. How she was refused permission to study at all colleges in Philadelphia and New York, until finally the faculty at Geneva put the matter before the student body, and they voted to extend their unanimous invitation to her to become a member of their class" (shades of chivalric Boston, what is this!) Dr. Emily Blackwell has ably told the story of how she graduated at Cleveland after having been debarred from taking her second term at the Rush Medical College, Chicago, how the New York Infirmary was established in 1854-1857 with a dispensary and twelve beds for poor lying-in women and how the Woman's College of New York Infirmary was opened in 1865. "Of its close in 1899, when Cornell opened its medical course to women, we can only speak with regret." The Woman's Medical College of Pennsylvania had been founded fifteen years earlier, and was the first college in the world for the medical education of women. The Woman's Hospital in Philadelphia was founded in 1861, and in 1895 the hospital and dispensary of the alumnæ of the Woman's Medical College of Pennsylvania was opened, thus making of the proverbially slow Philadelphia a city sufficiently alert and progressive to be able to lay claim to the unique distinction of being the only one able to boast of two hospitals founded and run by medical women. In Chicago, in 1865, the Women's Hospital was founded under the guidance of Dr. Mary Thompson, and the Women's College followed in 1869, becoming in 1891 an integral part of Northwestern University. The fifth hospital run by women physicians, the Hospital for Sick Children and Women, was opened in 1875 in San Francisco, and the sixth is Northwestern Hospital in Minneapolis. New York and Boston each boast of a homeopathic medical school founded in 1863 (by Dr. Clemence Lozier) and 1874 respectively. With the opening of the State universities to women, beginning with the University of California, in 1869, and followed by every western State university, the necessity for special medical colleges ceased in the west, but in the east, excepting only Johns Hopkins (1893), Cornell (1899), Pennsylvania (1915), and Columbia (1916), no university of the first grade admits women to its medical school. Johns Hopkins, Cornell, the universities of Rochester, of Buffalo, Iowa, Illinois, Michigan, Minnesota, McGill, Edinburgh, Glasgow, Sidney, Adelaide, Stockholm, Paris, and Rouen have all had, or at present have medical women in official teaching positions in their medical schools. New York University and Bellevue Medical College have for four years had two women as special lecturers to the undergraduates, which same women, this year (1916), held in addition salaried positions as lecturers to postgraduate students of the medical college.

Dr. Mary Putnam Jacobi was appointed clinical lecturer in children's diseases at the Post-Graduate Medical School in 1882, "the first time in this country that a lectureship in a masculine school was held by a woman." Dr. Sarah J. MacNutt was also a lecturer in diseases of children, and Dr. Grace Peckham Murray was professor of gynecology there. At the New York Polyclinic Hospital Dr. Rosalie Slaughter Morton has recently been made associate professor of gynecology with a staff of four medical women assistants. On the whole, however, there have been few opportunities for teaching open to the medical women outside of the special medical schools for women.

Mary Putnam—later Dr. Mary Putnam Jacobi—reopened to women the *Ecole de médecine* in Paris in 1867 and she and Miss Elizabeth Garrett—later Mrs. Garrett Anderson, M. D., dean of the London Medical School for Women—graduated there in 1871 and 1870 respectively. Miss Garrett was already registered as a licentiate of Apothecaries' Hall, London, since 1865, but at that time it seemed hopeless to obtain a medical degree from any of the British examining bodies, and so Miss Garrett had decided to study abroad. Elizabeth Blackwell had in the meantime been registered in London, in 1858, the first medical woman on the British register, and a group of plucky British women under the inspiration of Dr. Sophia Jex Blake were struggling to obtain a medical education in Scotland. Five women, Miss Sophia Jex-Blake, Mrs. Thome, Miss Pechey, Mrs. DeLacy Evans, and Miss Chaplin were trying to enter the medical class in Edinburgh University, and were joined by two more women, this group ultimately becoming known as the *Septem contra Edinem*.

In 1876 Dr. Sara H. Stevenson was admitted to the American Medical Association, the first woman to whom that national body of medical men opened their doors. Dr. Mary Putnam Jacobi had already, four years previously, gained recognition as a member of the New York County Medical Society, and in time she opened also the doors of other New York medical societies, such as the New York Academy of Medicine, New York Pathological Society, New York Neurological Society, etc., and, in 1874, she was a delegate to the New York State Medical Society. Dr. Garrett-Anderson was the first to obtain entrance to the British Medical Association and so on until general recognition and almost universal membership is accorded the women at the present time in every medical society or medical congress worthy of the name. A few special societies still hold to the narrow tendency of sex differentiation, but their influence is negative and their example generally looked upon with disfavor by the medical profession as a whole, which has recognized the ability of medical women.

(*To be concluded.*)

ANAPHYLACTIC FOOD REACTIONS IN SKIN DISEASES.*

With Special Reference to Eczema,

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Of late years the study of foods and their relation to the health of the general economy has become more and more absorbing. It has been recognized that while food is absolutely essential to the life of the human structure, yet we are brought to the realization that not all varieties of foods are essentially beneficial to the human body; in fact, some types of food may prove very harmful to certain types or groups.

Foodstuffs may be divided into: 1, Proteins and albuminoids; 2, carbohydrates; 3, fats. Of these three varieties the proteins are capable of doing the greatest damage to the economy in susceptible individuals. One of the varieties of pathological phenomena which foods are capable of producing, finds expression in what is termed "food anaphylaxis," by which we mean a condition of unusual or exaggerated susceptibility of the organism to foreign proteins.

Probably the first recorded observation of hypersensibility was that of Jenner, when he wrote of an "efflorescence of palish color" about the parts where variolous matter had been injected into a woman who had had cowpox thirty-one years before. The first observation where the principles of anaphylaxis were used for diagnostic purposes, was that of Koch when he demonstrated the fact that tuberculous guineapigs are more susceptible to injections of tubercle bacilli than normal guineapigs, and that tuberculous guineapigs are markedly affected by tuberculin, while normal guineapigs are quite nonsusceptible. The early observations on anaphylaxis were made with serum injected into animals, and comparatively little attention has been paid to render animals anaphylactic by stomach feeding. Rosenau and Anderson succeeded in sensitizing guineapigs to horse serum injections by feeding horse meat and horse serum. Cow's milk, ox blood, and dried egg have been fed to guineapigs, and they have been rendered hypersensitive to these substances in from three to eight weeks.

From a study of experimental anaphylaxis the following deductions may be made:

1. There is a sensitizing substance of a proteid nature, which may be from serum, animal, or plant albumin, milk, egg albumin, and so on.
2. Injections may be made intravenously, intraperitoneally, subcutaneously, by cutaneous inoculation such as rubbing into abraded surfaces, and by mouth.
3. Before hypersusceptibility is detected, it is necessary for an incubation period to elapse between the first and second injection. This period varies from six to twelve days.
4. After hypersensibility is once established, it may persist for years, and can be transferred by heredity to posterity.

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*Read before the Annual Meeting of the American Society of Immunologists, at Washington, D. C., May, 1916.

5. Within limits, sensitization is specific, being relatively but not absolutely so.

6. The constitutional phenomena of anaphylaxis may come on almost immediately, or not for five to six hours or so, and consist of respiratory disturbance, dyspnea, edema, tonic muscular spasms, glandular swellings, joint effusions, albuminuria, and hyperemic and urticarial skin eruptions. In severe reactions, the animal becomes excited, moves about from place to place, coughs, has respiratory distress, loses control of bowel and bladder, has convulsions, becomes paralyzed, and dies in respiratory failure.

7. Immediately following anaphylactic shock and repeated injections of the antigen in small doses, there is a state of immunity to anaphylactic shock from further injections of the same antigen. This state is called antianaphylaxis, and is absolute, although only temporary, and in this way is distinguished from immunity.

In our studies of food anaphylaxis the following proteins were employed: Cow casein, egg, beef and mutton, pork, fish, oysters, clams, crabs, wheat, oatmeal, rice, barley, tomato, and strawberries. The method of preparing these materials has been published in another paper. In brief, our method consisted in extracting the protein by use of a weak alkali, and, after shaking and incubating the solution, it was filtered, absolute alcohol was added, and the solution evaporated in a water bath. A saturated solution of this dry material was made in an alkalinized sodium chloride solution. This preparation was tested for sterility and also for its nitrogen content by the Kjeldahl method.

We adopted the endermic method of injecting our proteins, because it was felt that it was the more sensitive method. As a result of some experiments, which were published in another paper, it was concluded to use 0.1 c. c. as a standard dose. In none of our cases were there any evidences of constitutional reaction of any nature whatsoever.

We adopted the following standards as to what constituted a positive reaction: 1. The lesions must persist for more than twenty-four hours after the injections. In our practice we have fixed the standard as forty-eight hours. This period of time, to our mind, is the most important factor in reading the reactions, as it is in this way we obviate errors due to traumatism of injection and also rule out fleeting reactions of any irritant. 2. Next in importance is the presence of a distinct papule. 3. Third is the presence of erythema. 4. Fourth is the presence of tenderness at the point of injection.

In none of our cases was there any manifestation of soreness of the arm or glandular enlargement of the associated lymphatic glands.

Another method of performing these anaphylactic food tests consists in removing the upper layers of the epidermis of the flexor surface of the forearm in eight places, in two parallel rows of four, by rotation of a dental burr. Some of the abrasions are used for testing various proteins, such as milk, egg albumin, oatmeal, etc., and some are used as controls. It is stated that very rarely does the traumatism produce reaction. Patients vary, but as a rule the height of the reaction is seen in about thirty minutes. A positive result is the appearance of a papule, never wheal or vesicle. Various degrees of positiveness are observed. This method of food anaphylaxis has been studied by Doctor White, of Boston. From a study of fifty-six patients of varied ages suffering from eczema, he derives the following conclusions:

a. Eczema in children is due, in a certain percentage of cases, to excessive fat or sugar in their diet, or to egg albumin or milk, or in a minority of instances to diminished thyroid secretion. Approximately twenty per cent. of individuals afflicted with eczema are not sensitive to the common foods.

b. Normal people do not react to these tests.

c. Food anaphylaxis may be a factor in urticaria, and also possibly in acne vulgaris.

d. In eczematous individuals tested, approximately thirty per cent. of the controls were positive when this method was employed.

In the course of our experiments we studied the following diseases: 1, Eczema; 2, urticaria; 3, acne; 4, psoriasis.

We studied forty-six patients with eczema, and a great majority of them were kept under observation for some weeks. Our plan has been, whenever possible, to withhold local treatment entirely to see what benefit, if any, diet exerted on the course of the eruption, as to both subjective and objective phenomena.

From a study of Table 1 it can be seen that twenty-three patients, or fifty per cent., were in a greater or lesser degree benefited by changed diet, as shown by the anaphylactic food tests. In twelve cases, or twenty-six per cent., the food tests were entirely negative, and in the remainder the correction of diet, as shown by the food tests, did not have any bearing on the disease.

A few of the cases are worthy of comment:

Case I. Private patient consulted me about eight months ago for a recurrent erythematous eczema of arms and hands of four years' duration. He was under the care of a number of dermatologists, who advised him to discontinue his work. This eczema would come on every summer. He was a cabinet maker and was compelled to use glue which had to be in liquid form and was constantly subjecting himself to great heat. The anaphylactic food tests showed tomato +2, shellfish +1. These foods were discontinued and a cure resulted in about three weeks, with no recurrence up to date. After he was advised to discontinue tomatoes he volunteered the information, that as soon as tomatoes were in season, he would live practically on this article of diet, and almost coincident with this his eczema would recur.

Case II. Private patient; notes communicated to writer by courtesy of Dr. Jay F. Schamberg. Mrs. H. M., aged forty-five years, had suffered for fifteen years from an urticarial eczema, characterized by sheets of closely aggregated small papules accompanied by violent itching. The eruption was extremely fugacious, lasting about a day or two, then disappearing and shortly reappearing. The patient likewise suffered from nervousness and tremendous gaseous distention of the abdomen, with distressing colicky pains. She had consulted clinicians in New York city and Philadelphia over a period of years. The food tests gave a +4 cow casein reaction, and clam +2. Milk and milk foods were entirely eliminated from the diet. Within a few days the patient returned and said that a miracle had been performed. The abdomen had been reduced about four inches in diameter and at no time in years had she been so comfortable. The eruption had about ninety per cent. disappeared. The full extent of this improvement was not maintained in the subsequent weeks of observation, but the patient was infinitely better than she had been for many years.

Case III. A young lady, twenty-two years of age, consulted us at the Polyclinic Hospital for a recurrent ve-

TABLE I.

	Diagnosis.	Duration.	Extent.	Age.	Results of Food. Anaph. Tests.	Treatment.	End Results.
1	Erythem. eczema	4 years	Arms and hands	24 years	Tomato $+^{2}$ Shell fish $+^{1}$	Diet corrected and petrolatum locally	Cured in three weeks and remained so up to date
2	Eczema rubrum	4 months	Face	6 months	Cow Casein $+^{2}$	Put on broth and plain paste locally	Marked improvement. Shortly after withdrawal of milk lost from observation
3	Vesicular eczema	3 years	General	22 years	Cow casein $+^{1}$ Wheat (bread) ± Tomato ±	Diet corrected; no local treatment.	Cleared up completely in ten days and has remained so
4	Vesicular squamous	7 years	General	9 years	Cow casein $+^{2}$	Diet corrected later; Lassor's paste applied locally	Itching disappeared completely in about four days and the skin showed marked improvement after one week; patient was discharged cured
5	Squamous eczema	7 weeks recurrent	Face, legs, and scrotum	25 years	Wheat $+^{1}$ Cow casein $+^{4}$ Mutton sugg. Shell fish	Diet corrected; no local treatment	Marked improvement after two weeks; patient reported later practically well
6	Vesicular eczema	5 years recurrent	Face and hands	16 years	Cow casein $+^{3}$	Diet corrected and simple ointment	Marked improvement on diet and simple ointment; later cured
7	Eczema seborr.	Unknown	Body	11 years	Cow casein $+^{2}$	Diet corrected; no local cal treatment	Cured in three weeks and discharged
8	Eczema erythem.	10 weeks	Body	42 years	Cow casein $+^{2}$ Mutton $+^{1}$ Fish $+^{1}$ Shell fish ±	Diet corrected; also local treatment	Improved rapidly on diet and local treatment and was cured after three weeks
9	Papulosquamous	2 years	Arms and legs	50 years	Cow casein $+^{2}$ Clam $+^{2}$ Pork $+^{1}$ Mutton ±	Diet and a mild lotion	Markedly improved
10	Eczema rubrum	3 weeks	Face		Negative to all tests	Kept on milk formula	Improved on local treatment and modified formula
11	Chronic urticarial eczema	9 years	General		Cow casein $+^{4}$ Clam $+^{2}$	Diet corrected	Very marked improvement in about ten days.
12	Squamous eczema	2 years	General	74 years	Cow casein $+^{1}$ Lobster ±	Diet corrected	Subjective symptoms disappeared at once; skin condition not much improved
13	Squamous eczema	2-3 years	Buttock and face	5 years	Cow casein $+^{2}$ Egg ±	Diet corrected	Itching ceased and rash markedly improved on diet alone
14	Vesicular eczema	3 months	Face, neck, and hands	43 years	Egg $+^{1}$ Cow casein $+^{2}$	Diet corrected and improvement was more rapid	Cured; diet, also local treatment
15	Dermatitis urticata	6 months	Both legs	39 years	Cow casein $+^{1}$ Tomato ±	Diet corrected	Improved on diet alone, but not cured; afterward local treatment added
16	Vesicular eczema	3 years recurrent	Both hands	36 years	Cow casein ± Egg ±	Diet corrected; patient abstained from meats for a long while	Slight improvement on diet alone
17	Eczema and onychia	Eczema 24 years; onychia 9 months	Eczema hands onychia of fingers and toes	55 years	Cow casein $+^{2}$ Mutton $+^{1}$ Beef $+^{1}$ Tomato $+^{1}$ Pork $+^{1}$	Diet corrected	Improvement on diet alone; was soon lost from observation
18	Vesicular eczema	9 months	Arms and hands	30 years	Cow casein $+^{1}$ Egg ± Oatmeal $+^{1}$	Diet corrected	Improved, but not cured on diet alone
19	Seborr. eczema	Several years	General	11 years	Cow casein +	Diet could not be carried out	Improving slightly on local treatment
20	Vesicular eczema	3-4 years recurrent	Hands	19 years	All tests negative		
21	Vesicular eczema		Hands	12 years	Cow casein $+^{1}$ Wheat ± Tomato ±	Diet corrected	No improvement at all on diet
22	Erythematosquamous eczema	16 years	General	31 years	All tests negative		
23	Erythematosquamous eczema	8 years recurrent in summer	Arms, body, and legs	36 years	Egg $+^{1}$ Cow casein $+^{2}$ Beef ± Pork $+^{1}$	Diet corrected	No influence on eruption
24	Squamous eczema	9 months	General	33 years	Tests negative		
25	Vesicular eczema	2 months	Hands and feet	22 years	Cow casein + Barley $+^{1}$ Tomato $+^{1}$ Wheat $+^{1}$ Mutton $+^{1}$	Diet corrected	Some improvement on diet; improved more rapidly on addition of local treatment
26	Vesicular eczema	5 years recurrent	Hands	27 years	Tomato $+^{1}$ Clam ±	Diet corrected	No improvement
27	Erythematosquamous eczema	8 weeks	Legs	35 years	Wheat $+^{1}$ Cow casein ±	Diet corrected	Lost from obesrvation
28	Papular eczema	3 years	Legs	28 years	Cow casein $+^{4}$ Fish $+^{2}$	Diet corrected	No improvement on diet
29	Seborr. eczema	6 weeks	Face and legs	31 years	Negative		
30	Seborr. dermatitis	4 weeks		22 years	Cow casein $+^{1}$ Beef $+^{1}$	Diet corrected	Lost from observation
31	Seborr. dermatitis	7 months	Face and ears		Egg $+^{2}$ Wheat $+^{2}$ Mutton ±	Diet corrected	Slight improvement on diet alone and improvement more marked on addition of local treatment
32	Eczema	3-4 years recurrent	Arms, hands	56 years	Cow casein $+^{3}$ Beef ±	Diet corrected	Some improvement on diet alone
33	Papular eczema	Some years	General	13 years	Negative		
34	Papulosquamous	3 months	Face and hands	60 years	Negative		
35	Seborr. dermatitis	8 years recurrent	General	52 years	Negative		Disease first originated from an attack of dermatitis venenata
36	Papular eczema	Unknown	Face and ears	19 months	Cow casein $+^{2}$ Egg $+^{1}$	Diet corrected	Improved markedly on corrected diet; relapsed when placed on prohibited articles of food
37	Squamous eczema	1 year	General	5 years			
38	Squamous eczema	22 years	General	64 years	Tomato $+^{2}$		Patient states that attack started while working in tomato patch
39	Squamous eczema	9 months	Legs and arms	65 years	Negative		
40	Erythematous eczema	3 weeks	General	34 years	Negative		
41	Papular eczema	6 months	Scalp and face	32 years	Negative		Cured by taking a vacation
42	Erythematosquamous	5 years	General	61 years	Negative		
43	Papular	3 months	General	47 years	Tomato ± Fish $+^{2}$		Lost from observation
44	Vesicular eczema	2 years recurrent	Hands	28 years	Mutton $+^{1}$ Cow casein $+^{2}$	Diet corrected	No improvement
45	Eczema	18 months	Legs	54 years	Beef ± Pork ± Cow casein $+^{3}$	Diet corrected	Lost from observation
46	Vesicular eczema	Several months	Hands	38 years	Negative		

sicular eczema of three years' duration. The eczema involved hands, arms, legs, and body in patches. Her food reaction showed cow casein +1, bread ±, tomato ±. After being placed on the corrected diet without local treatment, her skin cleared up in ten days and remained so for several months.

CASE IV. Patient, nine years of age, under our service in the Philadelphia Hospital. She was afflicted with a vesiculosquamous eczema of seven years' duration, involving her entire body. The tests showed cow casein +2; milk, butter, cheese, and all foodstuffs containing milk were withdrawn from the diet. Her subjective symptoms cleared up in four days and the skin began to improve. She did not get any local treatment except petrolatum. Later she was put on Lassar's paste in addition to her diet, and was discharged from the hospital cured.

TABLE II.

No.	Diagnosis	Duration.	Age.	Results of Anaphyl. Tests.	Results.
1	Urticaria	5 months	38 years	All negative	
2	Urticaria; no lesions; history	2 weeks	29 years	Cow casein + Fish +	No improvement on corrected diet.
3	Urticaria	4 months	38 years	Cow casein $+^1$ Oatmeal ± Egg ±	No improvement on corrected diet.
4	Urticaria	4 months; recurrent	30 years	Tests negative	
5	Urticaria; acute	3 days	33 years	Mutton $+^1$ Beef $+^1$ Egg $+^1$	Diet corrected; no recurrence since correction of diet.
6	Urticaria	5 weeks	22 years	Cow casein ± Fish ± Pork ± Oatmeal ±	Disappeared from observation.
7	Urticaria	4 days	15 years	Cow casein $+^3$ Fish ±	Itching stopped almost immediately after correction of diet.
8	Urticaria	5 years	31 years	Tomato $+^1$ Oatmeal ± Clam ±	Diet corrected, but no influence on the itching.
9	Urticaria	1½ year	38 years	Cow casein ± Mutton $+^1$	Slight influence on correction of diet.
10	Urticaria	4 days	19 years	Crab $+^1$	Attack due to eating crabs; attack quickly subsided.

CASE VIII. Private patient, referred by Doctor Falls, aged forty-two years, diagnosis, erythematous eczema of ten weeks' duration, involving the body. The food tests showed cow casein +2, mutton +1, fish +1, shellfish ±. Her diet was corrected and she received some local treatment and in about three weeks was well. When her diet was modified, she stated that her general health improved. She had more ambition to work, she was less nervous, and her shortness of breath was completely gone; in fact, she felt like a different woman. Without our consent she went back to her old diet, and in about three days she had a recurrence of her skin trouble, which disappeared promptly after taking a purge. She is still on the diet, and is feeling fine, without evidence of eczema.

CASE IX. Private patient, referred by Doctor McDevitt, aged fifty years, papulosquamous eczema of two years' duration, involving arms and legs. Food tests showed cow casein +2, clam +2, pork +1, mutton ±. His diet corrected, and a mild lotion given, he showed prompt improvement both as to subjective and objective symptoms. By mistake he ate pork and beans and the next day a new crop of papules developed, which subsided on taking a purge. This patient had been suffering four years with constipation, and his condition has shown great improvement since he was on this diet.

URTICARIA.

We studied ten patients with urticaria, with the following results:

McBride and Schorer, in their article, Erythematous and Urticarial Eruptions Resulting From Food Sensitization, conclude that food may give rise to urticarial eruptions because it is not of the proper quantity; or because it is not properly chosen and prepared, or that certain proteins, no matter how simple they may be, prove harmful to the human structure. In our series of ten cases, eight showed positive anaphylactic food reactions, while two were entirely negative. In this series three were acute, and the remaining seven were chronic. In the acute cases the removal of the offending article caused a rapid subsidence of the eruption, and these tests serve as a guide to ward off further attacks.

In chronic urticarial skin conditions, we do not feel very hopeful. We do not believe that the presence of a positive anaphylactic food reaction holds out much hope for a cure in our patients. It is admitted that our series is small, and it is possible that a larger experience may cause a change in our present views.

PSORIASIS.

We studied eleven patients suffering with psoriasis:

TABLE III.

No.	Age.	Diagnosis.	Results of Anaphylactic Tests.	Results of Treatment.
1	56	Psoriasis; recurrent 15 years	Pork $+^1$ Cow casein $+^4$	No improvement
2	40	Psoriasis, with superimposed eczema	Cow casein ±	Lost from observation
3	30?	Psoriasis of 12 years' duration	Cow casein $+^2$ Shell fish $+^1$	Diet corrected; patient thinks she has improved
4	50	Psoriasis	Negative	
5	..	Psoriasis	Negative	
6	45	Psoriasis	Negative	
7	17	Psoriasis	Negative	
8	40	Psoriasis	Negative	
9	63	Psoriasis	Negative	
10	16	Psoriasis	Negative	
11	17	Psoriasis	Cow casein $+^2$	

In this series, four gave positive reactions and seven were entirely negative. Only in one case was there some improvement in the eruption, following the installation of the corrected diet.

ACNE.

We studied thirteen patients suffering with acne vulgaris and three with acne rosacea. Out of this number there were five showing negative tests, while the remainder showed positive reactions. In none of our cases, although most of them were kept under prolonged observation, did any noticeable improvement follow the corrected diet.

CONCLUSIONS.

1. The anaphylactic food tests are of value in the etiological diagnosis and in the treatment of various diseases of the skin.

2. In our experience these reactions find their greatest value in eczema, where the development of a strong positive reaction holds out great hope for an improvement or cure in the skin condition, and in some instances an amelioration of the associated

gastrointestinal disorder by exclusion of the incriminated articles of food.

3. In chronic urticaria, acne vulgaris, and psoriasis the results of these tests are disappointing, inasmuch as the information secured from the cutaneous tests had not as a rule led to therapeutic success.

4. A very weak reaction obtained by the endermic injections, no matter what the food products may be, is not of convincing value, although it is advisable to correct the diet according to the findings. It is our practice where very weak reactions are obtained, to give diet a trial for a few weeks and if no improvement follows, the anaphylactic findings are disregarded.

TABLE IV.

No.	Age.	Diagnosis.	Duration.	Anaphylactic Food Tests.
1	17	Acne vulgaris	3 years	Cow casein ± Egg ±
2	23	Acne vulgaris	4 months	Cow casein $+^1$ Wheat ±
3	21	Acne vulgaris	Several months	Negative
4	27	Acne vulgaris	Several months	Cow casein $+^1$
5	30	Acne vulgaris with rosacea	4 years	Fish $+^1$ Mutton ± Cow casein $+^3$ Tomato ±
6	30	Acne vulgaris	9 years	Tomato $+^1$ Pork ± Cow casein $+^2$ Mutton ±
7	43	Acne rosacea	20 years	Shell fish $+^1$
8	15	Acne vulgaris	2 months	Cow casein ±
9	..	Acne vulgaris		Cow casein $+^1$ Tomato ±
10	..	Acne vulgaris		Cow casein $+^1$
11	19	Acne vulgaris	2 years	Negative
12	..	Acne vulgaris		Negative
13	..	Acne rosacea	Several years	Cow casein $+^1$ Clam $+^2$ Pork ± Fish ±
14	18	Acne vulgaris	2 years	Negative
15	16	Acne vulgaris	2 years	Cow casein $+^1$ Egg ± Wheat ±
16	14	Acne vulgaris	2 years	Negative

5. Given a case of chronic eczema, the anaphylactic food tests offer hopes for our patient so far as the possibility of rapid improvement or cure is concerned, and also with regard to conferring immunity against future attacks by the employment of prophylactic measures. It will not be necessary to starve our eczema patient unnecessarily and without rhyme or reason.

6. It is realized that a larger experience is needed fully to determine the value of this test.

We wish to express our thanks to those who have aided in this work and as always I desire to express my gratitude to my chief, Dr. Jay F. Schamberg, for allowing the use of the clinical material which has made this work possible.

4037 GIRARD AVENUE.

Cysts of the Urachus.—John W. Means (*Annals of Surgery*, July, 1916) in discussing the treatment of cysts of the urachus, contrasts extirpation with incision, evacuation of the contents, and subsequent drainage. In only eight of Weiser's cases was extirpation done. This may have been due both to the great size of the cysts and the obscurity of the diagnosis. In the large cysts, it is doubtful if complete removal could be successfully practised, especially if the contents have become infected. The smaller cysts, however, do certainly permit such procedure, and care in attacking such cases will simplify the treatment.

PREDISPOSING FACTORS IN INFANTILE PARALYSIS.

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It would almost seem as if the prevalence in this country of infantile paralysis were a well deserved punishment for a grave sin we have committed, and are persisting in despite frightful warnings. The sin consists in not having heeded and still neglecting the teachings of the great epidemiologist and hygienist, my teacher, Pettenkofer. He established the principle that for every infectious disease predisposing factors are a condition *sine qua non,* thus putting the primary cause, i. e., the specific microorganism, into a place of minor importance. And yet our chief concern has always been and still is centred about the primary cause, so much so that we neglect entirely the search for predisposing factors and anxiously avoid even mentioning them, as may be shown by all discussions of the present scourge that threatens to decimate our infantile population. I do not hesitate therefore to make public the following reflections upon the burning question in our land, hoping that some good may be derived from the publication.

What are the predisposing factors in poliomyelitis? Evidently they are numerous, otherwise the plague would not be almost ubiquitous. The majority will probably remain unknown for a long time to come, but it would help a great deal in the combat against the scourge if we could ascertain and eliminate even one. I believe I have found one factor which is easily removable and not of minor importance. My belief is based upon the observation that formerly we had only sporadic cases of poliomyelitis, while now we are visited by regular epidemics in intervals more or less extended, the first epidemic having made its appearance seven to eight years ago, or three to five years after our factor had begun to be extensively applied. Three to five years would just be the appropriate time for the predisposition to develop from the factor. The coincidence of the first epidemic with the completion of this development is so striking that we must, *nolens volens,* investigate the factor, even though its efficacy in relation to poliomyelitis cannot be demonstrated, and even though we were convinced that the factor is not only not contributory to the disease, but may even aid in preventing it.

The factor I have in mind is tonsillectomy. The campaign to exterminate the tonsils started ten or twelve years ago, has been carried on relentlessly ever since, and has succeeded in making the well meaning general practitioner and even the lay public dread a piece of tonsillar tissue left back between the palatal arches after operation, as much as the cobra's venom.

There are two ways in which predisposition to poliomyelitis may develop from tonsillectomy, one of considerable and another of utmost importance. The first is the trauma, psychical and physical, caused by the operation. Weeks, nay months ahead, the child knows of the impending extermination of its tonsils and hears from playmates and schoolmates how awfully they have suffered long before, during, and many, many days after the operation. These torture the child's mind incessantly from now on until the loss of consciousness in the narcosis, and all the sweet words of teachers, doctor, and parents have but the opposite effect, as I have shown in my treatise, *Psyche* (pp. 32, 141, 158), i. e., they aggravate the fear and anxiety for the simple reason that the child sees in them nothing but sugared lies. As one not unfamiliar with psychoses and their etiology (*loco citato*, pp. 93, 103, 113, 118, 153, 175), I consider this protracted fear a psychical trauma of the first order. Such a trauma will derange the vegetative functions of the nervous system no less than the psychical ones (*loco citato*, p. 1), and derangement of the vegetative functions of the nervous system is the most striking symptom of infantile paralysis.

The physical trauma attending tonsillectomy is just as great as, if not greater than the psychical one. There is, first, the protracted deep narcosis considered by the advocates of the operation to be a necessary requirement. The narcosis lasts seldom less than half an hour, very often almost double that time. There are, secondly, the mutilations of the palate, arches, and pharyngeal walls, which to a lesser extent, even the most experienced operator cannot always avoid. There is, thirdly, the prolonged healing period. I have recently examined a child three complete days after it had been operated on by an experienced pharyngologist, and found the whole pharynx up to the hard palate looking like one diphtheritic mass, and another child's pharynx, after the same time, looking like a battlefield in the present European war, though not white or gray. I told the operator the throats looked miserable and received the following answer accompanied by that well known sardonic smile: "Were the tonsils all out?" This was all that he was concerned about and is characteristic of the tonsillectomy fanatics, whose mental horizon seems to be no larger than the extent of the tonsil or of the tympanic membrane. In another case, still under my observation, I found the pharynx, four weeks after operation in a prominent hospital, covered with almost fresh sores, both ears filled with an abundant mucopurulent discharge, and fever. That such trauma should pass off without leaving the nervous system in a state of permanently weakened resistance toward all kinds of injurious influences, is hardly to be believed.

Such trauma, psychical as well as physical, never took place in the era of tonsillotomy. There was no prodromal fear, no protracted narcosis, the latter not being continued any further than the very first stage and often omitted entirely, no mutilation of the pharynx, and no prolonged healing period. The whole operation rarely lasted longer than a second or two for each tonsil and a few seconds for the adenoid vegetations and some parts of them that may have remained hanging in the throat, altogether about one minute. Frequently I applied the following method. A mother brought her girl to me from Boston to be examined whether the child had enlarged tonsils. I took the tonsillotome, told the child it was a tongue depressor, and hardly had the child opened her mouth when the pretended tongue depressor made a thrust at the tonsil, grabbed it quickly, and left the mouth with the greatest part of the tonsil hanging on its grasping prongs. The second tonsil was removed no less expeditiously by telling the child to open her mouth at once, as otherwise she would bleed to death. The mother is my sister, the child my niece, an exceptionally beautiful girl of twelve years; both are living hale and hearty in Medford, Mass. The same method I have applied with a niece of the late Doctor Schaie, and last but not least, with my own dear child, a girl of eight years and not less beautiful than her cousin. The prodromal fear is certainly excluded in this method.

The second way for the predisposition to develop from tonsillectomy, which I have stated to be of utmost importance, is the elimination from the system of a valuable protective substance the nature of which is yet unknown. This substance may either be directly contained in the tonsils or else produced from the blood or other organs by the mere presence in the body of the tonsils. The latter may act in the manner of ferments, so that even minute quantities of their tissue suffice to keep up the continued production of this valuable protective substance. The latter mode of their action is the more probable one. In this regard the tonsils may have the same relation to poliomyelitis as the thyroid gland has to acromegaly, cretinism, and myxedema, for which three diseases the diseased thyroid gland probably forms the common point of contact, as I have expressed it in my dissertation entitled, Ein Fall von Zwergwuchs mit Beziehungen zu Akromegalie, Cretinismus und Myxoedem.

To determine whether or not my views of tonsillectomy furnishing a predisposing factor of poliomyelitis are correct, the following three questions should be put, in an official blank, to every physician attending a case of infantile paralysis:

1. Has an operation been performed on the tonsils? How long ago?
2. Was the operation tonsillotomy or tonsillectomy?
3. Are there any mutilations of the pharyngeal walls, and what are their nature and extent?

I have suggested these questions to the health board and have received the assurance that they will be studied by a "corps of special physicians." I am sure it is composed of the best clinicians aided by only one unbiased and competent nasopharyngologist, who, on the one hand, has never participated in the campaign to exterminate the tonsils, and, on the other hand, does not consider a slight nasal catarrh or a small piece of adenoid tissue in the pharyngeal roof or of tonsillar tissue in the fauces as much a menace to the human race as 0.25 diopter of uncorrected astigmatism (see my article, Reflections on Ophthalmological Successes, NEW YORK MEDICAL JOURNAL, December 2, 1905).

After having gathered all the statistical data they will have to be carefully sifted. This is a very difficult task for which the best statisticians will be needed (see *Psyche*, p. 104). It would lead us to far to go into details in this respect. If after taking consideration of all possible errors five per cent. remained in which tonsillectomy is the only demonstrable predisposing factor, the correctness of my views is proved.

I would further suggest to make experiments with all kinds of extracts and other products of the tonsils in order to find their active principle and to treat afterward with it cases of poliomyelitis, including in the treatment all children of a family, even those not yet afflicted.

In countries affected much by poliomyelitis and little or not at all by tonsillectomy, it devolves upon the authorities, clinicians, and laboratory workers to search for other predisposing factors which may be even more potent than tonsillectomy.

It is possible that statistical as well as experimental data may prove my views on tonsillectomy to be entirely fallacious and even the operation to be beneficial, though no child who has had the ill luck to be tortured by one surgeon, two assistants, and one or two nurses at the same time will ever admit the benefit. Nevertheless not one iota would be detracted from the worth of this publication. For its gist does not consist in the criticism of tonsillectomy, which is perhaps unjustified, but exclusively in having called attention to the fact that in all infectious diseases, not only in poliomyelitis, our efforts are bent in a wrong direction. It would be a great saving of energy, less expensive in the end, and incomparably more productive of practical good results to search for predisposing factors rather than hunt after specific microorganisms.

Before concluding, I wish to quote a remark of an intimate friend of mine. I consider him to be one of our best tonsillectomists, for more than once I have seen him perform the operation in the least possible time, with the least possible hemorrhage, and with the least possible injury to the pharyngeal walls. When I told him that I had proposed to the commissioner of health to investigate three questions he not only almost guessed them, but even added: "I am well aware that some morning we may wake up and find that with our tonsillectomies we have done more harm than good. For we do not know yet the functions of the tonsils." The contrast between so broadminded a statement and the above quoted retort, "Were the tonsils all out?" is both striking and refreshing.

I will brave the storm of criticism that may break out over this article with the following quotation from Horace:

> Si fractus illabatur orbis,
> Impavidum ferient ruinæ.

51 West 126th Street.

EARLY PULMONARY TUBERCULOSIS.*

The Signs and Symptoms.

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The amount of time and attention devoted to the study of pulmonary tuberculosis in every land and in every clime, overwhelmingly attests the great and everlasting interest and importance of the disease. First and foremost in this widespread human affliction is its early recognition. Upon it depend effective measures of prevention and successful methods of treatment. The awakening of the profession to this fundamental point in tuberculosis has resulted in perfection of methods in diagnosis, reduced mortality, prolongation of life and usefulness, limiting, arresting, and curing the affection. This assertion is not a flight of the imagination, for who has not noticed the scarcity of patients in the third stage of the disease?

Few problems in medical diagnosis are less difficult of solution than incipient pulmonary tuberculosis, provided that we go about it in an orderly, methodical way, instead of a slipshod, rambling, and haphazard fashion. As in all lesions, signs and symptoms enter into the scheme of this lesion. Symptoms stand in relation to signs as smoke stands to fire. There is no smoke without fire, and there are no symptoms without signs.

In examining a patient for suspected tuberculosis of the lungs, it is well to apply ourselves to the pulse and heart first. There is not an organ in the body which responds to tuberculous infection of the lungs more quickly than the heart. In health the aortic second sound is louder than the pulmonic second sound. Conditions are immediately reversed in the event of tuberculous implantation. In the very incipiency of the disease, the second pulmonic becomes loud and accentuated. We may regard it as pathognomic, considering that it is always present. The only other conditions which give rise to this sign are mitral insufficiency and mitral stenosis. Excluding those, it is safe to assume that an apex is in trouble, and he who seeks shall find: this is a good motto in physical diagnosis. Next is the pulse. No matter how young the infection is, the pulse will be found accelerated, sometimes more and sometimes less, but, barring a case here and there, the rate is never normal. In some, the increased rate is more noticeable in the afternoon, in some, it is more marked in the evening; in some at rest and in some after slight exertion; at one time or another, the pulse phenomenon is characteristically constant. There is another feature about the pulse which points to early tuberculosis, and that is its total extinction when palpated while the arm is held in the upright position. In a few cases, instead of complete disappearance of the pulse, there is marked diminution, but only in a few cases. This phenomenon is observed in one arm only, and the indication is that the apex corresponding to that arm is the seat of the infiltration. This sign is present in incipient tuberculosis; an advanced lesion does not show it. It may also be added that this peculiarity of the pulse is found in eighty per cent. of cases.

Having learned this much about the lungs from the heart and pulse, the next step is inspection of the chest. The inspection of the chest anteriorly in early tuberculosis is more important than the inspection of the back. Normally the right apex expands more fully than the left apex. If the right apex expands as much as or less than the left apex, then suspicion should rest on the right apex. While this is not the most important sign of early tuberculosis, yet when it is present it is helpful. Retraction of the infraclavicular and supraclavicular spaces is not symptomatic of incipient tuberculosis. Retractions indicate advanced conditions. An interesting point about the retraction of those upper and lower spaces is that unilateral retraction points more strongly to tuberculous involvement than bilateral, for the reason that bilateral incipient tuberculosis is comparatively rare.

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*Read, by invitation, before the Williamsburgh Medical Society, February, 1916.

Sagging of the side of the chest corresponding to the site of the lesion is considered by Pottinger to be indicative of early tuberculosis. This may be correct, but its absence does not exclude the disease; besides, this condition is found to exist in perfectly healthy chests. Protruding ears; pinched face; glistening eyes; winged scapulæ; irregular pupils and a red line on the upper gum—these do not belong to early tuberculosis of the lungs. Some of them belong to the romance of tuberculosis, even in the advanced stages.

The next and third step in the examination is palpation of the chest. Again let me point out a normal difference between the two apices. As we stand behind the patient and place the finger tips over the apices, the patient is told to repeat one, two, three, or ninety-nine. The articulation will produce a vibration known as fremitus, which will be better perceived in the right apex than in the left. This normal difference points a lesson in diagnosis, namely, if the vocal fremitus in the left apex is as strong as it is in the right apex, assuming that the right apex is normal, it may reasonably be inferred that the left apex is slightly infiltrated. Unfortunately there is no standard of comparison for the right apex except experience.

The fourth step in the examination is percussion. Pages upon pages are written and published on methods, manner, and technic of percussion. Some say strike hard; some say hit gently; others advise to do a tapping, tapping, gently rapping, like the raven in Poe's poem. Amid multitude of advices there is no lack of confusion, but a happy medium is always the best, the safest, and the sanest, as in all things.

Just a few words about the art end of percussion; what I shall say may sound elementary, but the more elementary and the simpler the subject, the better it is understood. Employ two fingers for a hammer and one for a pleximeter; percuss from the wrist instead of the elbow; let the stroke be light, easy, and uniform. Use the left thumb as a pleximeter for the right apex and the left ring finger for the left apex. While the pleximeter is on the chest and in position, keep the other fingers of the same hand away from the chest, in order that they may not carry off some of the percussion sound that is intended for the ear. It is best to place the pleximeter on the intercostal spaces, although for careful percussion, the ribs, like the clavicles, should be percussed. The whole thorax should be percussed, from apex to lower border, before any part is auscultated. Wherever a change is noted, it should be marked with a lead pencil.

Of the four attributes of a percussion sound, the two most important are duration and pitch. The most important of the two is duration. Every one should mentally measure the duration of the sound from the time of its production to the time of its disappearance. Long duration means normal lung, short duration means slight infiltration, still shorter duration means more infiltration, and no duration signifies complete consolidation.

There is one cardinal principle in percussion of the chest, and because it is cardinal it is invariably honored in the breach. *Percuss corresponding areas,* not making a hit in the left apex, then a stroke at the third rib, and winding up the performance with a blow at the solar plexus, for a grand finish.

But even if we are complete masters of the fine art of percussion, we still have to learn an important lesson without which our art and skill will go for naught. This lesson refers to a knowledge of the physiological conditions of the lungs as pertaining to percussion sounds, in order properly and accurately to assess the value of tones and sounds under pathological circumstances.

This introduces a very interesting subject, and as I am not writing a textbook on physical diagnosis, and as my sole desire is to elucidate the subject under discussion, I shall take up for consideration sounds which are of essential value in early diagnosis of early tuberculosis. The important percussion notes are: Vesicular, dull, and flat. I wish to mention another percussion note which I have described[1] and many times demonstrated. The name of that note is *dull-flat.* The value of it will become apparent as the discussion develops.

To know the pathological we must be familiar with the physiological, therefore it is opportune to inquire at what areas of the chest are the notes mentioned normal? The answer is as follows: Vesicular resonance is normal in the left apex, below the left clavicle, below the second right interspace, in the axillary spaces, and over the lower lobes.

Dullness is normal in the right apex; in the second right interspace, especially the outer half of that space; intrascapular spaces; between the seventh cervical and fourth or fifth dorsal vertebræ; and over the deep area of the heart.

Flatness is normal over the scapulæ and the superficial area of the heart.

If there is any deviation from the physiological standard, we must suspect tuberculous trouble and investigate further. The normal difference in the percussion sound between the two apices should never be forgotten. Its lesson in incipient tuberculosis is obvious, namely, should the left apex be found to be as dull as the right apex is normally, the left apex may be adjudged guilty of early infection. Now in case the right apex becomes infiltrated, what change does its normal dullness undergo to indicate the trouble? Considering that tuberculous infiltration is of slow growth, barring acute conditions with which this paper is not concerned, we need not expect to find one day dullness and the next day flatness. The change therefore consists in a note which is duller than dull but not as flat as flat should be. The sound is between and betwixt, and for the sake of clearness and comprehension, I named it dull-flat. This name has an honored parallel in a respiratory murmur which was named by that great American physician, Austin Flint, "bronchovesicular," a murmur which is neither bronchial nor vesicular, but shares the qualities of both. Vesiculotympanitic resonance is also an Austin Flint idea, and one which may serve as a parallel and precedent.

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[1] See *Archives of Diagnosis,* July, 1910.

If this name is accepted, it follows that a dull-flat note obtained over the right apex indicates incipiency, and that the incipient stage wrought that change in the normal dullness. Another practical lesson that is taught by this dull-flat sound is, that whereas if that sound is present at the right apex it indicates incipiency, if the same sound is elicited from percussing the left apex, the indication is that the lesion in the left apex is further advanced, for that would mean a double change for the normal vesicular resonance of the left apex.

The dull-flat note is a pathological sound. It is found nowhere on the normal chest. If anybody should be in doubt as to whether he is dealing with a dull-flat note or ordinary physiological dulness, the patient is asked to take a deep breath and hold it. Under this influence, if the apex is normal, its expansion is normal and the increased air in it will change the sound from dull to vesicular; on the other hand, if the sound is that which I have dubbed dull-flat, no change will be perceptible. This is the test, the crucial test.

Stress is laid on the careful examination of the apices, because they are the victims four hundred and ninety-nine times out of five hundred. This is Osler's dictum. What is the value of percussion in the early diagnosis of pulmonary tuberculosis? Any physician who is skilled in the art of percussion can with reasonable certainty diagnose incipient tuberculosis of either apex by percussion alone.

The fifth step in the examination of the patient is by means of auscultation. This aid to physical diagnosis is practised successfully by many more physicians than is percussion. There is less of the personal equation about it and less confusion about methods. This is probably the key to its popularity and credited superiority to percussion.

Before commenting on the significance of auscultation in the diagnosis of early tuberculosis, mention may profitably be made of a few vital points. The three cardinal respiratory sounds are: Vesicular or pulmonary; bronchovesicular, and bronchial or tubular. It is well to study these breath sounds in their relation to healthy conditions of the lungs in order to comprehend their meaning in disease.

The vesicular murmur is found in the left apex and below the left clavicle down to the base of the heart; in the axillary regions; over the lower lobes; and below the right clavicle.

Bronchovesicular breathing is normally heard over the right apex; in the second intercostal spaces close to the sternum; and in the interscapular spaces. Practically, bronchovesicular breathing follows the lines of normal dullness.

The place for bronchial breathing in health is the trachea and larynx. The essential features of these types of breath sounds are: Vesicular breathing is characterized by a long and full inspiration and a short expiration, expressed numerically, as three to one. Bronchovesicular breathing is characterized by inspiration and expiration being of the same duration and higher pitch. Bronchial or tubular breathing is recognized by its long expiration and very high pitch. It may be added that the expiratory sound both in bronchovesicular and tubular breathing is of higher pitch than the inspiratory sound.

In early tuberculosis, the following changes take place in the breath sounds: Vesicular breathing becomes bronchovesicular; bronchovesicular breathing changes to the extent that the expiratory sound becomes longer than the inspiratory sound; tubular breathing has no room in the diagnosis of incipient pulmonary tuberculosis.

In the application of this knowledge, it is well to take up concrete examples, as follows: If the right apex is the seat of an early infiltration, the change that its normal bronchovesicular breathing undergoes is that the expiratory sound grows longer than the inspiratory sound. In case the left apex is the seat of an early tuberculous infection, its normal vesicular murmur changes into bronchovesicular. Incidentally it is to be noted and emphasized, that a prolonged expiratory sound in the right apex denotes incipiency, while a prolonged expiratory sound in the left apex indicates an advanced process. The reasons are obvious. These points are of very great value. Diminished breathing as a result of early tuberculosis, in my experience, is a rare physical phenomenon.

The spoken voice and the whispered sound are muffled and indistinct over areas of vesicular breathing and very distinct over areas of bronchovesicular breathing. Thus both are muffled and indistinct over the left apex, and clear and well defined over the right apex.

In early tuberculosis of the left apex, we need only to compare the voice and the whispered sound in that apex to the voice and the whispered sound of the normal right apex to be absolutely sure of the diagnosis. The increased whispered sound is pathognomonic. The changes in the voice and the whisper in the right apex, in early infection, are hard to measure, as they have no standard of comparison; experience and "acromion auscultation" will lead to a correct diagnosis.

As a guide to a diagnosis of early tuberculosis of the apices, I will draw the normal differences of the apices in parallel lines:

Right apex.	*Left apex.*
Tactile fremitus present.	Tactile fremitus absent.
Voice present and distinct.	Voice absent or indistinct.
Dullness on percussion.	Vesicular resonance.
Bronchovesicular breathing.	Vesicular breathing.
Whispered sound distinct.	Whispered sound indistinct.

The value of auscultation at the acromion processes as an aid to apical tuberculosis need not be reasserted. It is a method worth practising and adopting in the daily work of the examination of patients who are suspected of tuberculosis of the lungs. I have described the method in two papers (*Archives of Diagnosis,* April, 1913, and April, 1915).

Thus far the paper has dealt with *signs.* I shall now very briefly take up *symptoms.*

Years of experience with pthisical patients, compel me to the conclusion, first, that many patients with early pulmonary tuberculosis show no symptoms whatsoever; second, those who show symptoms are victims of systemic as well as tuberculous infection; third, that if symptoms are out of proportion to signs, the systemic infection is the predominating element in the patient's misery; fourth, some patients show symptoms resembling those of tuberculosis who eventually die of cirrhosis of the liver or cancer of the stomach that gave neither signs nor symptoms during life.

Persistent hoarseness is a symptom of early tuberculosis. It is present only in a few cases in the beginning of the disease. Cough is not a common symptom. Many patients with unmistakable signs show no cough at all. When cough is present, it is dry or attended with scanty mucous expectoration. Dry cough results from pleurisy, localized over the lung lesion, in which case it is a reflex cough; or the tubercles alone acting as irritant foreign bodies, produce the cough; or tubercles are present in the mucous membrane, causing a mild degree of inflammation attended by mucous secretion and cough, or there is an ordinary bronchitis, local or general, which is responsible for the cough. In the incipient stage, the cough is bothersome mostly at night, interrupting sleep, or it troubles the patient in the morning. Cough of that character should always be looked upon with suspicion and prompt a careful physical examination of the chest. As the nasopharyngeal tract and heart are frequently responsible for persistent and annoying cough, these factors should be removed from consideration before blaming the lungs.

Dyspnea is hardly ever present in early tuberculosis, but when an otherwise healthy person complains of getting out of breath at the slightest exertion, it is well to think of possible incipient infiltration.

Slight hemoptysis is a common but not constant symptom in the incipient condition. Raising of blood in the very early stage of tuberculosis results from congestion or very slight erosion of the mucous membrane of the bronchi. Inasmuch as hemoptysis may be the very first indication of tuberculosis, which brings the patient to the doctor, it is well to remember that raising of blood may result from other conditions, for example excessive bodily exertion; excessive mental excitement; spongy gums; hypertrophied tonsils; chronic pharyngitis; acute or chronic laryngitis; mitral disease; vicarious menstruation; anemia; chronic bronchitis; angioneurotic edema; arteriosclerosis; small aneurysms; or, as the late Doctor Delafield used to say, "hemorrhages may occur in patients who seem to have nothing the matter with them."

Fever is not a frequent symptom in incipient tuberculosis. When fever appears steadily and with a tendency to rise, the disease is no longer incipient. If fever is present a part of the day and is constant in coming, and if signs do not warrant a diagnosis of first stage tuberculosis, the fever may be explained by the assumption of the presence of a severe systemic infection added to the tuberculous toxin. The proper appraisal of fever in early tuberculosis can be made only when all other conditions which give rise to fever have been intelligently and painstakingly excluded.

While on the subject of fever and rise of temperature in early tuberculosis of the lungs, I shall take the liberty to repeat the value of surface or local temperature. I cull a brief abstract from my own paper on the subject which was printed in the New York Medical Journal for January 8, 1910. "Away back in the sixties, Peter made a careful study of local temperatures in phthisis and other diseases. He found 'that the temperature of the affected side was always from three tenths to one degree centigrade higher than on the other.' (Supplement to von Ziemsen's *Cyclopædia of Medicine.*) Availing myself of this observation, I applied it to the study of incipient pulmonary tuberculosis. Peter apparently employed his method in well established cases. Most of my tests have been made in apical infections, and were made after the diagnosis of incipient tuberculosis was established by physical examination. The difference in temperature between the diseased apex and the healthy one was obtained regardless of the time of the day, although it was most marked between the hours of four and six p. m. The smallest difference that was ever registered was 0.6 and the highest two degrees Fahrenheit."

Increased experience confirms my first results with this sign in early tuberculosis. Success can be expected in eighty per cent. of cases. This local temperature in incipient tuberculosis is perhaps best explained by the fact that the affected lung is in a state of congestion or hyperemia; an increase of blood in a circumscribed area raises the temperature of that area. This must be the right explanation, because in advanced or ulcerative stages, surface fever is but rarely present.

Loss of flesh and strength in the incipient stage is, in my experience, uncommon. Patients in that stage may have a capricious appetite, a feeling of fatigue, but no distinct or appreciable loss in weight. When the weight of the patient is beginning to suffer, then either the infection has passed the threshold of incipiency, or the incipient stage is aggravated by systemic infection, or the patient was unduly frightened about the disease by an indiscreet doctor or somebody else; perhaps the ubiquitous social worker or the policing nurse of the health department.

Rales, moist, dry, or musical, are highly suggestive if not absolutely pathognomonic of early tuberculosis in an apex. They are of little or no value around the borders of the lower lobes. This statement is especially true with reference to moist rales. Almost everybody has mucous rales in and around the borders of the lower lobes: this is probably due to the neglect of deep breathing. After examining literally hundreds of patients affected with incipient pulmonary tuberculosis, I have come to the conclusion that a great majority of early cases have, at one time or another, or at one examination or another, some kind of rales. In most instances it is a matter of perseverance on the part of the examiner. There are rales, however, which may with perfect propriety be called dormant. Their delicacy and fragility prevent them from being heard with the ordinary method of auscultation. To bring them to life we may employ one of three methods, or all three: 1, Auscultate the apex while the patient coughs and breathes; 2, the patient is given five grains of potassium iodide three times a day for two or three days; 3, place the stethoscope over the acromial end of the clavicle. This procedure will elicit rales when nothing else will. (See *Archives of Diagnosis,* April, 1913, and April, 1915.)

The question as to which rales are oftenest heard over an incipiently infected apex must be left to the specialist on statistics. The clinical fact is sufficiently conclusive, that rales of any description, moist, dry, or musical, wakeful or dormant, as it were, spell tuberculosis in the great majority of instances. The insignificant exception is found in time of grippe, when an individual affected with that annoying disease involving the upper air passages, may show a few stray moist rales at the very tip of one or both apices. These rales may remain for some time, much to the confusion of the examining physician. When we observe the total absence of other physical signs, however, the grippe rales become only of academic interest. I noticed that grippe rales quickly disappeared by changing climate even if the change lasts no longer than a few days; while rales indicative of tuberculosis remain and are slow to disappear under the best climate and long stay. An elusive moist rale is heard once in a while over an apex in patients who have serious obstruction in the nasopharyngeal passages, but it permanently disappears after the trouble in those air passages is removed.

What is the requisite number of signs to justify a diagnosis of early tuberculosis? The answer depends entirely on the physician and his skill and experience. One skilled in percussion, for example, may detect a change in an apical resonance sufficient to justify a diagnosis of incipiency. Or, one possessing a correct knowledge of the acoustics of the apices or other parts of the lungs, but particularly of the apices, may safely draw inferences regarding diagnosis from one sign only. The majority of observers must elicit at least *two* signs for a justifiable diagnosis. It makes little difference which two, the point is that for the nonexpert there is safety in numbers. Sometimes the presence of a sign and a symptom will and does furnish the necessary data for a correct diagnosis of early tuberculosis.

A careful study of the foregoing statements and facts compel me to conclude that the diagnosis of early tuberculosis of the lungs is not beset with insurmountable difficulties; that it is but a question of correct knowledge of the physiological conditions of the lungs, first and foremost, and an enlightened interpretation of the pathological findings at the time of the examination; signs to be considered supreme, symptoms as handmaids to signs. Finally, if it is not heresy, and as an added assertion to all that has gone before, the microscope and the x ray are more ornamental than useful in this stage of tuberculosis, and frequently delay treatment by their negative results.

257 WEST EIGHTY-EIGHTH STREET.

Limited Value of Bromides in the Treatment of Epilepsy.—William T. Shanahan (*Medical Review of Reviews*, July, 1916) tells how greatly the use of bromides has decreased at the Craig Colony for Epileptics, and points out that with this material reduction in the use of the drug there has not been an increase in the average number of seizures, but rather the contrary. His object in the paper is to try to impress the fact that the bromides in the treatment of epilepsy have a much more restricted application than is ordinarily considered to be the case.

URINARY TOXEMIA.*

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Urinary toxemia is a chronic autointoxication due to some disturbance of, or interference with renal function (1), ranging from a mild toxic condition to the more grave or uremic syndromes; the onset may be sudden and acute, or it may steal upon us insidiously.

The incidence depends largely upon the careful clinical research as well as definite determination of renal function; keeping in mind such relative factors as acute or chronic nephritis, the various albuminurias, scleroses, myocardial insufficiency, polycystic kidneys, obstruction in the lower genitourinary tract, cystitis, pyelitis, unilateral or bilateral hydronephrosis, pyonephrosis, pyelonephritis, the hypernephromata, renal tuberculosis, ureteral or kidney stone, and numerous allied conditions which call for differential diagnosis (2). The causes of urinary toxemia are practically reduced to one condition, viz., inability of the renal epithelium to perform its function. The acute forms occur first as an acute postoperative renal congestion, and second as an acute reflex renal congestion.

The chronic urinary toxemias may arise from chronic obstruction along the genitourinary tract, or chronic interstitial nephritis. The symptoms are summed up, whether of the acute or chronic type, as those coming under the symptomatology of uremia, varying in degree from slight febrile and gastrointestinal disturbances to the profound slumbers of uremic coma. Hartman (3) has isolated from the urine a light yellow oil possessing the empirical formula C_6H_8O and giving the reaction of a cyclic ketone. This oil which he calls "urinod" has the odor described as urinous and apparently is the source of the odor of urine. It exists in conjugated form in normal urine, and when isolated in the free state is intensely toxic. Hartman tested the effects of extremely minute doses on himself, and observed symptoms of intense nausea, occipital headache, loss of appetite, heaviness of the stomach after eating, drowsiness, and continual malaise; on other occasions he noted irritability, restlessness, insomnia, inability to concentrate the attention, chilliness, and a desire for frequent micturition. He suggests that since the odor is due to urinod, the presence of a urinous odor on the breath, skin, and in the blood of uremic patients, may be taken as evidence of urinod retention and, further, that since symptoms of urinod poisoning resemble in many respects certain of the nervous manifestations of uremia, it is possible that the retention of this material may account, in part at least, for these symptoms. Foster (4) has reported the isolation of a highly toxic crystalloid not found in normal blood, which upon injection excites many of the symptoms of uremia.

Disturbance of the gastrointestinal tract is often an early indication of renal insufficiency, e. g., obstinate constipation, slight nausea with occasional vomiting, and sometimes profuse diarrhea occurs.

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*Read before the Philadelphia Genitourinary Society, Branch of American Urological Association, January 24, 1916.

Headache, constant in type, is always suggestive of toxemic conditions of the renal organs. Abercrombie (5) has published an interesting report on acute renal disease occurring among the troops in France; he gives a series of ninety-five cases in which headache was the most constant symptom. The onset was sudden in some of the cases, and in others the symptoms were slight and became progressively worse in a few days; in addition to headache the majority of the patients suffered from vomiting and nocturnal paroxysms of dyspnea; the tongue was usually furred and dry; convulsions occurred in three patients. An interesting fact is that none of the patients succumbed. In only a few cases could Abercrombie regard these conditions as exacerbations of chronic nephritis. From the symptoms at the onset and the irregular incidence, the cause was at first thought to be an anomalous form of influenza, but although organisms resembling Bacillus influenzæ were found in the sputum of patients having bronchitis, they were not recovered from the urine; cultures of the urine and blood remained sterile. Upon reviewing these facts Abercrombie has concluded that the disease is an infection by a definite organism the nature of which has not as yet been determined. Before making a diagnosis or prognosis in any case, certain questions must be considered: 1. What pathological condition underlies the clinical picture? 2. Is the condition restricted to the kidney, or is any other system (cardiovascular) involved? 3. What is the functional capacity of the kidney; is it permanent or temporary and subject to change? 4. Is the condition amenable to treatment? Functional studies reveal only the excretory capacity of the kidney, and alone do not determine the diagnosis. It is possible that a series of ten or twelve different tests may add little or nothing to our knowledge of the condition, after careful clinical study; whereas after an equally careful clinical study, one test verified may change all our ideas concerning the diagnosis, prognosis, and treatmênt. Clinical or functional studies alone are inadequate from the standpoint of prognosis. A perfectly normal urine may be excreted by a congenitally deficient kidney. There are on record numerous instances of death following nephrectomy, owing to the presence of this unrecognized deficiency of the kidney which has been left to do all the work. A prognosis may be safely made concerning the ability of any kidney to carry on renal function alone, even when catheterization of the ureter is impossible, and when the urine has been collected through an infected bladder, provided a catheter can be inserted into the other ureter. Extremely low functional capacity in chronic nephritis means death as a rule, but in obstruction of the lower genitourinary tract with urinary retention and back pressure, the injury may be mostly functional, so that after appropriate treatment a fair or good capacity may be reestablished.

In passive renal congestion the phthalein output is usually reduced, and in cases of marked cardiac decompensation it may be a mere trace, but rapidly rises upon improvement of the circulation. In degenerative nephritis the output of phthalein is variable; several instances have been cited in which there were marked albuminuria, casts, and some disturbance of chloride elimination, but with normal phthalein excretion or even an output above normal. In acute glomerulonephritis the phthalein output may be only moderately reduced or its elimination may be zero.

In the uremic conditions the creatinin retention in the blood is most marked; the valuable results of this test are in relation to prognosis. Myers and Lough (11) report a series of thirty cases in which there was retained over five mgm. of creatinin to the 100 c. c. urine; the termination was invariably fatal within two months. The estimation of the creatinin in the blood in nephritis, as stated previously, is valuable not only in relation to prognosis, but to diagnosis as well. In renal involvement the creatinin rises above 2.5 mgm. to the 100 c. c. almost without exception. Creatinin value from 2.5 to three mgm. may be viewed with suspicion, from three to five mgm. as decidedly unfavorable, and over five mgm. as indicating early fatal termination. In cases where the nonprotein, nitrogen, and phthalein tests have been carried out simultaneously there has been a most excellent agreement between the two tests. The difference, however, is that the amount of phthalein excreted shows the renal function at the moment, while the nonprotein and urea nitrogen are rather a measure between the amount of waste nitrogen produced in metabolism and that eliminated by the kidney. In early stages the phthalein test probably yields more valuable information; but after a decided retention has occurred the nonprotein and urea nitrogen of the blood furnish a more accurate index of the changes in the patient's condition.

Tileston and Comfort (6) have reported a case of acute nephritis with zero phthalein, which ended in recovery. Freeman (7) also has reported the case of a child with only three per cent. elimination, with complete recovery. In the chronic glomerulonephritis in which there are albumin and casts, and the blood pressure is elevated, the renal function tests are normal; the phthalein test is no exception to this rule. As the case progresses, however, elimination gradually diminishes. In the series reported by Thayer and Snowden (8) the minimal point was reached anywhere from one day to a month before death. Monakow (9) has concluded that marked diminution in phthalein is an indication of severe loss of renal function; on the other hand, a normal phthalein excretion does not exclude renal disease. Changes upward and downward in the function test have prognostic value. In severe disorder, such as coma or convulsions, a normal phthalein output usually excludes true uremia, whereas a greatly reduced phthalein renders it extremely probable that the condition is of renal origin. Neubauer (10) has suggested the administration of creatinin as a function test, since it is the one normal urinary constituent which is entirely endogenous, and the rate of excretion of added creatinin may be readily followed.

Ambard (12) asserts that the relation between the concentration of urea in blood and that eliminated in urine furnishes a more reliable index of the functional condition of the kidneys than the content of urea in blood alone; these contentions have been supported by more recent experiments of Marshall and Davis (13) and McLean and Selling (14). A study of postoperative renal function has been made by Miller and Cabot (15); they found the phthalein output usually diminished, especially after laparotomy and operations for cancer. Generally speaking, the diminution is proportionate to the amount of ether used and the length of operation. Shock decreases the elimination of phthalein, while postoperative albuminuria is not in proportion to the phthalein reduction.

Postoperative renal infection is more frequent than was formerly believed (16), owing first to the fact that in many cases it is overlooked on account of the mild character of infection; second, vesical irritability occurring after operation may be an important precursory sign of renal infection; third, a study of the urine will probably show the type of disease present. We should avoid nephrectomy if possible by a careful study of the pathological condition at time of operation.

The amount of permanent damage done by an attack of acute nephritis in childhood has been studied by Ernberg (17), who succeeded in locating and examining forty out of 106 adults who had had an acute nephritis before the age of fifteen years, mostly in connection with an acute infection, and found normal urine in all; further, he examined sixteen out of fifty adults whose acute nephritis had occurred between the ages of fifteen and thirty years, and found all normal except in four cases; two of these gave evidence of nephritis of recent origin, and the other two, whose original attacks had been subacute rather than acute, showed albuminuria. If these figures present a true picture, it is certain that we have been too pessimistic about the prognosis of nephritis in childhood. In conjunction with the foregoing citation I take the liberty of reporting a case seen in Professor Loux's service at Jefferson Hospital.

Case. A boy of twelve years was admitted for operation upon an undescended testicle; four years before, he had had a severe attack of measles, and two weeks before admission to the hospital had been treated by his family physician for grippe; temperature on admission was 100° F., which subsided to normal. Operation was regarded as urgent on account of severe pain in the undescended testis and canal, suggesting a possibly malignant condition. Oliguria was present, patient not voiding more than 450 c. c. in twenty-four hours. Owing to this decreased output and the presence of albumin and a few hyalogranular casts in the urine, it was decided to postpone operation. On the third day, the patient became more or less stuperous and suddenly manifested a clonic convulsion, first attacking the left arm; condition became progressively worse; convulsions increased in frequency and length of attacks. On the fifth day, the patient succumbed, death being due to respiratory failure; the cardiac impulse was discernible four minutes after respiration ceased. The autopsy showed an acute parenchymatous nephritis and a few calcareous plaques on the mitral valves. The histological diagnosis was acute degenerative nephritis, edema and fibrosis of mesenteric lymph nodes, and persistent thymus.

This case is interesting from the standpoint of the renal condition, whether the acute exacerbation of a chronic nephritis resulted from his infection four years previously, or from the recent attack of influenza.

TREATMENT.

In summarizing the treatment of urinary toxemia, success depends on one factor—elimination. The three avenues through which we hope to accomplish this end are the kidneys, bowel, and skin. An initial dose of calomel, five to ten grains, followed by a saline, will produce excellent purging; while calomel also acts as a diuretic, further elimination of toxins from the intestinal tract can be brought about by high colonic irrigations of salt solution. Hypodermoclysis and intravenous saline transfusion are indicated in certain cases. Diaphoresis is best accomplished by the dry hot pack, preceded by some cold acidulated drink and the application of an ice cap to the head. In robust patients pilocarpine can be administered hypodermically to enhance diaphoresis. Activity of the skin can be maintained by systematic alcohol rubbings; for the dry, furred tongue, nitroglycerin grain 1/100, every three hours, seems to be the best drug to restore moisture. This also mollifies the pulse tension; digitalis, owing to its irregular standardization and strength, as well as its unstable properties, cannot be relied upon, although where it is possible to obtain a fresh preparation of some of the alkaloids, it acts admirably as a cardiorenal stimulant. As a substitute for the above mentioned drug, sparteine (18, 19) seems to have taken its place, both as a heart stimulant and a diuretic. Strychnine still holds its place as a circulatory stimulant. The ingestion of distilled water is indicated also for the diuretic effect—I mention distilled water as it is free from chlorides. When hiccoughing occurs, the administration of sodium bicarbonate or Hoffman's anodyne seems to be of use in allaying this grave and annoying symptom. In some instances there is a condition of apathy, a hazy mental state, with slight muttering delirium; when these symptoms manifest themselves it is well to get the patient out of bed and into a wheel chair.

Gastric lavage for vomiting, or small pieces of ice allowed to dissolve on the tongue, seems to bring about relief. When drainage has been instituted, careful watching for obstruction is imperative. It sometimes becomes necessary to perform bilateral decapsulation of the kidneys in order to restore renal function.

CONCLUSIONS.

1. Prophylactic care before operation.
2. Careful clinical study corroborated by functional tests of the renal output.
3. Comparative studies of toxic retention in the blood as well as in the urine.
4. Careful selection of the anesthetic and expediency in operating.
5. Close attention to maintenance of drainage when indicated, and to the renal output, after operation.

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124 South Eighteenth Street.

TUBERCULOUS INFECTION AND TUBERCULOUS IMMUNITY,

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I quote verbatim from an article by Dr. S. Adolphus Knopf, in the *Medical Record* for January 8, 1916, and reviewed in the New York Medical Journal for January 15th:

> According to exact statistics as well as general impressions given by men of vast experience, the majority of cases of tuberculosis in the adult have their origin in an infection during infancy or childhood. . . . Nearly all authorities consulted unite in the opinion that in order to combat tuberculosis successfully in the young and the old alike, we must diminish the source of infection in childhood.

The first part of the foregoing statement we must admit to be correct. That being so, the second part deserves closer attention. The fact is that nearly every person living in a civilized community has been infected before reaching the twelfth year of life. It naturally follows that we are all more or less tuberculous. If we are, all of us, tuberculous how can we diminish "the sources of infection during childhood"?

At this present moment the war in Europe is diminishing the sources of infection, but those who are fortunate enough to live and tell the tale will continue to be sources. What do we gain by diminishing the sources of infection during childhood, when one source is sufficient for a whole community?

May I call attention to the case of Typhoid Mary, who has the unique distinction of having infected numberless persons with the typhoid bacillus, although she herself does not suffer from the disease. In tuberculosis there may be thousands of such carriers, but their identity remains unknown.

Does the doctor mean that it is better to be infected later in life? In order to find an answer we must refer to some authorities that the doctor has apparently overlooked:

"The wild tribes in various portions of the globe and on our own account the Indians remain free from tuberculosis as long as they live isolated and do not come in contact with so called civilization. But when they do become infected, their mortality from the disease is unusually high, because they have not had time to acquire immunity and the source of the disease is usually a much more rapid one than in civilized regions . . . we must strive therefore to strengthen our rising generation in physique and in general physiological make-up and thus increase the immunity acquired by a one time attack of the disease" (1).

"Those races or groups which have long lived under conditions favoring almost continual exposure to infection, have acquired a certain degree of immunity. . . . Recovery from these mild infections which are often repeated in early life, leads to the development in the individual of an effective relative immunity of the acquired type. . . . Medical care which permits the recovery of a certain proportion of infected individuals, increases the proportion of protected individuals" (2).

"It means that the adult individual must appreciate that he probably already has acquired his infection and that he must depend for his protection, not so much upon dodging the germs as in keeping himself in good physical health" (3).

"Individuals free from tuberculous infection are very susceptible to the pernicious effects of tubercle bacilli" (4).

"Too much stress has been laid upon the infection and too little attention directed toward preventing the production of a soil which would sustain the life of the bacilli after inoculation" (5).

"The future crusade against tuberculosis will probably be directed largely against the factors which reduce resistance" (6).

"The tables sustain the assumption that infection with tuberculosis occurs early in life, . . . also that an infection of this kind confers immunity to new infection later in life, or if infection occurs the course is essentially milder" (7).

"It is every day becoming more evident that by the time our children reach maturity they are all infected with tubercle bacilli, and that therefore the attempt to protect our people against tuberculosis should not so much be against preventing an infection already and inevitably acquired, as toward protecting them from the consequences of what has already occurred and can in no way be avoided. . . . In the present state of our knowledge it is useless to attempt to protect our children against this wholesale infection because we do not know when nor how nor why it is acquired" (8).

"All civilized races long removed from infection are particularly susceptible. Some of the white races have acquired a certain degree of immunity by inheritance and almost universal infection" (9).

"A cow which reacts to tuberculin in a stable with cattle known to be free from tuberculosis, often brings about an infection of the cattle, so that ultimately they all become reactors, although it cannot be proved that the cow which disseminated the bacilli had any physical signs of the disease" (10).

"Given a virgin soil and a race of bacilli already adapted to the species, an initial infection takes place with little hindrance from the nonspecific defensive powers. . . . The ultimate survival of those who acquire a relative immunity will tend to diminish the severity of the disease, but many generations will be required to accomplish this" (11)

"I have elsewhere shown that no intimate contact is necessary to transmit the disease among persons who have not met with tuberculosis before" (12).

"Evidence that a large percentage of persons acquire a limited tuberculosis infection in early life has been accumulated and the conviction has grown stronger that a certain limited immunity is conferred as a result of these early infections" (13).

"At the Nazareth Trade School in Farmingdale, L. I., we have a general average of 400 boys ranging in ages from six to sixteen years assembled under one roof. While there are a few who show what may be termed the 'pretuberculous diathesis' the percentage of those suffering from actual tuberculosis is less than one per cent., yet according to the tuberculin test ninety-five per cent. would be credited with having the disease" (14).

"Children recover apparently from their tuberculous infection as they do from measles or scarlet fever. There is, however, this difference. In the recovery from measles or scarlet fever the germs seem to have been destroyed in toto, while in tuberculosis the bacillus is apt to remain in the host latent, much as Spirochæta pallida" (15).

These quotations certainly throw some doubt, not only upon the possibility, but upon the advisability of attempting to "diminish the sources of infection in childhood." Since every person has been infected, he may, for all we know, be a carrier of the infection. One of the first things that we must learn to appreciate more and more is the fact that "tuberculosis" is not synonymous with "phthisis." A patient may have tuberculosis, but it does not necessarily follow that he is or ever will suffer from phthisis. Phthisis pulmonalis is a symptom complex and requires at least three permanent factors, all of them to be present at one and the same time.

First, the patient must be infected with the specific cause, the bacillus tuberculosis; second, the patient either never had an immunity because never infected, or else he has lost a previously acquired immunity; third, the patient must have either a localized anemia or a general lowered body resistance.

As we have seen from the foregoing citations, the infection with Bacillus tuberculosis is practically universal and usually confers a more or less lasting immunity.

Among wild tribes there is no immunity because they have never been infected with the specific germ. When they do become infected, phthisis occurs rapidly and usually with fatal results. Tuberculous infection is a result of civilization; all civilized nations are infected. They all have as a result acquired a reasonable degree of immunity. Civilized modes of living tend to destroy this acquired immunity. When this acquired immunity is lost the patient is apt to become like his uncivilized brother, rather hypersensitive, in a condition of anaphylaxis. This condition of anaphylaxis either creates or is preceded by a localized anemia, usually in the upper or unused portion of the lungs.

Having these three conditions, a local anemia in the lungs from nonuse, a nonimmune person or a state of anaphylaxis plus an infection with the specific cause and we have phthisis pulmonalis.

The treatment is as specific as the disease. It will take some time to rid the human mind of fads and fancies. When that time comes, phthisis pulmonalis will be treated on rational lines according to well established laws in harmony with physiology.

Phthisis pulmonalis is an easily preventable disease and certainly as easily cured as any other disease to which human flesh is heir.

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231 West Ninety-sixth Street.

EARLY SYPHILIS.

Its Clinical and Microscopic Diagnosis,

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Experience impresses us with the unruliness, the inconsistency, and the obstinacy of syphilis. The longer we observe these cases and the greater the intimacy with the victims, the more we appreciate the fact that a long course of intensive treatment is necessary. It is generally conceded that the prognosis is best when the treatment is given in the very early stage of the disease. It is therefore of infinite importance for the physician to make a diagnosis of beginning syphilis. This sketch is written to review the clinical appearances assumed by the chancre and to emphasize the value of a microscopic examination of material from the initial lesion for the microorganism of syphilis.

The typical chancre usually appears within three weeks of inoculation, but may occur as early as ten days after exposure. The patient usually experiences a slight localized itching and notices an erythematous spot, which gradually develops into a persistent, superficial, dark red papule. After a few days the surface epithelium desquamates and a round, superficial, dark red, sharply circumscribed, glistening erosion forms, which exudes a scanty discharge. Occasionally a beginning induration may be felt on the periphery. This is the picture usually present when first observed by the physician. It is typical. No other lesion on the penis resembles it and a positive diagnosis is confirmed by finding the spirochetes. The Wassermann reaction is almost always negative at this time.

After four or five days, the erosion tends to extend peripherally and penetrate the deeper tissues, forming a sharply circumscribed, well defined ulcer, which feels hard, firm, or cartilaginous. The induration feels as if it were about and underneath the lesion and set into the skin. When not secondarily infected, it looks clean, has sloping edges, a regular, shining, dark red floor, and exudes a profuse serous discharge containing the spirochetes. The skin around the ulcer looks blue and congested and not an angry red. The lymph nodes in both inguinal regions are uniformly enlarged, painless, indurated, freely movable, do not suppurate, and the skin over them is not inflamed.

The great majority of genital chancres occur on the glans penis, the prepuce, and the skin of the penis; the others are found scattered on the scrotal skin, the meatal mucosa, and within the urethra. In the female they may be found in the vulva, the vagina, and the cervical canal. Extragenital chancres may develop on any part of the body where the continuity of the skin is broken or on a mucous membrane.

Initial lesions vary in clinical appearance. The secretion may be profuse, scanty, absent, or dried to form a crust, and the induration may be marked, slight, or absent. The lesion, although usually single, may be multiple. It may be infected by an ordinary pus organism or by the bacillus of Ducrey, the causative agent of chancroid, and become echthymatous or a mixed chancre with suppuration of the lymph nodes. A superimposed luetic infection may cause a chancroid gradually to become indurated. In the aged, and people with chronic diseases, a gangrenous ulcer may be present.

Instead of an ulcer a round, dark red, dry, smooth, or slightly scaly papule occasionally occurs. The so called silvery spot is generally situated upon the glans and looks like the small spot left after the application of a caustic stick. Later it becomes ulcerated.

The indurations assume different forms and shapes, and are classified accordingly: 1. Laminated, in which the hardening round the chancre is thin and feels as if a disk of paper was in the superficial layers of the skin. 2. Parchment induration. The lesion feels as if it was placed on a piece of parchment. 3. Nodular is the most characteristic and feels like a cartilaginous nodule. 4. The annular induration forms a dense ring around the sore.

In detecting induration a piece of rubber tissue is placed over the lesion, which is then pinched up between the thumb and index finger. The rubber tissue should be destroyed by heat and all precautions observed to avoid infection. Induration is much more marked on the glans and prepuce than anywhere else on the genitalia or the general integument of the body.

Osler and Churchman classify chancres according to the extent and form of ulceration (simple fissures, small ulcers, giant ulcers), the depth of ulceration (erosive, ulcerative, and boring ulcers), the character of the surface (papular, squamous, diphtheroid, pustular, and papillomatous chancres), and the character of the base (foliaceous, parchment, hypertrophic, elevated, and elephantine chancres).

Genital chancres may be cõnfounded with chancroid, herpes progenitalis, folliculitis,, and impetigo. A chancre occurring at the meatus may resemble a gonorrheal ulceration or when within the urethra simulate a Neisserian infection. A diagnosis of balanoposthitis is often made when the sore occurs beneath the foreskin, producing a phimosis which conceals it. In the female the chancre may cause a diffuse inflammation of the vaginal canal, which may resemble an ordinary vaginitis.

Extragenital chancres are acquired innocently or as a result of perversion. The site of the lesion often misleads the physician and syphilis may not be thought of when one of these presents itself. The general characteristics resemble those of the genital chancres, but the lesions may be confounded with epithelioma when occurring on the finger, with herpes, impetigo, or a chronic fissure of the lip and epithelioma or diphtheria of the tonsil or the pharynx. Chancres of the anus resemble chronic indurated fissures or ulcers, but when situated within the anus may not be discovered until the appearance of symptoms of the secondary stage. When a chancre occurs on the general cutaneous surface, a diagnosis of echthyma or tuberculosis may be made.

A typical chancre occurring on the genitals makes the diagnosis comparatively easy, but an atypical genital or an extragenital lesion may offer great difficulty in diagnosis. A conclusion is often impossible unless Spirochæta pallida is found. The spirochæta is always present in the chancre. It remains localized for ten hours after inoculation, when it invades the lymph vessels. The vascular system is not invaded until three weeks later. If the microorganisms are revealed in this period, intensive treatment must be instituted in order to prevent the disease from becoming general.

Spirochæta pallida or Treponema pallidum is present, not only in the chancre, but in the lymph nodes during the primary stage. It is also found occasionally in the later cutaneous lesions. It is a straight or slightly curved organism with pointed extremities. It is about seven micra long and at the most one half of a micron broad. It has from five to twenty convolutions, the average being ten. These form acute angles. In fresh specimens the organism is distinctly active and moves usually by rotating about its long axis. It may also move forward and backward with a gliding motion, or by flexion and extension of its body. Sometimes a snapping whiplike action is observed.

There are several microorganisms related to Spirochæta pallida, which when found in specimens from a suspected lesion, may cause confusion. Spirochæta refringens is larger, has a coarser contour, fewer and wavy convolutions, is more refractile, and stains more easily and deeply. Spirochæta buccalis is found only in the mouth, even in health, is thicker, has irregular convolutions, and shows snakelike or flagellating movements. Spirochæta microdentium is found in tooth deposits in children, is finer, has more regular convolutions, and is less active. Spirochæta pertenuis, which causes frambœsia tropica or yaws, is longer, measuring from seven to twenty micra, has more numerous convolutions, and its extremities are more tapering. The spirillum of Vincent's angina is found, together with Bacillus fusiformis, and shows a variable number of convolutions which are less steep and more irregular than are those of Spirochæta pallida. This spirochæta and Bacillus fusiformis are probably identical.

In examining for Spirochæta pallida in a lesion there are several methods of procedure. These are by means of dark ground illumination, India ink, and various stains. The best of these is the first. This and the India ink method depend upon the fact that light colored and unstained objects are rendered more easily visible when observed against a dark background.

In the dark ground illumination the spirochete is not only rendered visible, but is illuminated and viewed in its active motile state. This is accomplished by using a special reflecting condenser, which directs the light rays coming from a radiant of great intensity to the spirochete, which is thus intensely illuminated. At the same time the rays are prevented from entering the objective. Thus a dark background is formed.

If the suspected lesion is crusted or dried it is always advisable first to apply a sterile normal saline solution to soften and remove both the crust and Spirochæta refringens, and to increase the flow of serum. When an antiseptic has already been applied, serum may be obtained and immediately examined, but it is always preferable first to use a saline dressing for twelve hours, to insure a specimen with live active spirochetes. Precautions should be taken during the manipulations to produce as little trauma as possible in order to prevent a flow of blood, the presence of which obscures the field and conceals the organisms.

A drop of sterile normal salt solution is first placed on a slide, with which a loopful of the suspected serum is then thoroughly mixed, and the whole is surmounted with a cover glass. The margins of the cover glass should be coated with petrolatum to prevent evaporation, drying, escape of the mixture, and a possible inoculation of the examiner. Scrupulous care should be taken that the apparatus is clean. New cover glasses and slides should be used for each examination. The slightest speck of dust or the smallest scratch will scatter light of diffraction and produce a general haze over the field.

The specimen is now ready for examination. A drop of immersion oil should be placed on the under side of the slide, before adjusting it upon the microscope. The condenser should be raised until it is in contact with the immersion oil. It is best to place the oil on the slide rather than on the condenser because it eliminates the danger of bubble formation which may occur when the oil is dropped on the condenser. The light is now turned on, and the lamp inclined so that its rays are directed fully upon the plane side of the mirror of the microscope. The high power ocular is brought close to the slide and focused with the fine adjuster, and the mirror is moved into that position in which it reflects the best light.

The danger of infection should always be remembered. Immediately after use the platinum loop should be sterilized in a Bunsen flame, the saline solution should be set aside and used for no purpose except similar examinations; the specimen, after being examined, should be destroyed by heat, and the cover glass and slide should not be used again. The lesion should be dressed with a mild antiseptic, and all substances which were in contact with it burned. The microscope should be cleansed with alcohol and xylol.

It will be found convenient if the lamp is placed in a fixed position on a board base and the microscope always put on the same spot. This will save time in future examinations.

Although the dark ground illumination, as already stated, is the best method at our command, it is not always the method of choice because it requires special and costly apparatus. This is not the case when the India ink is employed. The latter method depends upon the fact that foreign substances present in the thin film of ink appear as clear spaces on a dark brown background, and it is therefore important that all such extraneous matter be removed from the ink before it is used. This is accomplished by destroying all the bacteria by sterilization of the ink with heat and throwing down all other particles by centrifugation. It is then kept in a sterile test tube in the ice box and only the upper portion is used. The best ink for this purpose is the Günther-Wagner manufactured by Grübler.

The lesion is sponged with sterile saline solution, the crust, if one is present, is softened and then gently elevated with sterile forceps. A loopful of the serum is obtained and thoroughly mixed with a drop of the India ink which has previously been placed near one end of the glass slide. The mixture is spread in a thin film by drawing the edge of a second slide over the specimen slide in a manner similar to that employed in making a blood smear. The smear is allowed to dry in the air and must not be heated. It is then examined with the oil immersion lens, and if the spirochete is present it will be found as a clear spiral space against the dark brown background. It is not necessary to use a cover glass.

Beside the dark ground illumination and the India ink methods of examination for the spirochete, there are special stains such as the Giemsa, the Coldhorn, and that originally described by Schaudinn and Hoffman, but the results are not by any means so satisfactory as those obtained by the two methods described.

In conclusion, it is emphasized that a good prognosis may be offered the syphilitic if a diagnosis is made in the early stage. The diagnosis of a chancre should be made by the clinical picture and corroborated by the microscope. All lesions on or in the neighborhood of the genitalia and all suspicious extragenital lesions should be examined for Spirochæta pallida. The examination of material for the microorganism, although simple, will at first tax one's patience. The technic is readily acquired. No time should be lost in waiting for the development of a positive Wassermann complement fixation test or induration of the lesion.

2 WEST 120TH STREET.

SIX MONTHS' WORK IN ANESTHESIA.*

Second Surgical Division, New York Hospital, 1915, with a Report of Endotracheal Cases to Date.

By ALMA VEDIN, M. D.,

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The cases comprise general and gynecological surgery, as well as a small percentage of tonsils and adenoids. The routine method employed has been ether by the drop method, preceded by nitrous oxide in adults and ethyl chloride for young children. In head and neck cases, endotracheal or pharyngeal insufflation has been used, and in minor cases nitrous oxide and oxygen, or ethyl chloride. The ethyl chloride has been dropped or sprayed on the gauze covered mask, and in some cases its use has been continued as long as half an hour, always with good results. The patients have had a beautiful pink color and no mucus, and the action is very rapid, as well as the awakening. Chloroform has seldom been employed on account of the danger; a few drops have been added occasionally to deepen ether anesthesia.

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*Read before the Women's Medical Association of New York City.

Our patients as a rule suffer little from the anesthetic, many having no conscious vomiting nor nausea, and very seldom excitement or cough during induction. No preliminary medication is given. They are kept in recovery rooms adjoining the operating room until conscious.

The anesthetics are administered by the official anesthetist, the junior staff doctor, substitutes, and students, under supervision. It has been our aim to induce anesthesia as pleasantly and quickly as possible, and to keep the patient as lightly under as the operative procedure will allow, thereby reducing hemorrhage and shock; for there is no doubt that there is more oozing when the patient is completely relaxed and hence more tendency to shock.

In 656 cases where careful records have been kept there was no conscious vomiting in 334 cases, or 50.91 per cent., and 210, or 32.01 per cent, had slight vomiting, whereas 112, or 17.07 per cent had considerable long continued or late vomiting. Seventy-seven suffered from headache and 269 from varying degrees of thirst. Forty-five complained of cough, but very few to the extent that treatment had to be instituted. Thirteen of these were coughing before the operation. These data have been obtained by closely questioning the patients, and they have seldom complained of the anesthetic.

It is generally thought that without a preliminary hypodermic injection of morphine and atropine, the patient will suffer much with mucus, but we have not found this to be the case. It is only in the exceptional cases that we have been troubled with excessive mucus, and these have not been among the cases that have later developed pneumonia. The pneumonias have been studied by Dr. Frederic Bancroft and described at length by him in discussing Doctor Whipple's paper on Postoperative Pneumonias.[1] His discussion is given below.

Ether seems to us the safest anesthetic, and its administration by the open drop method the safest and most practical method for the general hospital clinic. If attention is paid to keeping an unobstructed airway, there is no respiratory strain nor asphyxia, and the patient awakens promptly, in good condition.

Postoperative pneumonias. During the year 1915 there have been fifteen cases of pneumonia in 1,413 operations, or 1.06 per cent. Of these fifteen cases seven ended fatally; a mortality from pneumonia of 46.6 per cent., or a total mortality of 0.5 per cent. In order to study and analyze these cases, a brief résumé of the history and operations performed is given. First, the fatal cases will be considered.

CASE I (appendicitis with general peritonitis). A child of fourteen years had been sick three days before operation; appendicectomy and drainage under gas and ether anesthesia; time, forty minutes. Death on third day. A right lower lobar pneumonia. In this case the pneumonia was probably a manifestation of a general septicemia with the anesthesia as the exciting agent.

CASE II (acute appendicitis with general peritonitis). A child eight years old, onset six days before admission. At operation the abdomen was full of pus and the child was critically ill. She continued draining very slowly until the fifteenth day, when she had sudden pains in the right chest, with bloody expectoration, all the clinical and physical signs of a pulmonary embolus. Following this, she developed signs of a lobar pneumonia and died on the twenty-fourth day.

CASE III (typhoid appendicitis). Child eight years old, onset two weeks before admission; malaise, fever, acute right sided abdominal pain twenty-four hours before admission. Had vomited once. Lungs negative. Few marks suspicious of rose spots. Spleen palpable. Mass in right lower quadrant; extreme tenderness; moderate rigidity. White cells, 7,000. Polymorphonuclear eighty per cent., mononuclear twenty per cent. At operation a small gangrenous area over an ulcer in the jejunum. Cecum and appendix markedly indurated (evidently the mass felt upon palpation). Appendix removed, reenforcing suture over ulcer. Ethyl chloride and ether anesthesia. Time, thirty-five minutes. Pathological report showed typhoid appendicitis. Lobar pneumonia fourth day. Died eighth day.

CASE IV. Man, thirty-five years old. Exploratory laparotomy for ruptured gastric ulcer with general peritonitis. Duration twenty-four hours before admission. Abdomen found full of fluid. No ulcer found on anterior surface of stomach. Case too ill to proceed further. Drainage. Anesthesia, novocaine one per cent., and gas and oxygen after opening abdomen, time forty minutes. Patient did fairly well for a time, but drained profusely, then developed a subphrenic abscess. This was drained by the transpleural route, after having waited for thirty-six hours for adhesions of the pleura to form. He developed a suppurative pleurisy and later a pneumonia. Death was due to edema of lungs.

CASE V. Woman, aged thirty-eight years. Oophorectomy for ovarian cyst. Double salpingectomy for pyosalpinx. Gas and ether, duration forty-five minutes. Left table in good condition. Died second day with signs of lobar pneumonia. Urine negative.

CASE VI (acute cholecystitis). Woman, aged thirty-eight years. Enormously fat. Cholecystostomy. Anesthesia, gas and ether changed to chloroform. Patient choked and coughed a good deal and was never thoroughly relaxed. First day signs of dullness and bronchial breathing right lower base. Died on second day.

CASE VII (strangulated inguinal hernia). Man, fifty-six years old. Irreducible hernia, twenty-nine hours' obstruction, vomiting, etc. Few coarse, moist rales at both bases posteriorly. Herniotomy. Gas and ether, duration thirty-five minutes. Contracted lobar pneumonia first day, died the third.

A summary of these seven cases shows three deaths following general peritonitis. Of these three cases, one was fatal at the end of the third day, one on the twenty-fourth day, of pneumonia, secondary to pulmonary embolus, and the other died of a pneumonia secondary to a suppurative pleurisy, due to a subphrenic abscess.

The other four cases, those of typhoid appendicitis, strangulated inguinal hernia, pelvic inflammatory disease, and cholecystitis, should have been avoided.

The diagnosis of the eight cases that ended in recovery were: Chronic appendicitis, 3 cases; ventral hernia, 1 case; gastrostomy for carcinoma of esophagus, 1 case; inguinal hernia and hypertrophied tonsils, 1 case; inguinal hernia, 1 case; cholelithiasis, 1 case.

Two were lobar pneumonia and six bronchial pneumonia. Onset: First day, three cases, and one each on the second, third, fourth, fifth, and eighth days. All persisted four to eight days and subsided by lysis. X ray taken in two cases showed signs like tuberculosis.

The entire series of fifteen cases classified according to pathological lesions is as follows: Appendicitis, 5 cases; typhoid appendicitis, 1 case; inguinal hernia, 2 cases; strangulated inguinal hernia,

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[1] Read before the Surgical Section, Academy of Medicine, April 12, 1916.

1 case; ventral hernia, 1 case; carcinoma of esophagus, 1 case; pelvic inflammatory disease, 1 case; peritonitis with ruptured gastric ulcer, 1 case; cholecystitis, 2 cases.

It will be noticed that every case was a laparotomy. Age: Youngest, four, eldest sixty-two years. Six varied between thirty-four and thirty-eight years. Time of operation: Shortest, fifteen minutes; longest, one hour. Average, thirty-six minutes.

Onset: Earliest, first day; latest, fifteenth day. Season of year: three occurred in March, three in August, one each in the other months, therefore the time of year did not seem to be a factor. Ten occurred in the cold months and five in summer.

Conclusion: 46.6 per cent. of our pneumonia cases were fatal. Three of these cases were in sesevere peritonitis and the pneumonias may have been of the terminal type.

The anesthesia in eleven cases was gas and ether, Bennett inhaler, followed by the drop method. Ethyl chloride and ether, 2 cases; gas and ether followed by chloroform, 1 case; local, novocaine, followed by gas and oxygen, 1 case.

The bacteriology of this series has not been studied.

The study of the bacteriology in Doctor Whipple's paper has been most instructive, and will tend to clear up the disputed question of whether the postanesthetic bronchopneumonias are true bronchopneumonias or multiple infarcts. In our series we had two cases where the x ray report was returned "suspicious of tuberculosis." Both cases later cleared up. It seemed probable that the shadows seen were multiple infarcts, rather than bronchopneumonia. If the same organism found in the mouth is later identified as the cause of the pulmonary infection, it will suggest that the lesion is a bronchopneumonia. We have x rayed our cases that had unexplained high temperatures, provided that they were in condition to move, but have not considered it advisable to x ray cases with positive physical signs.

IMPROPER CLOTHING DURING ANESTHESIA.

One of the greatest factors in the etiology of postoperative pneumonias is the operative night gown. Many of the patients entering a hospital are accustomed to sleep in heavy woolen or flannel underwear. After entering the hospital they are forced to wear these light muslin gowns split open in the back. When they are on the operating table. there is often only a couple of layers of cotton between the metal operating table and their unprotected backs. During the recovery from the anesthetic, although wrapped in blankets, they may thresh around enough again to expose their backs. There should be undershirts of different weights provided by the hospital, so that the body heat of a patient may be protected until he is well out of the influence of the anesthetic.

ENDOTRACHEAL CASES 115.

As this is a comparatively modern method of anesthesia, being first used on the human being by Elsberg, in 1910, it seems important that all cases should be recorded in order that a correct estimate may be formed of the safety of the method as well as its special indications.

The apparatus used in the New York Hospital is the Janeway, which is kept on a table specially made for it, with a closed compartment below, containing all the necessary appliances. In this way the whole apparatus can be wheeled from room to room. It has the advantage over some similar machines, that it runs without noise and so does not disturb the operator.

The Jackson direct laryngoscope and silk woven catheters are used. The patient is placed in position for operation and a small sandbag is placed under the shoulders fully to extend the head, allowing the catheter to be placed while the patient is being painted and draped; thereby time is saved. A little more time is required than with the inhalation method, however, as the patient has to be deeply anesthetized in order to insure success in intubation, and this is one reason why we have not used the method more frequently. In the beginning we used it in all kinds of cases to try out the apparatus and gain skill in intubation.

This series of 115 cases, therefore, represents a great variety of general surgical operations: For repair of hernia, 22; 11 for cervical adenitis, 12 for appendicitis, 4 for gallstones, 15 other laparotomies, 14 thyroidectomies, 2 brain cases, 2 laryngectomies, 3 resections of jaw, 4 thoracotomies, 1 resection of cervical rib, 1 resection of portion of sternum, 4 fracture cases, 1 prostatectomy, etc. They were most of them fairly long operations, 87 lasting half an hour or more. Of these, 46 lasted one hour or more, 4 being two and one half hours and over. The longest operations for an old fracture of both bones of forearm near the elbow—lasted two hours and fifty-five minutes, with the patient in good condition at the end. Only three cases lasted ten minutes or less.

Preliminary medication was given in only seven cases. Relaxation was with one or two exceptions perfect, with a lighter degree of anesthesia than with inhalation. There was very little vomiting and no throat irritation.

In a few cases, notably some goitre cases, there was a good deal of mucous secretion during anesthesia, but no aftereffects were noted as a result. One patient undergoing amputation of the tongue acquired pneumonia and died on the third day; and one patient with much hemorrhage, undergoing a tedious resection of the superior maxilla for carcinoma, died from shock within a few hours of the operation.

We consider the method especially indicated for intrathoracic work and operations upon the head and neck, where it is inconvenient for the surgeon and anesthetist to occupy the same field. In thyroidectomies it is particularly useful, because respiration is not interfered with when the trachea is pulled upon, nor can the trachea be compressed while the catheter is *in situ;* also for cases of extensive cervical adenitis where there is apt to be more or less disturbance with breathing.

It has been stated that pharyngeal insufflation is just as good and much easier of accomplishment, but, while it may be satisfactory in the majority of cases, it is not always absolutely smooth, as the catheters may become clogged with mucus and blood, if the operation is in the mouth, and the air way may not be entirely free; whereas in the endotracheal method we know where the ether vapor is going all the time; and the method certainly has a place in thoracic surgery, brain surgery, and for lengthy operations about the head and neck.

224 East Fifteenth Street.

BURSITIS SUBACROMIALIS.

Treatment of the Acute Form,

By Heinrich F. Wolf, M. D.,
New York,
Chief, Department of Physical Therapy, Mount Sinai Hospital and Dispensary.

Bursitis subacromialis has been studied by a great number of American physicians, among whom I have only to mention Codman and Brickner. They approached the subject from the standpoint of the surgeon, and among the various forms which Brickner mentions in his exhaustive paper there is nothing said of the acute form of this disease. I realize that on account of this fact many may doubt the existence of this disease and I feel obliged to prove that my statement is correct.

If we take the history of the cases of bursitis subacromialis, we find that in some of them the disease started suddenly without known cause, and was accompanied by a considerable amount of pain. After longer or shorter periods of intense suffering the acute stage passes and the patient is left with a stiff and painful shoulder.

I do not intend to go into the description or treatment of the chronic form, which has already been sufficiently discussed by various writers, but I should like to show that the initial stage of these conditions closely resembles that of a great number of cases which I have observed in my private practice and as chief of my department of physical therapy at Mount Sinai Hospital and Dispensary. Among the five or six hundred cases of shoulder disability which I have observed during the last six years, there were about forty where the history read as follows:

During or shortly after an attack of grippe or sore throat, and often without previous infection, sometimes after injury, violent pain with total disability of the shoulder developed. There is often a distinct swelling around the entire shoulder, and a very marked tenderness in the region of the bursa, which in some cases was distinctly fluctuating and yielded a serous fluid. Fever is absent in most cases, in fact, I observed it only twice and then the temperature did not reach 101° F.

Once a patient was recommended to me for treatment who suffered considerable pain in his right shoulder. The part was swollen and the bursa fluctuating. The patient appeared to be very sick; his temperature was 102° F. I came to the conclusion that the bursa contained pus and sent the patient to the hospital. After long observation and various treatments that were not successful, a puncture of the bursa was made, and pus found. At a subsequent operation it appeared that the patient was suffering from superficial osteomyelitis underneath the bursa. The patient was cured by adequate treatment. In some cases other joints were slightly involved, but the principal complaint pointed to the local condition.

DIAGNOSIS.

This affection has frequently been diagnosed as brachial neuritis. In this, however, if not complicated with other affections, the motion of the arm is entirely free; the nerve roots along the spine and the plexus brachialis are sensitive to pressure.

Hyperesthesia of the skin is absent in bursitis subacromialis acuta. In tenosynovitis the pain is restricted to movements where the diseased tendons are involved, and the tenderness is to be found only in that particular spot.

Tears of the tendon of the supraspinatus can be distinguished through the etiology, and by tenderness at the insertion of the muscle.

Gonorrheal infections can be recognized to some extent by the periarticular swelling, but the proper diagnosis can only be made by tracing the original infection. The other forms of stiff and painful shoulder differ from bursitis subacromialis acuta by its earliest symptoms.

My reasons for bringing this affection before the medical profession, are not only because it appears to be a clinical entity, similar to acute articular rheumatism, but because I have been able to find a form of treatment which has not failed me in any case. It consists of wet dressings kept on day and night, changed every twelve hours, high doses of aspirin, fifty to sixty grains daily, and very gentle massage. The latter must be done with the palm of the hand after sprinkling a good supply of talcum powder on the parts to be treated. Relief of the pain should be immediate. If this is not the case, the treatment was too severe or the diagnosis incorrect.

It has been my experience that only a combination of these remedies will give the desired result. The patients recover with very few exceptions (Case VII), within a week, when treated not later than three or four days after the onset; the improvement beginning from the first treatment. Strictly contraindicated are hot applications of any description.

Case I. Mrs. R., recommended by Doctor Reinthaler, had pain which had lasted for twenty-four hours; usual symptoms. Baking was given twice and pain increased, then the usual treatment was begun, massage twice daily; improvement showed at once and patient was well at the end of a week.

Case II. Mr. A. B., recommended by Doctor Junger, pain began about a week before, usual symptoms, patient took a few bakings, which after a slight initial improvement, increased the pain. He came to me about a week after the onset and recovered after a typical treatment of ten days.

Case III. Mr. M., recommended by Doctor Rubin, had been sick five days; severe pain in the shoulder; was treated with baking and heavy massage, which irritated the condition. Under the usual treatment the patient recovered in six days.

Case IV. Mr. R., recommended by Doctor Herman Lorber, fell sick the day before I saw him; very severe pain, inability as to motion, slight swelling. Was perfectly well after three days. Treatment was given every twelve hours. This patient had just recovered from an attack of grippe.

Case V. H. G., twenty-six years old, had tonsillitis eight days before. Two days later, severe pain in the shoulder. Active motion impossible. Region of the bursa very tender; distinct fluctuation. Ten days later, pain disappeared under typical treatment and the patient returned to work.

CASE VI. G. G., aged twenty-three years, jumped from a wagon five days before and struck his shoulder; swelling, restricted motion, fluctuation. On aspiration three c. c. of clear fluid was obtained. Cured in three weeks.

CASE VII. S. M., forty-six years old, fell on his shoulder. Came to me, fourteen days later, for treatment; restriction of motion, tenderness of the bursa, fluctuation. Cured after seven days. Returned, three months later, with general rheumatic symptoms.

CASE VIII. Mrs. K., presented before the German Medical Society, January 3, 1916, had an attack of pain in her right shoulder some years before, which left her with restricted motion of that arm. Renewed attack about a week before. X ray picture showed a calcareous deposit in the region of the bursa. After a week's treatment, pain disappeared completely, and motion returned to the same extent as before the second attack. It was evident that the calcareous deposit was the result of the first attack, owing to lack of proper treatment, and it was too deeply seated at the time of the second attack for treatment to cure.

I could cite a great number of cases from my records, but I abstain from doing so as they are practically repetitions of those already described. I wish once again to point out that I consider bursitis subacromialis acuta only a clinical entity, that I am fully aware of the fact that the same restrictions that we have to make in regard to acute articular rheumatism, hold true for these cases.

I am not in a position to say what connection the injury which I have mentioned in Cases VII and VIII, had with the development of an acute bursitis subacromialis and why aspirin had any effect, but I have noticed similar beneficial action in other traumatic cases of synovitis.

CONCLUSIONS.

1. There exists an acute form of bursitis subacromialis.
2. There are various etiological factors analogous to those of acute articular rheumatism.
3. Treatment, which hardly ever fails, consists in a combination of wet dressings, acetyl-salicylic acid, and very gentle massage.

161 WEST EIGHTY-SIXTH STREET.

UNILOCULAR CYST OF THE KIDNEY.

By MAXIMILIAN SCHULMAN, M. D..
New York.

This disease is sufficiently uncommon to make it desirable that a proved example of it be recorded. The case reported below, perhaps, has distinctive features of interest.

CASE. Harry J. F., aged thirty-five years, white, native of United States, publisher, in May, 1914, applied for life insurance and was rejected because of the presence of albumin in his urine. He then came to me to be examined and advised. He felt perfectly well, except for being nervous and sleeping poorly and being habitually constipated. Had a good appetite and was of usual weight.

Family history: Mother had chronic bronchitis, with winter exacerbations. Father had hypertrophied prostate, otherwise well. Several brothers and sisters living and well. Patient had three healthy children. His wife was well and had never miscarried or aborted.

Past personal history: Variola as child. Did not remember any other children's diseases. Had been in printing business twenty years, but never had any symptoms of plumbism. Had gonorrhea seventeen years ago, requiring treatment for about a year. Then had an eruption of three days' duration, said to be due to medication. There were no other symptoms suggesting syphilis. Seldom drank alcohol, and very seldom smoked.

Physical examination: Well nourished man of good color, tongue clean and moist, teeth in good condition, and gums sound. Pharynx negative; skin clear; no glandular enlargement. Eyes; considerable myopia, pupils equal, and reacted to light and accommodation. Temperature 98° F., pulse 78, full, regular. Blood pressure, 144 systolic, 110 diastolic (by auscultation). Heart; left border in midclavicular line, sounds clear and normal. No accentuations and no murmurs. Lungs normal. Abdomen normal. Liver and spleen not palpable, no masses, no tenderness, no rigidity. Extremities normal. No scars, no varicosities; and knee jerks normal.

Urine (casual specimen), specific gravity 1.030, cloudy, mucus and some shreds, acid, albumin + cloud, moderate number of finely granular casts in sediment, sugar, 0, indican no excess. A twenty-four hour specimen delivered a few days later, contained 750 c. c., and only a trace of albumin and a few granular casts.

The Wassermann reaction in blood serum was negative.

The patient was advised in matters of diet, warm bathing, and general hygiene, told not to take his condition with too much concern, and to report periodically. He appeared about three weeks later, with urine showing only a faint trace of albumin and no casts.

I saw nothing more of him until August, 1915, when he came in from the country, complaining of headache. He then had a foul breath and badly coated tongue, a temperature of 100.5° F., and what I thought was a palpable spleen. I gave him one ounce of castor oil, took blood for Widal examination, gave him instructions looking to typhoid, and told him if he was not well and rid of his headache the following day, not to come to the city, but to call a local physician.

His Widal was negative, and I subsequently learned that he was well after the castor oil had operated.

September 21, 1915, I was called to see the patient because he had a headache of two days' duration. He had been entirely well since I last saw him in August. Except for the headache and vomiting of some citrate of magnesia which he had taken, he felt nothing wrong, though he was constipated, as usual. On examination, he had a normal temperature and pulse, and everything else negative, until I reached his abdomen. I again felt a mass under the left costal border, which, at first, seemed to be the spleen. On more careful examination, I found that he had a mass the size of a grapefruit, very hard, extending clear back into the flank, and freely movable. When I turned him on the right side, the mass would fall forward, so it would recede from the flank, extend to the right to the midline of the abdomen and down as far as the umbilicus. I could put my hand over it and under the costal arch, so ruling out the spleen. It seemed to be connected with either the left kidney or splenic flexure of the colon. In view of the great mobility and the chronic constipation, it seemed to me that the colon was the more likely site. The mass was smooth, not tender, and no friction rubs were either palpable or audible over it. Rectal examination was negative.

The urine now, was specific gravity 1.016, clear, amber, acid, faint trace of albumin, no casts, no sugar, no blood, a few leucocytes (recent attack of anteroposterior urethritis with epididymitis).

Blood, hemoglobin seventy per cent., leucocytes 13,000, and the differential count in 300 cells was, polynuclear, sixty per cent.; lymphocytes, thirty-six per cent.; eosinophiles, four per cent.; myelocytes, 0. There were no malarial organisms, and morphology of red cells was normal. Gastric analysis showed nothing abnormal in the motility, nor in the chemistry of the gastric juice, and no pyloric obstruction.

Stool was normal, and on two examinations failed to show occult blood. It was still impossible to be certain with what organ the mass was connected.

The x ray findings seemed clearly to indicate that the mass was not connected with either spleen or gastroenteric tract. It was therefore most likely that it was connected with the left kidney. An x ray plate of the lumbar region showed nothing abnormal in kidney areas.

In view of the foregoing and a urine containing very little that was pathological, the diagnosis seemed to be brought down to hypernephroma or obstructed hydronephrosis. It was now in order to cystoscope the patient and catheterize the ureters. This was done after indigocarmin had been injected intramuscularly, with the result that a good urinary flow was observed to come from *both* kidneys, and the indigocarmin also was excreted promptly and equally from both sides. An examination of the separated urine showed on left, suspected side no blood, but an occasional leucocyte, on right, healthy side, a few fresh red cells and one clump of epithelial cells. The left ureter was injected with argyrol and an x ray picture taken. A final preoperative diagnosis of hypernephroma was therefore made and prompt operation advised.

The patient was operated on under gas and ether anesthesia. A large cyst presented which could not be delivered through the wound, and which was therefore emptied by aspiration. It was then possible to note that the cyst sprang from the lower pole of the left kidney, and that the kidney and ureter were entirely normal. A few cm. of the kidney tissue were resected with the cyst, the kidney was sutured, and the wound closed. The pathologist's report follows:

Gross specimen: Specimen consists of a portion of one kidney measuring 4 cm. by 3½ cm. by 2 cm., attached to which there is a cyst measuring 7½ cm. by 3 cm. by 3½ cm. Cyst is made up of what looks like a thin, connective tissue wall, the lining of which is arranged in elevated ridges projecting consecutively.

Microscopic examination: Cyst of kidney shows that the wall of the cyst is made up of very dense connective tissue and what is apparently smooth muscle. Cyst wall is suggestively thick. It has compressed the kidney tissue and at points the tubules make very small islands scattered throughout the tissue.

The kidney proper shows that the glomeruli are undergoing degeneration and are replaced at many points by connective tissue scattered throughout the compressed kidney. The lining of this cyst is a small, low epithelium, apparently that of the ureter. It suggests that the cyst is formed from the dilated pelvis of the ureter and is not a true cyst of the kidney.

It must be added to the pathologist's report that the cyst *was not* "formed from the dilated pelvis of the ureter," for the ureter was entirely normal.

The fluid contained in the cyst was cloudy, light, and amber colored, was sterile, and contained no urea.

The patient made a smooth recovery.

The urine (patient on full diet), examined about three months after the operation, was of specific gravity 1.026, and contained a trace of albumin and a few hyaline casts, this being about the same as prior to the operation.

The constipation is considerably reduced, though the patient still requires a small dose of some laxative every second day. The general condition is excellent.

1845 SEVENTH AVENUE.

A Case of Palpebral Chancre.—Donald M. Livingstone in the *Lancet* for May 20, 1916, remarks that this condition is rare and the diagnosis is difficult for some weeks unless spirochetes are found in scrapings or the Wassermann is positive. Rapid healing under salvarsan is proof of its luetic nature.

LABORATORY FACTS IN POLIOMYELITIS.

Observed in the Willard Parker Hospital.

By S. R. Klein, M. D., Ph. D.,
New York,
Director, Norwich Pathological and Bacteriological Laboratory.

While doing laboratory research work in the Willard Parker Hospital on infantile paralysis cases, I have had an excellent opportunity to observe some remarkable facts, mostly based on laboratory diagnosis. During my stay there, nearly 400 children were brought in, fifty per cent. of them having been diagnosed as doubtful cases. The death rate was very low, thanks to the exact, thorough, excellent management and clinical treatment extended to the unfortunate little creatures by physicians and nurses. I can really say that the city of New York should be congratulated on having such an institution as the Willard Parker. In nearly every case was a urine and blood examination performed, but, of course, no special findings could have been recorded, except that every urine contained albumin, more or less, with sugar regularly absent. Urea, as usual under inflammatory conditions, was higher—about three to 3.5 per cent. Anuria was almost absent, except in most of the fatal cases. Differential blood count showed mostly from eighty to eighty-five per cent. polymorphonuclear cells, the rest of them small and large lymphocytes. No bacteria, of any kind, were found. I have tried to find the Ehrlich granulations, but failed to do so. The Schick test was made in many cases suspected of having remains of diphtheritic microorganisms, and reported as negative.

In regard to lumbar puncture I would like to say that, according to Peyton-Rous, the average protein content is 0.3 grain to the litre, but in these cases it varied from one sixth to three eighths of a grain. The normal pressure in the subarachnoid space is estimated at thirty to fifty mm. of water, but in the fatal cases it varies from 120 to 180 mm. In a very few cases it went as high as 300. At the height of the disease the fluid is grayish yellow, and turbid. On standing, in the case of a purulent fluid, a yellowish, homogeneous, and viscid deposit collects at the bottom of the tube, while the supernatant fluid becomes somewhat clarified. A fibrin reticulum is occasionally seen floating in the fluid or adherent to the tube. Along the sides of the tube a deposit of fine yellow flakes resembling sulphur particles may form.

Microscopically, the protoplasm looks homogeneous, nongranular, and vacuolated. The chromatin network of the nucleus is not sharply stained. At times the nucleus disappears. Some of the cells are so markedly degenerated that only a cellular débris remains. The lymphocytes are usually present in the proportion of ten to fifteen per cent. As a rule, they show less degeneration than the polymorphonuclears.

Frequently there are vacuoles which contain one or more ingested cells. These large cells are derived from the connective tissue and adventitia of the bloodvessels of the meninges. Concerning micrococci, I found these microorganisms in considerable abundance. We should accept definitively the Weichselbaum micrococcus as the only microorganism found in the spinal fluid, producing inflammatory processes in the cerebrum, cerebellum, and cord. No other microorganism has ever been found in the fluid since Quincke made the discovery. This is a fact and we should accept it as the only important achievement of that kind of research work.

During my stay in the hospital one of our interns found a dead cat in the same room where he took a child affected with infantile paralysis. Remarkable in the case is that the child recovered after a while. The autopsy performed on the cat showed the spinal cord very soft, also two ventricles of the cerebrum. The lungs showed bronchopneumonia. We stained the cord and cerebellum by the Giemsa method and alcoholic solution of fuchsin and methylene blue. A tremendous number of lymphocytes were found and micrococci which exactly corresponded with those of Weichselbaum.

In regard to bacteriolysins, bacteriotropins, and antiendotoxins, I would say that the first ones mentioned exactly inhibit the growth of the micrococcus—that the bacteriotropins markedly stimulated phagocytosis. Antiendotoxins gave very little encouragement in regard to the usefulness of serum. If I mention that one monkey was treated with spinal fluid, but unsuccessfully, I think I have mentioned all the facts we found in infantile paralysis cases. All other research work proved to be negative in result.

Foot of East Sixteenth Street.

Contemporary Comment

California Mineral Springs.—The cry of "see America first" has been heard throughout the land, remarks the *California State Journal of Medicine* for June. But the European war and the fear of submarines did more than any amount of advertising to convince the traveling public of the wisdom of heeding the cry. So, too, with our mineral springs, with which this country, like Europe, is richly endowed. The waters of the European spas can all be duplicated in the United States. Some of them are possibly superior to those of Europe. The great trouble with the springs in this country is that no real effort has been made to induce people to go to them. In this State we have no place that really meets the requirements of a first class resort. First class hotels, attractive grounds with an abundance of carefully laid out walks, convenient drinking places, proper bathing facilities, carefully planned institutions for hydrotherapy and mechanotherapy—all these are needed if a resort is to attract people, or if it expects the support of the medical profession.

It is possible that the profession does not thoroughly appreciate the value of our mineral springs. Too often are we apt to attribute the benefit derived by patients at distant resorts to the change of climate, the interesting trip, the freedom from household or business worries or duties, discounting the effect of the waters, often because the drinking of the same waters after they have been bottled is devoid of results. Recent observations would seem to lend truth to the belief that waters drunk or bathed in, at their source, are better by far than the bottled product. The discovery of radium in many of the waters in the United States as well as in Europe explains why this may be true.

In Europe, the various municipal and state governments have done much to develop their resorts, not only because of the desire to lessen the suffering of humanity, but because of the revenue ultimately derived therefrom. A few years ago, the State of New York purchased Saratoga Springs. It obtained the services of experts to aid in the restoration of the springs, which had suffered at the hands of shortsighted commercial interests. It has spent considerable money; it is today beginning to reap its reward; physicians are studying its waters; they expect to find that they are as efficacious as those of Nauheim, Vichy, Kissingen, etc. It will not be long before the cardiac, the nephritic, the gouty, the rheumatic, will be taught to "drink and bathe in America first."

In California we have numerous springs. None of them may be said to be properly managed. They not only lack many of the essentials necessary for successful handling of patients, but no attempt is made to run them on a scientific basis. By their extravagant claims and literature, they create distrust rather than confidence in the minds of the profession.

Might it not be well if our most active and very efficient State Board of Health, among its many other duties, took it upon itself to investigate our California springs, and make recommendations so as to induce private interests, or failing in this, perhaps the legislature, to improve our resorts and place them on a proper basis?

Old Time Courtesy.—History records that in the good old days, a doctor, in the employ of an insurance corporation, desiring to visit the patient of another physician would seek the permission of the latter, and that this privilege was, in most instances, most graciously accorded him. It is a noticeable fact, however, in these days, that such courtesy is often entirely lacking, especially in the newly hatched doctor who has only just begun to grow his pin feathers.

It is no uncommon thing, remarks the *Medical Adviser* for June, 1916, for us to learn that between calls one of these phenomena has blundered in upon our patient with an authoritative air which would do justice to the president of the company, and proceeded to inform him that he was there for the purpose of ascertaining the extent of his injuries, general condition, etc. He insolently inquires into the treatment, comments upon it at will, disturbs or removes bandages, and frequently leaves the unfortunate person in doubt as to the efficiency of the attending physician.

As matters in this regard seem to become worse as time goes on, we suggest that it might be well for our medical colleges to add another department to their curricula whereby a couple of hours a week during the senior year could be devoted to instruction in professional deportment for the benefit of those who are naturally lacking in that qualification.

Editorial Notes and Comments

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THE TREATMENT OF INFANTILE PARALYSIS.

The reported successful use of adrenaline in the treatment of acute poliomyelitis will meet an urgent need if a number of recoveries sufficient to afford a fair test can be recorded. Indeed, in a recent editorial article (NEW YORK MEDICAL JOURNAL, July 8, 1916) we referred to the unfortunate paucity of curative measures at our disposal. In the recently published edition of Osler and McCrea's *Modern Medicine,* Farquhar Buzzard speaks in the same vein when he states: "We are unacquainted with any method of combating the acute attack and must be content to treat the initial stage similarly to that of any acute infective disease. When the disease is epidemic," continues this distinguished neurologist, "and constitutional disturbances suggest the possibility of an attack, the administration of hexamethylenamine is worth a trial." The same reserve was fittingly observed by Simon Flexner in his recent public address, when speaking of the shortcomings of hexamethylenamine, and of his own serum, he said: "The experiments have not yet reached the point where the new drugs are applicable to the treatment of human cases of infantile paralysis."

We urge that a fair and impartial trial be given to adrenaline, not only because its use was suggested by so competent an authority as Meltzer, and because of the favorable results obtained in forty-one cases by Doctor Bermingham at the New York Throat, Nose, and Lung Hospital, but on account of its intrinsic merits as a pharmacological entity. To realize its possible worth, however, its users must place the problem on a higher scientific plane than the reported statement that the direct injection of adrenaline into the spinal canal acts "as a wonderful tonic" when "reaching the nervous tissues" and "removes pressure from them," and thus "places nature in a position to do the rest." Much evidence is available to show that we have, in all probability, in adrenaline, thus used, *a direct activator of the antitoxic function of the blood* in the central nervous system, the main seat of morbid activity of the veins.

Brown-Séquard, Abelous, Langlois, Albanese, Zucco, Charrin, and others have long emphasized the importance of the ductless glands as factors in the active protection of the body against disease. While Charrin, nearly twenty years ago, wrote, "As to antitoxic functions, one may depend upon a series of viscera, first of all the liver, the pituitary, the adrenals, the pancreas, the kidneys, the spleen, etc.," Albahary, as recently as 1913, in a paper read before the Paris Biological Society, stated that "as regards the neutralizing secretions that the organism can oppose to the action of a toxin in general, we know today that this role belongs mainly to the ductless glands." Sajous, however, identified the role of the adrenal secretion in the process as that of a catalyzer, the purpose of which is to activate oxidation and thus enhance the antitoxic power of the digestive ferment which, both in phagocytes and the plasma, endows the blood with defensive properties. The influence of the adrenal principle on oxidation was confirmed, in 1912, by Bernstein and Falta; while the labors of Abderhalden have confirmed the view that a digestive ferment is the active protective agent in our defensive functions. Briefly, the evidence goes to show that adrenaline should not be looked upon as an antibody, but as an activator of antibodies.

How does the adrenaline penetrate the central nervous system to enhance the antitoxic power of the blood therein? On the basis of Ehrlich's methylene blue injections, Sajous, in 1903 and 1907, pointed out that bloodplasma laden with the adrenal principle circulated in the nervous elements, traveling upward as does tetanotoxin. Lichwitz, in 1908, confirmed this view, having also observed that "adrenaline traveled from the lower extremities to the upper when these were only connected by nerves." Recently the presence of adrenaline in nerves was likewise discerned by Macallum, of Toronto, with the aid of silver nitrate solution injections.

This evidence, to which much could be added, will suffice to indicate that we may have in adrenaline the keynote for a successful treatment of acute poliomyelitis. It will undoubtedly increase the defensive reactions of what active antibodies are formed. This suggests that *it might sufficiently increase the activity of Flexner's serum to give it the potency it needs* to render it effective, not only very soon after infection, but as long as the latter is active. That the hexamethylenamine wisely given simultaneously by Doctor Bermingham is aided indirectly by the adrenaline, is also probable.

SUMMER CAMP SANITATION.

Whether the summer camp idea for city people is ultimately to be a good one for the health and well being of those in need of them, and serve as the best means of recuperating after the usual high pressure of urban life, depends entirely upon its proper development along the lines of sanitation. In the abstract, the camp idea is most excellent. It is an advance upon the stereotyped summer hotels with their conventional and tiresome social life, monotonous and unwholesome menus, crowded accommodations, and burdensome personal display. Besides, even in the best resorts the sanitary conditions are far from ideal. Health authorities have continually to enforce the simplest sanitary measures. The usual autumnal increase of typhoid in large cities, where the water and food supplies are tolerably free from possible sources of infection, is summer resort exportation. The problem is still so little under control that health authorities advise antityphoid vaccination as the only measure of safety.

Moreover, it is a fallacy not yet outgrown that country life is more healthful than city life—regardless of the improvement in sanitation of urban communities. Often the strenuous social life of summer resorts allows less time in the open air than is really needed, and is without the advantages of personal comfort offered in the city. Large cities like New York are rapidly assuming the roles of first class summer resorts, with a maximum of diversion, relaxation, and safety. The health of large cities is better than of smaller ones; of small cities better than towns; of towns better than of rural communities. Health authorities in large communities are well organized and well financed and efficiently handle the sanitary problems. There is less opportunity for specific infections. For the same reason the morbidity and the mortality from nearly every disease is less in the city than in the country. On the other hand, country life may be of great benefit because of the change and relaxation offered. Change is a great rejuvenator. Open air is perhaps the best stimulant. The isolated camp offers advantages in the way of rest and repair for the overspeeded faculties. The sanitary problems in the isolated camp are intrinsic, and comparatively insignificant; but the crowded camp sites, situated not very distant from large communities, present a much larger sanitary problem than is usually realized. The opportunities for infection are numerous. Here, if anywhere, antityphoid vaccination for prospective campers should be especially urged.

The camp problem is perhaps the largest problem of army mobilization. Its poor development in the Spanish-American War was the cause of very high typhoid mortality. The success of army mobilization depends largely upon its sanitary organization. It is a medical engineering problem on a large scale. Likewise, large civilian camp sites should be laid out primarily from the sanitary standpoint. In poorly controlled camp sites the sewage disposal is the crudest, food preparation of the poorest, and necessary comforts are absent. Camp sites that give the impression of being unclean should be avoided. The gain from living out of doors, with plenty of exercise is not sufficient to overcome the loss entailed by general unsanitary conditions, poor food, lack of comfort, and small protection against cold and rain.

The camp tent is not at all ideal for sleeping purposes. The air allowed in through the partly opened tent flap, which is usually closed during inclement weather, is hardly sufficient, and not at all equal to the generous supply allowed by open windows or the artificial methods of ventilation which obtain in the city.

Then, too, every change, such as is entailed in camping, has a "negative phase," which those who need the camp life most cannot afford. Perhaps their whole vacation time does not extend much beyond this period, and they are, therefore, rather harmed than benefited. It must be remembered, especially by those who are inclined to condemn the niceties of city life, that they are evolutionary developments and not regressions. They have been large factors in increasing the span of life. While it is true that urban life has many vices, they are not to be balanced against the unsanitary conditions of primitive life which the camper is trying to mimic. The camp idea is a good one, but needs development on a large scale. Its primitiveness must be modernized, so to speak, before it can be unqualifiedly approved by the profession as a therapeutic measure.

THE PREVENTION OF AMEBIC DYSENTERY.

Amebic dysentery since the beginning of the European War has been thoroughly studied and our knowledge thereof considerably increased. While the allied troops were stationed in and about the Dardanelles, this form of dysentery was rife and a good many points respecting the treatment and prevention of the malady were unveiled, while other points concerning which knowledge was vague were illuminated. Perhaps the most important feature has been the recognition that emetine is the only drug which exerts any specific influence, and that it is of the utmost importance to give such treatment thoroughly in all cases before discharge from hospital. Efficient treatment of this character not only benefits the patients but prevents them from becoming carriers. Even when a patient has become a cyst carrier, as a rule he can be rendered noninfective by the administration of emetine combined with magnesium sulphate in doses of two drams every four hours.

It has been proved in Egypt—and this is referred to in a memorandum on the prevention of amebic dysentery published in the *British Medical Journal* for June 24, 1916, by J. Gordon Thompson and D. Thompson—that flies are capable of ingesting cysts of the pathogenic entamebas from infective material and depositing these in their feces on food. Furthermore, it has been discovered that the cysts of Entamœba histolytica will persist for a month, and much longer under conditions in which the stool is not allowed to dry too much. For instance, it has been shown that the pathogenic cysts in feces well diluted with fresh drinking water persist for weeks, and this fact has likewise been proved in the Central Laboratory in Egypt.

Consequently it is obvious that in order to prevent the spread of amebic dysentery one of the first and most essential steps to be taken is to dispose of feces in such a way that flies can have no opportunity to alight and feed on them. The authors mentioned above recommend for this purpose, in the absence of a flush water system, either flyproof latrines or metal buckets containing kerosene or some antiseptic. Kerosene wards off flies, and it is inflammable and assists in the incineration of the feces later on.

Among preventive measures which may be advocated are thorough and rapid disposal of horse dung and refuse, in order that flies may not be provided with favorable breeding grounds. Water supplies should be carefully guarded, and fly screening and destruction of flies should be carried out in the most energetic fashion. Cases of amebic dysentery should be isolated as much as possible in special wards of hospitals, and early and thorough emetine treatment should be proceeded with at once in all suspicious cases.

With respect to amebic dysentery, however, as in so many diseases, flies appear to be the chief factors in the spread. *Delenda est musca* must be the battle cry of sanitarians who are striving to wipe out, or at any rate, to curb various deadly epidemic maladies.

THE MIDWIFE.

The midwife is with us and in increasing numbers. She is not new to the old world. She existed in Egypt before the days of Moses. In the East and in Europe up to the middle of the sixteenth century all women were delivered by midwives. In the seventeenth century schools were established for their special training and in the past fifty years they have, on the continent, been under state control; in most European countries a thorough training is required, which sometimes covers a period of two years. In at least one country, Holland, midwives or a certain number of them, are taught at the expense of the state, in order that they may better serve the people of the rural regions.

Some of our own States hold examinations and have certain requirements of training, and in at least one city, New York, there is an excellent school for midwives. Since they are likely to become more and more a part of our national life, it behooves all our States to be alive to the need of seeing that the midwife in her line comes up to as high a standard of excellence as is demanded of the physician and that she has ample opportunity for the best of training.

The midwife fulfills a want among the poor, and cannot be replaced by the physician, for she is doctor and nurse combined and gives her services in both capacities at a price lower than the doctor can afford to charge.

It is not to be wondered at, therefore, that in some of our cities a fourth of the children are born into their hands. As with physicians, there are good and bad midwives, well trained and ill trained, experienced and inexperienced, yet, in comparison with the physicians, their work seems not to suffer, for statistics of one of our American cities show that of the cases of puerperal infection, about half occurred in the women delivered by physicians and half in those attended by midwives. These figures should obviously be judged in the light of the character of the clientele of the two classes of practitioners, for those assisted by the midwives are undoubtedly more immune to infection, but, nevertheless, considering the amount of her training, the midwife stands the comparison well. Doubtless too frequent interference with the course of nature —meddlesome midwifery—on the part of the doctor has much to do with this statistical reproach.

PHYSICAL TREATMENT FOR DISABLED SOLDIERS.

Major L. Haden Guest, R. A. M. C., has sent to the *Lancet* some notes on the treatment by mechanotherapy at the Hôpital anglais in Nevers, an Anglo-French hospital established under his direction in November, 1914; they appear in the issue for July 1st. The treatment is carried out in a separate building by Dr. L. J. Phelan, an American practising in Paris as an expert in applied exercises, movements, and massage. He employs a minimum of mechanical apparatus of the Zander type and a maximum of use of elastic cord exercisers. The latter have the great merit of economy, as the cost of the apparatus for the treatment of 100 patients daily need not exceed $1,000.

The apparatus consists of a number of rubber cords and pulleys, and by adapting the position of the patient and the exerciser and by attaching the exerciser either to the hand or foot a very large variety of movements can be obtained. Special apparatus can be made for individual finger movements, flexion and extension of wrists, pronation and supination, etc. The main characteristic of these apparatus is their simplicity. Movements of the hip are obtained partly by application of the exerciser to the foot and partly by the use of an inclined plane on which the patient lies. The plane is movable on runners placed below it and the patient pushes himself up by pressure with his feet. For passive movements of the ankle and knee in cases of great stiffness a mechanical apparatus on the Zander pattern cannot be dispensed with.

Treatment is given daily, with an average duration of ten minutes, but a number of cases can be treated at the same time. The length of treatment required by individual cases varies much with the nature of the injury and the condition of the patient, but as a rough guide to the duration of treatment the following figures may be given: Injury of hand, one week; wrist, one to two weeks; elbow, one month; knee, one month; adhesions (not affecting a joint), two to three weeks. At Nevers there have been so far forty per cent. of cures, forty per cent. greatly improved, and twenty per cent. not benefited. The possibility of progress or of cure can usually be discovered in from two days' to a week's treatment. Cases for treatment should be sent as soon as possible after any open wounds have healed.

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News Items

Errata.—By a regrettable oversight, two serious mistakes occurred in the original communication by Dr. M. Neustaedter on Infantile Paralysis, which appeared in our issue for July 22d. Page 146, line 7 should read 75.4 per cent. instead of 5.4 per cent.; page 146, third paragraph, line 12 should read 900 instead of ninety cells per c. mm.

New Name for the International Health Commission.—Announcement is made by the International Health Commission of the Rockefeller Foundation that its name has been changed to International Health Board of the Rockefeller Foundation.

Infantile Paralysis Clinic at Lebanon Hospital.—Dr. Charles Herrman, of 250 West Eighty-eighth Street, New York, announces that he will hold a clinic on infantile paralysis at the Lebanon Hospital, Monday afternoon, July 31st, at three o'clock. Physicians of the borough of the Bronx are cordially invited to attend.

Old Dominion Medical and Surgical Society.—At the annual meeting of this society, held at the Bay Shore Hotel, Buckroe Beach, Va., Monday and Tuesday, July 17th and 18th, the following officers were elected: Dr. J. J. France, of Portsmouth, president; Dr. J. B. Darden, of Petersburg, vice-president; Dr. R. A. Deane, of Victoria, recording secretary; Dr. J. H. Blackwell, Jr., of Richmond, corresponding secretary; and, Dr. R. E. Jones, of Richmond, treasurer. Next year's meeting will also be held in Buckroe Beach.

The Tuberculosis Movement.—Statistics compiled by the National Association for the Study and Prevention of Tuberculosis show that nearly 3,000 agencies are now listed in the fight against tuberculosis in the United States, an increase of 1,600 per cent. since 1904, when the national welfare on this disease was started. The list includes 557 sanatoriums and hospitals, 158 tuberculosis boarding houses, 90 hospitals for the insane, and 35 penal institutions making special provision for tuberculosis, 455 dispensaries, 310 open air schools, and 1,324 antituberculosis associations and committees. To these are added 158 Canadian institutions and associations, making a total of 3,087.

Sir William Ramsay Dead.—Sir William Ramsay, the discoverer of argon, neon, xenon, and krypton, gaseous elements, who occupied a commanding position in the world of chemistry, died at his home in England on July 23d, at the age of sixty-two years. He received the Nobel prize in chemistry, in 1904, had been president of the Seventh International Congress of Applied Chemistry, and of numerous scientific associations, and was a member of some fifty scientific academies and organizations in different parts of the world. He lectured at Johns Hopkins University and before the Lowell Institute some years ago. In collaboration with F. Soddey he succeeded in transforming radium into helium.

Appointments in the Medical Reserve Corps of the Navy.—At the examination recently held in various cities throughout the United States the following named medical men successfully passed the examination for appointment as assistant surgeon in the Medical Reserve Corps, with a view to subsequent examination for appointment in the Medical Corps of the Navy: James A. Halpin, M. D., Washington, D. C.; William D. Heaton, M. D., Wahoo, Neb.; Aubrey M. Larsen, M. D., Salt Lake City, Utah; Lincoln Humphreys, M. D., Argenta, Arkansas; Theo. Edward Cox, M. D., Cleveland, Ohio; Arthur W. Hoaglund, M. D., Minneapolis, Minn.; Carroll H. Francis, M. D., Camden, N. J.; Harold L. Jensen, M. D., San Francisco, Cal.

Federal Quarantine in Infantile Paralysis.—The United States Public Health Service has published a notification that no children under sixteen years of age will be permitted to leave New York city for interstate travel without both a Federal and a city department of health certificate. Before such certificates are issued children will be carefully examined by the health authorities. Numerous cities have announced the establishment of a rigid quarantine against children coming from New York city or from infected portions thereof. California has quarantined against all persons from New York who are not provided with authoritative health certificates. The railroads have advised against taking children on excursions, and railroad officials have been instructed to aid in carrying out quarantine regulations

The American Hay Fever Prevention Association met in annual session in New Orleans in June, and elected the following officers: President, Dr. William Scheppegrell; honorary vice-president, Dr. Rupert Blue, surgeon general, United States Public Health Service, Washington, D. C.; vice-president, Colonel George McC. Derby, U. S. A.; recording secretary, Joseph B. Bassich; corresponding secretary, Dr. N. F. Thiberge; treasurer, J. D. O'Keefe, vice-president, Whitney Central Bank and Trust Company.

New Head to the Union Medical College, Pekin.—Dr. Franklin C. McLean, of New York, hitherto an assistant resident physician in the hospital of the Rockefeller Institute for Medical Research, has accepted an appointment by the trustees of the Union Medical College, Pekin, China, to the professorship of internal medicine in the college. Doctor McLean will also be the head of the Union Medical College, which is one of the institutions of the China Medical Board of the Rockefeller Foundation, and he is now going to Japan, Korea, and China as a representative of the board.

Appointments to the Faculty of University and Bellevue Hospital Medical College.—The following appointments have been announced: Dr. Joseph B. Bissell, Dr. Thomas A. Smith, Dr. Walter C. Cramp, and Dr. Arthur M. Wright, clinical professors of surgery; Dr. William C. Lusk, professor of surgery; Dr. W. Howard Barber, chief of clinic, department of surgery, college dispensary, and instructor in surgery; Dr. George Francis Cahill, instructor in surgery; Dr. Theodore J. Abbott, clinical professor of medicine; Dr. Hubert V. Guile, instructor in medicine; Dr. Benjamin M. Levine, clinical professor of cancer research; Dr. Charles Krumweide, assistant professor of bacteriology and hygiene; Miss Mary Smeeton, instructor in bacteriology.

Splendid Cooperation from Private Hospitals in the Management of the Infantile Paralysis Epidemic.—The number of private hospitals in the city, cooperating with the department of health in caring for infantile paralysis has grown to 24. Of these St. Peter's in Brooklyn now has fifty patients, the New York Nose, Throat, and Lung Hospital has 38, the New York Orthopedic 33, St. Francis (in the Bronx) has 32, Mt. Sinai has 19, St. Vincent's in Manhattan has 15, and St. Vincent's in Richmond has 4. Others in the list bring the total number of patients cared for in these private hospitals (July 19th) to 245. Total cases in hospitals, 1,134; department hospitals, 765; other city hospitals, 84; private hospitals, 245; Swinburne Island, 40.

Red Cross Christmas Seals for 1916.—The printers have begun work on the Red Cross Christmas seals and will soon be turning them out at the rate of several million a day, announces the National Association for the Study and Prevention of Tuberculosis. Orders will be filled in the order of their receipt.

The 1916 seal was designed by Mr. T. M. Cleland, of New York city. It shows a Santa Claus in red on the green background of a centre panel. Santa Claus has a pack on his back bearing a red cross. The lettering A Merry Christmas and A Happy New Year is carried vertically up and down the sides of the seal. The date and the words American Red Cross, are at the bottom of the seal. The poster effect of this seal is striking and makes an unusually handsome design.

Liability of Health Departments.—The Supreme Court of Kansas has decided that a city is not liable in damages for injury resulting from the negligence or misfeasance of officers or employees of the city health department while enforcing laws or ordinances for the protection of the public health. A patient in a city isolation hospital suffered from blood poisoning as a result of getting into his foot a splinter from the floor. He alleged that the city was negligent in maintaining the floor in a defective condition, but the court said that "the duty of a municipal corporation to conserve the public health is governmental, and it is not liable for injuries inflicted while performing such duty." The opinion is published in the July 14, 1916, issue of *Public Health Reports* of the United States Public Health Service.

A Prize of 50,000 Francs for the Best Mechanical Hand Apparatus.—A generous donor who wishes to remain anonymous has offered to the Société nationale de chirurgie, a prize of 50,000 francs to be handed over to the maker of the mechanical apparatus best supplying the place of the hand. All competitors must belong to allied or neutral nations. They are to present to the society mutilated men who have been using their apparatus for at least six months. The Societé de chirurgie will experiment with each apparatus on mutilated men for the length of time it thinks fit. The apparatus rewarded is to remain the property of its inventor. The competition will be closed two years after the end of the war.

MM. Faure, Kirmisson, Quenu, Rieffel, and Rochard, who make up the committee elected by the Société de chirurgie, inform the public of the condition of the competition as stated by the donor, and beg all persons wishing to compete to send their memoirs and apparatus to M. le Secrétaire Général, Société Nationale de Chirurgie, 12, rue de Seine, Paris, France.

Poisons and Habit Forming Drugs.—Martin I. Wilbert, technical assistant in the hygienic laboratory of the United States Public Health Service, has compiled a digest of the laws and regulations relating to the possession, use, sale, and manufacture of poisons and habit forming drugs, enacted during the years 1914 and 1915, and now in force in the United States. The extracts from and the references to the several statutes have been arranged under the following headings: Sale and use of poisons; sale and use of cocaine and narcotics; drugs to be announced on label; poisons in articles of commerce; occupational intoxications; methyl alcohol; sale and use of intoxicating liquors; practice of pharmacy, and standards of drugs. This arrangement has been found to serve well as a basis for the analysis of laws designed to restrict the manufacture, sale, and use of poisons and to facilitate a comparative survey of the legislation enacted during any given period of time. During the legislative year ending in 1915, some form of legislation relating to the manufacture, sale, and use of poisonous materials, was considered in the forty-nine States, territories, and possessions of the United States, and in the majority of instances the bills presented were enacted into law. This pamphlet is Reprint No. 330 from *Public Health Reports,* and was published as a supplement to *Public Health Bulletin No. 56.* Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at twenty cents a copy.

$100,000 to Be spent on a New York or Massachusetts Town to Control Tuberculosis.—Intense rivalry is being exhibited between towns in Massachusetts and New York in their endeavor to secure a fund of $100,000 which is to be expended during the next three years in an effort to control the spread of tuberculosis by the National Association for the Study and Prevention of Tuberculosis, as announced in a bulletin issued by that organization.

More than fifty different towns and villages, ranging in population from four to ten thousand inhabitants each, have been suggested as possible places for the experiment, and the State Charities Aid Association of New York, the Massachusetts Department of Health, and the local organizations in many of the towns are urging their claims with vigor. Among the towns which are being considered carefully are Canandaigua, Johnstown, Patchogue in New York; Framingham, Winchendon, and Norwood in Massachusetts.

The preliminary committee appointed to select the place consists of Dr. Edward R. Baldwin, of Saranac Lake, President of the National Association for the Study and Prevention of Tuberculosis, as chairman; Dr. Lee K. Frankel and Mr. Homer Folks, of New York; Dr. Arthur K. Stone, of Boston; Dr. Stephen J. Maher, of New Haven; Dr. William Charles White, of Pittsburgh, and Dr. Charles J. Hatfield, of New York, executive secretary of the National Association for the Study and Prevention of Tuberculosis, as secretary. The committee has chosen Dr. Donald B. Armstrong, of New York, as executive officer of the experiment.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

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THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Department of Biology, Olivet College.

Thirtieth Communication.

DRUGS AND DISEASE.

In considering the treatment of specific disease, the pharmacologist is frequently confronted with the fact that modern clinical treatment is far from being determined by laboratory findings—that when it is not frankly empirical, it is not always demonstrably rational. Some pharmacologists are inclined to rail at their clinical brethren, and denounce in no uncertain terms the apparent obtuseness of practitioners who continue to ignore the findings of the laboratory of pharmacodynamics; but it must be admitted that the conclusions from the laboratory are strictly of those conditions only which pertain to the laboratory. Conditions identical with those of the laboratory do not exist in the hospital, therefore the pharmacologist may not justly say that his drug provings on a healthy cat necessarily demonstrate a true indication for that particular drug for a sick baby; the data obtained undoubtedly strongly suggest discreet possibilities, but do not amount to a demonstration of proved efficiency in any particular disease.

Neither is the clinician justified in ascribing alterations of symptoms to a particular favorite drug unless by the careful study of many cases, in which study strict laboratory methods are used, he can legitimately prove his asserted drug action is a constant one under given conditions. Here, it must be confessed, exceedingly few such scientific observations in hospitals have been made; consequently, at present practically all statements concerning pharmacodynamics are founded upon incomplete data. The pharmacologist must needs be critical and show wherein modern treatment stands in need of further experimentation, yet he may be constructive in showing wherein possibilities exist.

TYPHOID FEVER.

Aside from the use of serum, where potent antibodies are introduced, the treatment of typhoid is symptomatic. If cardiac weakness supervenes, there are two drugs of known value which may be used, caffeine and digitalis; the caffeine may be used to correct a thin, weak heart beat, whereas digitalis is of service to restore regularity, the dose of either to be carefully regulated just to meet physiological need. Some texts as recent as last fall recommend strychnine, alcohol, and ammonia as cardiac stimulants in typhoid fever; yet, so far as we have ascertained, strychnine increases neither force nor frequency of heart action, and both alcohol and ammonia act reflexly only through irritation of the gastric mucosa, with aftereffects from alcohol that may easily prove prejudicial.

The various antipyretic drugs should be tabooed in cases like typhoid, where cardiotoxins may accumulate rapidly in the blood stream. The temperature may be best controlled by facilitating rapid radiation from the skin area by frequent spongings with cool water, the temperature of which must be adapted to the age and vitality of the patient and to the exigencies of the hour.

The use in typhoid fever of intestinal antiseptics is based more on fervent wish than on trustworthy demonstration. Are not all these antiseptics cleft in the stomach or duodenum with resulting systemic absorption of the products? Could the phenol split off from salol be germicidal in the lower ileum without unfavorably affecting the jejunal mucosa? Would not any unabsorbed phenol be reduced to the relatively inocuous albuminate? And yet theoretically there may be some substance capable of inhibiting typhoid bacteria without at the same time being injudious to the bowel or system.

The use of turpentine for meteorism has widespread clinical support, though the way in which turpentine can thus be of benefit has not been explained. Most of the essential oils mildly stimulate peristalsis through local irritation, but they seem to possess some other property not common to other exciters of peristalsis. The control of undue flatulency, as well as of diarrheic disturbances, may also be attempted by alterations of diet, increasing the allotment of pancreatinized foods and meat essences, and decreasing starches and fats.

Acetphenetidin is sometimes temporarily desirable for the treatment of the severe initial headache which usually characterizes typhoid, but when employing this drug we must bear in mind that it is simply an interpreter of pain sensations, and is to be used when simpler measures, like complete rest and local applications of the ice bag, fail to give relief.

Epinephrine is spoken of in a recent text as serviceable in case of hemorrhage in typhoid; but to the pharmacologist epinephrine seems to be contraindicated, inasmuch as it raises blood pressure enormously, has little or no constrictor effect on distant oozing bloodvessels except when used intravenously and not always then, and at its best it transitory in its action. When hemorrhage cannot be controlled by quiet and the lessening of peristalsis, operative procedures should be resorted to, intermediate support being obtained by repeated enemata of warm saline solution.

If alcohol is ever useful as a medicine, it may be considered of value in the low stages of typhoid when its oxidation may help to conserve the body tissues; but whether it may not do more harm than good under these conditions remains a debatable question.

Treatment of Neuralgia and Rheumatism.—C. Ziemann (*Journal of the Medical Society of New Jersey*, July, 1916).

℞ Tincture of iodine, ...ʒi;
Gum camphor, ...℥i;
Chloroform, q. s. ad..............................℥v.
M. Sig. Apply as directed.

Operative Treatment of Infantile Paralysis.—Mark H. Rogers (*American Journal of Orthopedic Surgery*, July, 1916) reports the operative results in 130 cases of infantile paralysis, the work having been done by the orthopedic staff of the Massachusetts General Hospital. He finds that, in children when deformities are not developing, the fewer the operations performed the better; that, in adults, good results are obtained by tendon transplantation with and without bony resection; and that astragalectomy is preferable to arthrodesis of the ankle joint in cases presenting deformity.

Operative Treatment for the Disabilities and Deformities Following Anterior Poliomyelitis, as Practised at the Hospital for Ruptured and Crippled.—Charlton Wallace (*American Journal of Orthopedic Surgery*, July, 1916) reports success with the Soutter and Whitman operations, the transplantation of the hamstrings for quadriceps paralysis, and the grooving of the tibialis anticus and transplantation of the extensor proprius hallucis into the calcaneoscaphoid ligament for equinovalgus. He reports poor results with arthrodesis in children. He believes that many operations would be unnecessary if the proper brace treatment was instituted.

Operative Treatment of Infantile Paralysis.—R. Tunstall Taylor (*American Journal of Orthopedic Surgery*, July, 1916) believes that tenotomy, myotomy, and tendon lengthening should be performed only if a transplantation cannot be done; that tendon shortening is successful if the tendon is anchored in a periosteal or bone groove; tenodesis is justifiable when the muscle of the tendon has degenerated beyond functional use; extraarticular and intraarticular silk ligaments should be preferred in flail joints where no impotent tendons are obtainable for a tenodesis; arthrodesis should be used only in flail joints and not preferred to tenodesis and extraarticular silk ligaments; articular transplantation for calcaneus gives no increase in power of extension unless a tendon transplantation accompanies the operation; astragalectomy should be used only when other methods fail; and tendon transplantation is probably most successful in partially paralyzed cases.

Treatment of Summer Complaint Among Children.—R. C. Youngblood (*Texas Medical Journal*, July, 1916) divides the treatment into dietetic and medicinal. Breast milk is the ideal food for infants. As a substitute, condensed milk may be used. Barley water, rice water, oatmeal gruel, and occasionally, orange or beef juice should be added. For the medicinal treatment, summer complaints among children are divided into two groups: Gastroenteritis (cholera infantum) and ileocolitis. In gastroenteritis, morphine sulphate, grain 1/50, strychnine, grain 1/250, and atropine, grain 1/1000, repeated in two hours if necessary, should be administered. If there is improvement, we give one tenth or one sixth of a grain of calomel every half hour for six doses, followed by two teaspoonfuls of castor oil; later, zinc sulphocarbolate in one sixth to two grain doses every two hours until convalescence is well under way. In treating ileocolitis we use calomel and castor oil, as stated above. If the fever reaches 102.5° F. again, another dose of castor oil is indicated. Where there is mucus, blood, and dark green stools bismuth subnitrate is of immense value. The dose is ten to twenty grains every two hours. If black stools do not appear in twenty-four hours, add precipitated sulphur, one grain, to every dose. For the tenesmus we exhibit paregoric and enemas of normal salt solution and starch; in the presence of high fever, colonic irrigations with normal salt solution.

Treatment of Vesicular Eczema.—P. G. Unna (*Berlin. klin. Woch.*, January 10, 1916) states that, although lead water gives pleasant relief to itching, it is not a useful treatment, for it often increases the eczema through too great maceration of the tissues. The same is true of aluminum acetate solution. More satisfactory are ice bags for symptomatic relief, combined with the direct application of zinc sulphurata paste, which is covered with a mull bandage to be kept moist with aluminum acetate solution or sterile water. The paste abstracts water from the eczema, and the moist dressing reduces the hyperemia through the cooling of evaporation. In place of this form of dressing we may use a cooling paste, made according to either of the following formulæ:

℞	Magnesii carbonatis,	10 grams;
	Liquoris plumbi acetatis,	50 grams;
	M. et adde unguenti zinci oxidi,	40 grams.

℞	Pulveris ichthargani,	20 grams;[1]
	Liquoris alumini acetatis,	40 grams;
	M. et adde eucerini,	40 grams.

Choral Hydrate in Cardiovascular Affections.—A. Martinet (*Presse médicale*, June 5, 1916) points out that the warning against the use of chloral hydrate in cardiovascular disorders given in numerous textbooks is unwarranted and has done harm in preventing the employment for hypotensor purposes of a drug both more efficacious and less injurious than the nitrites. Impressions concerning the action of chloral on the heart have been derived chiefly from intravenous injection of toxic doses in animals. Actually, depression of the myocardium does not occur until enough has been given to depress dangerously the respiratory centres and the centres of nervous cardiac regulation. Daily doses of twenty-eight grams of chloral have in a number of instances been given to tetanus patients without harm to the circulation. In dogs no increase of tolerance of the drug develops from its daily administration, even for long periods. The chronic toxic effects of chloral are exerted chiefly on the nerve centres, including especially the vasomotor centres, and to no special extent on the heart. Clinically, chloral is, with bromides, one of the best relievers of general and circulatory spasm. Many cases of angiospasm and high blood pressure attacks, with or without sleeplessness, are effectually allayed. As advised by Brunton chloralized patients, when marked vasodilatation and heat loss result, should be kept warm with flannel and hot water bags. Another most useful property is that of improving the urinary outflow where oliguria, combined with insomnia and high blood pressure, seems due to excessive nervous

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[1] Pulvis ichthargani has the following composition:

℞	Ichthargani	1 gram;
	Magnesii carbonatis	20 grams.

excitability causing excessive renal vasoconstriction. In well compensated high pressure cases with a urinary output of one fourth to one third litre in sixteen to eighteen hours, sleep induced by chloral hydrate is characteristically followed on awakening by an abundant diuresis, as much as a litre of urine being passed in six or eight hours, with manifest euphoria, relaxation from nervous tension, and lessened difficulty of breathing. The drop produced in the systolic blood pressure, which may attain thirty or forty mm., is coupled with a corresponding fall in the diastolic, thus clearly betokening a peripheral as well as renal vasodilatation. Where caffeine, used as a diuretic, has been given in doses so large as to cause constriction of the renal vessels and arrest the flow of urine (especially in excitable subjects), a small dose of chloral suffices to overcome the inhibiting angiospasm and produce diuresis. Chloral and caffeine make sometimes the combination of choice for diuretic purposes. While thus clearly indicated in conditions of neurocardiovascular erethism with insomnia, high blood pressure, and oliguria, chloral is, on the other hand, contraindicated in neurocardiovascular asthenia, low pressure, and somnolence, with or without reduced urinary output.

Acute Gonorrhea.—F. L. Ashton (*Northwest Medicine*, June, 1916) avers that this common infection is frequently mismanaged. Each case should be treated individually according to indications. No local treatment should be employed in the acute stage, but more attention should be devoted to the use of internal medication, diet, and general hygiene. At this stage, unless there is some contraindication, five to ten minims of oil of sandal wood should be given hourly until pain on micturition is controlled. Only after the local inflammation has subsided somewhat should local treatment by injection be begun. It is a mistake to pin one's faith on any single drug, for a given patient may not respond to a drug which gave prompt results in another, while a change to some other drug will give the best of results. It is fallacious to try to cure posterior urethritis with prostatic and seminal involvement by internal remedies alone, and in such cases there should be systematic massage.

Treatment of Auricular Fibrillation.—Robert H. Babcock (*Medical Herald*, June, 1916) says there are four essentials to be considered, namely, rest in bed, the relief of insomnia and dyspnea, reduction of visceral congestions, and slowing and stimulation of the heart. For the insomnia a hypodermic injection of morphine or other opiate is the best remedy, milder hypnotics such as bromides, hydrated chloral, etc., seldom sufficing. The dose of morphine should be large enough to insure a comfortable night and should be repeated nightly in decreasing doses so long as the insomnia and dyspnea continue. If morphine is not well tolerated, heroine or codeine may be substituted. Vigorous purgation is always needed, but if an opiate is being used its need is even more imperative. Five to ten grains of blue mass with half a grain of extract of hyoscyamus is satisfactory, followed in the morning by a saline cathartic to which a dram of bicarbonate of sodium has been added. The daily use of an alkaline saline laxative should be continued as long as there is visceral congestion. For the slowing and stimulation of the heart, digitalis in some form is the only drug; it should be given in the form of strophanthine intravenously in doses of half to one mgm. repeated not oftener than once every twenty-four hours. The digitalis medication should be continued until there has been marked slowing, after which it will be necessary to find a dose for each patient which will be just enough to hold the heart at a good level of efficiency; he should continue to take this dose the rest of his life. He should always be kept under observation to prevent the return of broken compensation, and when the premonitory signs are seen, the treatment outlined should be begun at once.

Some Indications for Venesection.—A. Theilhaber (*Berlin. klin. Woch.*, January 10, 1916) believes that this therapeutic measure is too little appreciated. It gives great relief in many conditions, such as dysmenorrhea, intermenstrual colic, the symptoms of the menopause, neuralgias and neuroses in plethoric persons, and some forms of nervous headache. There is, however, another field in which venesection is valuable, namely, as a means of minimizing the recurrence of cancer after operation. Whether the original cancer has been wholly removed or not, the withdrawal of 400 to 500 c. c. of blood twice each year will accomplish much in preventing recurrence or metastases. The mechanism is believed to be dependent upon the stimulation of the hematopoietic organs secondary to the removal of the blood. If this practice is combined with diathermy and glandular extracts, excellent results may be expected.

The Rapid Treatment of Epithelioma and Lupus.—C. S. Neiswanger (*Chicago Med. Recorder*, June, 1916) states that the method depends upon zinc cataphoresis adequately carried out. The surface of the lesion should be cleansed with hydrogen peroxide or boric acid solution and over it a suitable pledget of cotton saturated with a ten per cent. solution of cocaine should be laid. Using a block tin electrode attached to the anode a constant current of five to ten milliampères is turned on through the cocaine and maintained for about five minutes or until there is complete anesthesia. It is best to wind the cotton pledget about the anode. This is then squeezed dry of cocaine and wet with a saturated solution of zinc sulphate and reapplied. Cataphoresis with a current of the same strength as previously employed should then be carried out until every portion of the ulcerating surface has become blanched. It is not necessary to observe great care to protect the sound tissues about the ulcer. A day or two after such a treatment the surface of the ulcer will have turned black and the crust may be removed after the fourth day, leaving a healthy cicatrix. If after several weeks any small nodules reappear they should at once be treated as originally. In the majority of cases, if the first application has been thorough, no repetition will be required. Some scarring always follows the treatment, as all three layers of the skin are involved.

Removal of Adenoid Growths.—J. L. Aymard (*Lancet*, June 24, 1916) considers that accurate diagnosis of the presence, size, shape and precise location of these growths cannot be made without direct inspection of the affected region, aided by a specially devised tongue depressor and a suitable palatine retractor. The same is true of their removal. The author discusses the reasons for the inadequacy of the curettes in common use and describes a pair of specially shaped scissors and a pair of similarly constructed clamps, by which it is possible to remove completely all of the pathological tissues without the risk of damage to adjacent parts. The removal should be done leisurely, with good view of the operative field and under a moderate degree of general anesthesia. Prior to their removal, which should always precede the removal of hypertrophied tonsils, there should be some toilet of the nasal passages and throat. Cleansing is probably best accomplished by the use of peroxide of hydrogen. Following the operation we should be sure that all hemorrhage is checked, and to reduce the danger of late hemorrhage the use of adrenaline should be abandoned.

Venereal Disease in European Armies.—E. Kilbourne Tullidge (*Military Surgeon*, July, 1916) says the various treatments for the respective venereal diseases are familiar to all members of the profession, and therefore need no elaboration. He consequently mentions only a novel and excellent treatment for venereal bubo or inguinal adenitis practised in the field where it was discovered accidentally by a German officer in charge of a mobile Röntgen apparatus. He treated the partly inflamed swelling symptomatically with röntgenotherapy (10-20x with a 0.5 mm. aluminum filter) with the result that in a short time fluctuation, pain, redness, and swelling gradually disappeared and the retrogressive changes that followed left only a small pigmented spot or scar.

Second Thoughts about Salvarsan Therapy.—William E. Stevens (*Caliornia State Journal of Medicine*, July, 1916) presents us with the following list of "Don'ts." Don't use salvarsan unless positive indications for its employment exist. Don't expect as much from neosalvarsan as from salvarsan. Don't give salvarsan in the office. Don't give salvarsan at too frequent intervals, or in too small doses. Don't omit any details in preparing the solution to be injected. Don't neglect to filter the solution before it is injected. Don't cut down on a vein. Don't inject any of the solution into the tissues surrounding the vein. Don't administer too large a dose at the first injection, especially in the early secondary stages. Don't inject salvarsanized serum prepared from a Wassermann positive blood into a canal containing Wassermann negative fluid. Don't inject air into the spinal canal. Don't use intradural medication under any circumstances until the intensive treatment with intravenous injections of salvarsan, mercury inunctions or injections, and potassium iodide has been given a thorough trial. Preliminary medication is of the highest importance in securing the most satisfaction in comfort to the patient and in attaining complete anesthesia without danger. Three doses of morphine given at three quarters of an hour intervals should render the patient distinctly drowsy when he comes to the operating room, and the size of the dose must be determined by watching the effect of the first and second injections. The use of scopolamine is not necessary and adds to the risk, which is decreased by morphine alone. The use of local with the general anesthesia is likewise of great assistance. Gas and oxygen anesthesia is indicated in all cases of obvious lung irritation, when there is reason to think that there is a latent lung process, and when the kidneys are severely damaged. Stevens believes it to be the safest anesthetic in old men with weak lungs and atheromatous bloodvessels, if there is any marked kidney damage, and with increasing skill in administration it may become the safest under any condition. Spinal anesthesia is of more limited use, as it cannot safely be used above the level of the pelvis. The great advantage is that all stimuli to the brain are cut off and shock much lessened, but the mortality has been high. A skilled man is needed to administer it, and the psychic shock may be considerable. In a limited field it is very valuable. In cases of great vesical irritability needing cystoscopy the paralysis of the motor nerves allows of the maximum dilatation with safety as well as without sensation. It is useful also in perineal prostatectomies, and amputations of the legs for gangrene in diabetes. Local anesthesia has gained in importance since the introduction of novocaine, and as our skill increases the class of cases in which this is the preferable method grows larger, but the psychic effects on the conscious patients must be borne in mind. It is indicated today in all operations on the scrotum or its contents, and in minor operations generally.

Aftertreatment of Colles's Fracture.—J. A. Arnold (*American Journal of Surgery*, July, 1916) says that the aftertreatment of a Colles's fracture, for at least eight or ten days, is the same as the first, except inspection and instruction to the patient to cut the bandage at any time it should become too tight, in the event that he cannot reach his physician. It is preferable to take the risk of having to reset the arm than to have a myositis with its subsequent contractions, and this condition will manifest itself within the first twenty-four to thirty-six hours. Otherwise, in the aftertreatment, the splints should remain as applied without interference, unless swelling or other pressure symptoms arise to necessitate changing. After the first ten days remove the splints and make slight movement, which should be repeated at intervals of two or three days. Take the anterior splint off, and use only the one dorsal splint. The anterior splint should never be used except in conjunction with the dorsal, as it will not only fail to correct a deformity, but will produce one in an otherwise perfectly reduced fracture. Keep the dorsal splints on, as an average, in the case of a young person, about three weeks; in the case of an old person, about four weeks; then remove all dressings, except perhaps adhesive plaster to support the wrist, and practise passive motion.

Tuberculin Therapy: Its Principles, Limitations, and Indications.—Walter C. Klotz (*California State Journal of Medicine,* July, 1916) says that on a pathological basis our knowledge of tuberculin is limited to the phenomenon of the focal reaction, which is the essential feature of the tuberculin reaction. The basis for indications and contraindications for tuberculin therapy is an estimation of the degree of reactivity of the tissues at the site of the tuberculous lesions. This can be determined only by a careful clinical study of each case. The principal object of tuberculin therapy is to establish tuberculin tolerance, which is not permanent, and the protection offered by it is limited. The various biological tests are too variable to serve as safe guide for doses in tuberculin therapy. The dose is not and cannot be absolute, but must be determined for each individual case, according to the clinical picture.

Desirability of Using Miotics as Adjuvants to Mydriatics.—Harold Gifford (*Jour. A. M. A.,* July 8, 1916) reports five cases in which glaucoma followed the instillation of small amounts of homatropine into the eyes for the purposes of refraction. A review of the literature shows this occurrence to be rare—not over once in 10,000 cases—but steps should always be taken to prevent its development. Three of the five cases suffered permanent damage to vision, while the other two were cured by the immediate use of physostigmine instillations. On the strength of the author's experiences it is urged that physostigmine should be used as a routine following the employment of such mydriatics as homatropine. The only exception to this rule is in the case of young children. For every patient who has had homatropine for any ophthalmological purpose, there should be prescribed ten or fifteen drops of a solution containing one grain of physostigmine to the ounce. The patient should be directed to use one drop, three times daily, until the pupil has returned to normal and the sight for near objects is restored. It is also recommended that the home instillation be made from the tip of a toothpick or a match to avoid too large a dose. This prescription should be given in addition to the immediate instillation of the same drug in the office. The need for the continued use of the miotic arises from the fact that the action of the homatropine often persists for some time and because some of the cases of glaucoma resulting from its use have first developed many hours after its administration.

Regeneration of Bone.—Franklin D. Smith (*American Journal of the Medical Sciences,* July, 1916) tells us that osteogenesis is not a specific attribute of any tissue or layer of cells, but is limited entirely to the osteoblasts which are scattered throughout the entire structure. Mature bone cells are end products, and while they may undergo mitosis under artificial conditions, this process is unknown in the human economy. Many mature bone cells of a transplant remain alive, especially near the periphery of the transplant, and control its calcified matrix. Absorption of isobone is influenced in many cases by the treatment received by the transplant. Protoplasmic poisons should not be employed during bone grafting procedures. Regeneration of bone for the most part is an indirect process through the differentiation of the osteoblast to a mature bone cell. A transplant is subject to the varying demands of its environment; functional demands producing an increase in bone deposition, while lack of functional demands causes atrophy and absorption. Bony contact is not essential to regeneration of bone, but for practical purposes, doubly insures the result desired. In the transplantation of any bone the most that can be hoped for is the continued development of the implanted osteoblasts, together with such stimulus as may be obtained from the osteoblasts of the host and the retention of vitality in some of the transplanted bone cells with their corresponding intercellular calcium matrix. The transplant in the presence of an infection may or may not survive, and is dependent on the type of the infecting agent. The medullary transplant is not a permanent entity, but is absorbed as soon as all functional demands are removed.

Anesthesia.—Edward L. Young, Jr. (*Boston Medical and Surgical Journal,* July 6, 1916) says that because of its low mortality and very wide margin of safety, ether is the anesthetic of election in the majority of routine surgical cases. Preliminary medication with a hypodermic injection of morphine and atropine helps to quieter and more rapid induction of unconsciousness. The use of gas to put the patient to sleep and then the substitution of ether is much easier for the patient, and in so far as it lessens the stage of excitement and the amount of ether used, is likewise safer. A certain amount of rebreathing is probably necessary to preserve the gas balance in the blood, and this is one of the advantages of the drop method of administration, just enough rebreathing goes on, and there is not, as in most closed cones, far too much, as well as periods of too great ether concentration. The clinical fact seems to be beyond dispute that when a local as well as a general anesthetic is used, patients are better relaxed with less ether, there is less shock from the operation, and the postoperative course is much smoother. Nitrous oxide gas may be used for all minor operations requiring but a short time, and in such operations it is by far the safest anesthetic. Mixed with about eight per cent. of oxygen to prevent cyanosis, gas may be used for operations of any duration in the majority of patients. This mixture is not irritating to the lungs or kidneys; has no bad effect on the heart when properly administered, unless the patient is unfit; tends to raise the blood pressure slightly except at the end of long operations; is easy to take, and recovery is quick with few if any symptoms; but the margin of safety is narrow. The immediate mortality from its administration varies with the skill with which it is given. In the hands of experts it is safe, but in the hands of the inexperienced or careless the mortality is believed to be higher than that of any other anesthetic in general use. The minute any cyanosis develops the danger zone is in sight; the face should remain of a pink color. When a patient cannot be anesthetized satisfactorily without cyanosis, gas and oxygen alone should not be employed.

Miscellany from Home and Foreign Journals

An Unusual Epidemic of Whooping Cough.—P. Tissier (*Bulletin de l'Académie de médecine*, June 6, 1916) writes concerning the whooping cough epidemic which prevailed in Paris and its outskirts from April to July, 1915, and from December, 1915, to the time of publication. Of 144 cases treated by the author no fewer than ninety-four were in adults. The cases occurring in children were often contracted from the parents. Though not, as a rule, immediately grave, the disease, in adults, ran a protracted and tedious course and was fraught with serious consequences, especially in the aged, in those already afflicted with bronchopulmonary or cardiac disease, and in soldiers infected while on a furlough and later transmitting the disease afar. The condition being mild at the outset, the adult patients often failed to interrupt, or left off only a few days, their customary occupations. The majority of cases seen had already been diagnosed as grippe, nervous cough, tonsil cough, or reflex spasmodic cough. The actual nature of the condition was shown, however, by the paroxysmal cough, frequently with nausea and at times vomiting, the absence of bronchial disturbance, and of marked involvement of the upper respiratory passages, the ready yielding of the condition to the ordinary treatment for pertussis while refractory to that for grippe or bronchitis, and especially, its contagiousness. The pertussis contracted by children from their parents was always typical and generally severe. The disease in adults constantly began with slight coryza, sore throat, or hoarseness, followed later by dry, paroxysmal cough, seldom with expectoration, which consisted of saliva alone. All the patients experienced a tickling sensation in the throat which obliged them to cough. The paroxysms then became more and more frequent, though the cough remained dry and was not, as in children, accompanied by suffocating attacks. Treatment with bromoform, chloroform, iodoform, or fluoroform proved effectual, early administration being, however, necessary to ward off bronchopulmonary complications, against which these remedies are powerless.

Infectiousness of the Cerebrospinal Fluid in Syphilis.—Richard Frühwald and Alexander Zaloziecki (*Berlin. klin. Woch.*, January 3, 1916) inoculated spinal fluid from twenty-three cases of syphilis in various stages of the disease into the testicles of rabbits to determine the infectiousness of the fluid in the several stages. The authors summarize the result of all positive cases in the literature to date as follows. Acquired syphilis: A. Without objective nervous symptoms, no positive result before the eighth week of the disease; two positive cases in the eighth to tenth weeks, during the primary and secondary stage; in older secondary cases of three to twelve months' duration, seven positives; no positive result in tertiary syphilis. B. In cases with objective nervous symptoms—one case of early meningitis gave a positive result and one of neural recurrence; two positives in hemiplegia and apoplexy; one in a syphilitic meningitis of unknown duration; one in spinal syphilis; and, in metasyphilis, there were two positive results in tabes and five in progressive paralysis. Hereditary syphilis: Two positive cases in newborn infants without symptoms referable to central nervous involvement, and two in older cases of inherited syphilis. One of the most striking features of these findings is that in the secondary stage, where the positive results are most frequent, these results bear no necessary relation to the condition of the spinal fluid, which may or may not be pathological, and may or may not give a positive Wassermann reaction. In all cases, however, the Wassermann reaction in the blood was positive. Another striking fact was the absence of positive findings in the tertiary stage of syphilis.

Etiology of Cancer of the Esophagus and Stomach.—William Lerche (*Surgery, Gynecology, and Obstetrics*, July, 1916) summarizes the question of cancer of the esophagus and stomach as follows: 1. Cancer of the esophagus is exceedingly rare in animals. 2. Cancer of the stomach is rare in animals. 3. Cancer of the esophagus and stomach is comparatively rare in the natives of tropical and subtropical countries. 4. Cancer of the esophagus and stomach is common in certain countries in the temperate zones. 5. Cancer of the esophagus is much more frequent in men than in women. 6. Cancer of the stomach occurs with almost equal frequency in both sexes. 7. Cicatricial strictures of the esophagus and the stomach from swallowed corrosive fluids particularly, form at certain parts of these organs and for definite physiological reasons. 8. The favorite sites of cancer in the esophagus and in the stomach correspond exactly to the favorite sites of the cicatricial strictures in these organs.

Relapsing Fever.—Frederic Hagler (*Military Surgeon*, July, 1916) states that much may be said as to the importance of the role of the body louse in the transmission of relapsing fever. In Serbia, relapsing fever appeared with typhus fever (which is admittedly transmitted by the louse), and measures instituted against lice soon markedly decreased the incidence of each. This difference is noted, however, that whereas typhus practically disappeared with the lice, relapsing fever persisted and continued to develop in the medical wards of the Belgrade hospital until systematic sulphurous fumigation of wards and rooms was undertaken to destroy bedbugs. After this it also disappeared. Thus it would seem that the bedbug certainly is one and probably the most common of the agents of transmission. A further significant fact is this: Of approximately fifty Red Cross surgeons and nurses assigned to Serbia, at least twenty contracted typhus, while in none relapsing fever developed. If the methods of transmission were the same we should expect at least a few cases of relapsing fever to have arisen among this number, and, in view of the lesser likelihood of nurses and physicians being bitten by bedbugs than by lice, it seems probable that the bedbug plays a larger part in the transmission than is generally ascribed to it.

Trophic Disturbances Following Superficial Wounds.—Mouchet and Poirot-Delpech (*Paris médical*, May 27, 1916) record an instance of curious trophic changes in the ring and little fingers of the left hand, following a superficial wound by shell fragments on the ulnar side of the dorsum of this hand. The two fingers referred to are practically reduced to bone and skin, the latter being reddish and squamous throughout. The nails are markedly striated and curved. The two fingers remain extended and somewhat divergent, flexor power being practically lost, though careful palpation reveals no impairment of the flexor or extensor tendons. Sensation in the fingers is diminished, but the fingers are sensitive to cold, becoming purplish as soon as the atmospheric temperature falls. There is no traumatic lesion of the metacarpals or the corresponding interosseous and lumbricalis muscles. Röntgen ray examination, however, reveals an osteoporosis of the last two metacarpals and the phalangeal bones. The ulnar nerve shows normal electric reactions except at the wrist, where no reaction is obtainable. The condition has been treated for some time with massage, hot air, and hot running water, without result.

Mycetoma in Hawaii.—M. T. Clegg and W. C. Hobdy (*American Journal of Tropical Diseases and Preventive Medicine*, April, 1916) report a case of Madura foot in a native Hawaiian fisherwoman, the condition having begun over five years previously after a puncture of the sole of the foot on a coral reef. After four years sinuses had begun to form on the dorsum of the foot, and the patient's general health was impaired. The foot attained nearly twice the normal size. Treatment consisted in amputation six inches above the upper margin of the diseased tissue, and was completely successful, without recurrence. That more than one species of streptothrix may cause Madura foot has been fully established. From this case cultures of an organism identical with that isolated by Vincent in India, Streptothrix maduræ Vincent, were obtained.

Some Bodily Changes during Anesthesia.—Frank C. Mann (*Journal A. M. A.*, July 15, 1916) made experimental studies on dogs, and attempted to eliminate changes due to struggling, excitement, and asphyxia. The blood was the chief subject of investigation and its volume was found to undergo about ten per cent. reduction after six to nine hours of light etherization. Since lecithin is greatly increased in the blood during anesthesia, studies were made of the cholesterin and yielded such variable results that no uniform response could be determined. There seemed, however, to be some increase in this lipoid also. No change occurred in the specific gravity of the blood under light anesthesia and none even when the anesthesia was deep until asphyxia developed. No alteration in the number or fragility of the red cells or in the amount of hemoglobin occurred. A constant change did appear in the number of the white cells, which varied from a slight increase to over twice the normal number. This increase was usually present after two or three hours of etherization and was due chiefly to an increase in the polymorphonuclear elements; the change was independent of the spleen and was not influenced by atropine. It is probably due to some direct effect on the bone marrow. Using a new method, consisting of injecting known suspensions of bacteria into a doubly ligated portion of vein and incubating in the living animal, it was determined that etherization for five or six hours did not depress phagocytosis.

Intraventricular Cerebral Hemorrhage.—Alfred Gordon (*Archives of Internal Medicine*, March, 1916), from a study of five personal cases of primary intraventricular hemorrhage—two into both lateral ventricles and three into a single lateral ventricle—is led to consider a sudden onset without premonitory symptoms, profound coma continuing several days without improvement, absence of marked paralysis, absence of rigidity and contracture in the days following the seizure, and absence of the toe phenomenon, as indicative of this relatively uncommon form of cerebral hemorrhage. Early surgical decompression on the sound side is advised, the profound coma being, perhaps, due to sudden compression of the normal brain tissue on this side by the hemorrhagic effusion on the other. In one of Gordon's cases this procedure was followed on the fifth day, and in spite of the delay distinct amelioration resulted.

Simple Tic Mechanism.—C. P. Oberndorf (*Jour. A. M. A.*, July 8, 1916) reports three cases of tic to show that the probable mechanism of this phenomenon is a simple one, referable to an interaction of a mental censor and a primary autopleasurable act. Thus in one instance the tic consisted of pressing the extended thumb deeply into one cheek. This was traced back to the childhood habit of sucking the thumb—an act of autoerotism, hence one of pleasure. The form of the tic as it was encountered was due to the modification demanded by the individual's mental censor. Psychanalysis led to the disappearance of the tics in all three cases, owing rather to the solution of more vexing problems which troubled the patients than to the direct effect of the analysis.

Right Side of the Heart in Relation to Overstrain.—William Russell (*Brit. Med. Jour.*, June 24, 1916) considers that more attention should be paid to the condition of the right side of the heart, for it can give valuable evidence of changes occurring in the left heart as well. Visible pulsation over the body of the heart is due to the right ventricle and may be referable either to its dilatation or to the heart being pushed close to the chest wall by an enlarged left ventricle. The latter is the more common cause, since the right ventricle is not easily dilated. The pulmonary second sound, when accentuated, is evidence of some degree of impairment of the power of the left ventricle leading to a damming back of the blood into the lesser circuit. The occurrence of a systolic murmur in the pulmonary artery also reflects upon the condition of the left ventricle, for its mechanism is probably secondary to a narrowing of this vessel through enlargement of the left ventricle and a kinking of the origin of the vessel. It is a murmur stictly functional in origin, although usually significant of some organic lesion of the left side of the heart. The absence of the first sound heard over the right ventricle indicates weakness of that chamber, and is common in cases with fatty infiltration. Sudden death is a frequent termination in such cases. Pulmonary diastolic murmurs are almost invariably due to endocarditis in that region or are secondary to more or less failure of the left side.

Prostatic Nodes; Their Significance.—Noah E. Aronstam (*American Journal of Surgery*, June, 1916) thus summarizes his views on this question. 1. Gonorrhea is the most common cause of prostatic nodes. 2. By reason of the nodes the prostate is altered both structurally and functionally. 3. The prostatic secretion produced under these circumstances is no longer a normal and physiological secretion. 4. As such it can no longer activate the spermatic fluid. The normal prostatic secretion exerts a powerful influence upon virility, and if pathologically altered may thus cause partial or complete impotence. 5. The prostatic nodes are sources of toxin absorption and are responsible for the subsequent train of symptoms thus engendered. 6. Treatment is unsatisfactory and problematical.

Complete Congenital Atresia of the Ileum.—This case is reported by Royale H. Fowler (*Medical Record*, June 10, 1916), as the first of the kind to be recorded. The ileum ended in a blind pouch twenty-two and a half inches from the ileocecal valve, and the whole small intestine measured only fifty-six inches in length, which is only one half the normal length.

Life History of Ascaris lumbricoides.—F. H. Stewart (*Brit. Med. Jour.*, July 1, 1916) did experiments which showed that pigs could not be infected with the parasite, but that white rats were susceptible. The eggs passed by man developed into mature embryos in the presence of moisture and at a temperature ranging from 25° to 30° C. If such eggs reach the intestinal tract of the rat, they hatch and the liberated larvæ enter the body of the host, being found in the bloodvessels, liver, spleen, and lungs after four to six days. On and after the sixth day they have all passed into the air cells of the lungs, where they produce hemorrhagic inflammation and render the host very sick. After the tenth day no larvæ can be found except in the lungs. If the attack is not fatal, the host is free from parasites by the sixteenth day. Evidently there is an alteration of hosts; the experiments do not prove, however, that the rat is the natural or the only intermediate host.

Diagnosis of Cancer of the Stomach.—James Alexander Lindsay (*Lancet*, July 1, 1916) thinks it a simple matter to make a correct diagnosis of this disease in the later stages, but it is more important and difficult to make the diagnosis in the early stages. The condition was found to be most frequent in the fifth to seventh decades, being rare below thirty years; there was a clear family history in about ten per cent. of the cases; and a history of previous gastric ulcer in only 12.5 per cent. The mode of onset was found to be of importance from a diagnostic viewpoint, the signal symptom having been, in order of frequency: Painful dyspepsia, vomiting and pyrosis, loss of weight, progressive weakness and anemia: hematemesis, anorexia, and melena. In nearly half of the cases fever was noted, seldom above 102° F. Usually one of the signal symptoms will be found to develop abruptly in a person over forty years of age who had previously been in good health. One or more of the remaining symptoms mentioned as signal symptoms will sooner or later appear, particularly loss of weight, anorexia, and vomiting. Such a picture suggests early examination of the gastric contents.

The Factor of Fear in Nervous Cases.—Hugh T. Patrick (*Journal A. M. A.*, July 15, 1916) says it is well known that fear is a factor in many cases of functional nervous disorder, but he contends that this emotion is at the bottom of a large number of other cases in which its presence is not commonly recognized. He presents brief histories of a number of cases which illustrate how common and potent a cause of functional, mental, and even somatic phenomena fear actually is. Many of the patients whose cases are cited were persons of unusual bravery, yet they were the victims of fears which caused them much suffering.

Systolic Pressure in Acute Nephritis.—Rodolph G. Abercrombie (*Brit. Med. Jour.*, June 24, 1916) reports observations made on several hundred cases of acute nephritis. It was found that the systolic blood pressure was always raised some time in the course of the disease, but not to so great a degree as in chronic nephritis. A striking feature of the systolic pressure was found to be the occurrence of wide diurnal variations, the highest point being in the evening. Often as recovery progressed the elevated pressure fell *pari passu* with the clinical improvement. In cases with uremic convulsions, the pressure averaged much higher than in the nonuremic cases, although in some it remained persistently low.

Branchiogenic Carcinoma. — Frank Warner (*Annals of Surgery*, July 1916) concludes: 1. The mortality of branchiogenic carcinomata is very high. This is probably due as much to the start it gets before operations, owing to its deep seat, rendering diagnosis difficult, as to extreme malignancy of the growth, although this is sometimes great. 2. In rapidly growing branchiogenic carcinomata, the cell differentiation may be so imperfect in many fields as to simulate tumors of endothelial origin; other fields usually clear up this uncertainty. 3. Operations for the relief of branchiogenic carcinomata are always serious, owing to their attachment to deeper structures which may require removal. Both the carotid artery and jugular vein may be injured to an extent requiring the removal of a section: the pneumogastric nerve may be injured at the same time. 4. The only hope for making any satisfactory reduction in the mortality rate following operations for branchiogenic carcinomata is to operate earlier in their progress. 5. Any hard swelling in the region of the branchiogenic clefts should immediately arouse suspicion of branchiogenic carcinoma, especially if associated with pain as a prominent symptom.

Proceedings of National and Local Societies

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Joint Meeting Held July 13, 1916, at 8:30 p. m., under the Auspices of the Department of Public Health and Charities of Philadelphia, The Philadelphia County Medical Society, and the Philadelphia Pediatric Society, to Discuss Anterior Poliomyelitis.

Dr. JOHN D. MCLEAN, President, Philadelphia County Medical Society, in the Chair.

Infantile Spinal Paralysis.—Dr. CHARLES K. MILLS said that experience with this disease pointed to the fact that the malady was infectious or microbic in origin and tended to spread by at least two methods, through certain occult atmospheric or climatic influences, and by contagion. The healthy children of a family should be removed to other neighborhoods and the sick quarantined. Through the work of Flexner and others the measures were known which should be taken to prevent the spread of the disease by the secretions of the nasopharynx and the intestinal excretions. Good nursing played a large role in the treatment of infantile paralysis in all periods of the disease. Rest of the body and mind was said to be in the highest degree important. The virtue of a quiet and composed manner should be remembered by the nurse and enforced by the physician. Light and sound should be excluded during the acute febrile stage; also insect life. The closest attention should be paid to keeping clean the nose and throat by gentle spraying with solutions of hydrogen peroxide or other germicidal solutions. Attention should also be paid to the intestinal excretions. With the appearance of paralysis and contractures the limbs should be kept in positions less liable to lead to subsequent deformities. Massage should not be used until the fever had largely disappeared; at first it should be employed simply as a gentle stroking; later there should be moderate kneading combined with the stroking. Instead of the patient being lifted out of the bed, the position should be changed in the bed. A typical case of the disease was easy of recognition within three or four days after the onset of fever. It should be suspected before the paresis appeared. The presence or absence of pain and hyperesthesia might be of value in determining whether or not the lesion was closely limited to the spinal cord or higher regions of the neuraxis or whether meningeal implications were shown. The physician should not make the mistake of supposing he was dealing with simple meningitis or neuritis when the fundamental disorder was poliomyelitis. In a neighboring epidemic of poliomyelitis one of the most essential things to remember was the frequent existence of abortive and aberrant cases, so atypical that their nature was doubtful. Such cases were as much a source of danger to the uninfected as those fully developed. As a neurologist Doctor Mill's attention had been called in a striking manner to mistakes in diagnosis in severe cases of poliomyelitis, especially those showing bulbar, cerebellar, or cerebral lesion. He had seen in consultation cases in which the diagnosis of brain tumor or meningitis had been made. He would, therefore, emphasize that during the prevalence of poliomyelitis, patients presenting cerebral, bulbar, or cerebellobulbar symptoms should be closely scrutinized lest they have cases of poliomyelitis of unusual localization. Unless the physician was aware that in the aberrant types the disease might attack practically any part of the brain or cord he was likely to be misled in diagnosis. On the other hand, instead of the abortive case the physician might be confronted with febrile symptoms of the most severe character. In three such cases of which he had knowledge the condition had been thought to be cerebrospinal meningitis, tumor, or abscess; in two instances, typhoid fever of the cerebral type. Since the disease prevailed epidemically in June, July, August, and September, whenever possible, children of an infected community who presumably had not been infected, should be removed to places supposedly immune. It should also be remembered that children should not at once be mixed with others who had been brought from a region in which the disease had not existed. Emphasis was placed upon the necessity of isolating children removed from a locality in which the disease was epidemic until the period of incubation was past or after the elapse of two or three weeks.

Poliomyelitis; Diagnosis.—Dr. JAMES H. MCKEE remarked that there was little that was characteristic about the onset of poliomyelitis, many of the symptoms simulating those of other infections and of some autointoxications. There was nothing typical connected with sudden onset, with moderate fever lasting usually for several days; the constitutional symptoms, or the fact that the attacks sometimes followed other infectious disease. This was particularly true of the polioencephalitis types. The nervous symptomatology, however, was suggestive during the prevalence of epidemics. It was not usual for babies and very young children to have severe pains in legs, arms, fingers, and toes, and to have headache and backache. This was also true of the associated general tenderness, and the rigidity of the neck. There were relatively few things in early life that caused such symptoms. Laboratory examination of blood and of the spinal fluid here gave undisputed evidence. Another symptom uncommon in infancy and early childhood and which often led to the diagnosis of "rheumatism" was profuse sweating. Scurvy was to be considered in the differential diagnosis. This, however, was a chronic affection with slow onset and definite history, and usually afebrile. Tonsillitis in early life might be accompanied with severe pains. In the various conditions to be considered, however, the laboratory gave convincing aid. In the treatment of the paralysis the patient should be mainly under the care of the orthopedist.

In the prevention of poliomyelitis, prophylaxis in general was to be observed. Since the disease occurred particularly in the hot months of the year children should be taken out of the large cities. The patient should be segregated, much attention should be paid to the care of discharges of the nasopharynx and of the bowels; animals might be carriers and should be excluded from the patient. Attendants should wear uniforms, and preferably, rubber gloves. Cleansing of he nasopharynx was highly essential. The bowels should be opened freely; nothing better for this probably than calomel followed by oil or salines; or the giving of hot baths with as little disturbance of the patient as possible. Since sweating was probably one of Nature's efforts to eliminate toxins, this should be increased as much as might be proper. In the presence of meningitis, lumbar puncture seemed wise for the reduction of pressure and the lessening of toxicity. Great emphasis was laid upon the necessity of absolute rest and quiet. The protection of the paralyzed parts with cotton, wire frames, etc., was essential to successful treatment. Voluntary activity should be resumed very slowly. Hope for recovery of the paralyzed part should obtain, not only for a year, but for many years.

Poliomyelitis; History.—Dr. Paul A. Lewis recalled that six years previously, before the College of Physicians of Philadelphia he had given a summary of what up to that time had been done in the study of poliomyelitis, which summary had been given from the results in the laboratory of the work of Dr. Simon Flexner and himself. Two years ago, Doctor Flexner had made a statement of the work he had done with other associates in the meantime. Since then little progress, Doctor Lewis said, had been made. With Doctor Mills and Doctor McKee he could in no way disagree; they had covered the ground so far as their statements went. He referred to the article by Doctor Flexner appearing in the *Philadelphia Public Ledger* for the 9th inst., in which the author had summarized his experiences in the matter of poliomyelitis. While there were slight corrections to be made in the publication, so far as the laboratory work was concerned the latest evidence was given. Doctor Lewis in giving his own experiences, said that as all knew, poliomyelitis was understood to be an infectious disease and in greater or less degree contagious. Its cause was known, and to the elect few who had had opportunity to work with the disease in the laboratory its cause might be said to be well known. The essential cause had been discovered six years ago; three years ago, with the actual cultivation of the organism, by Flexner and Noguchi, the causative organism had become more perfectly known. Six years ago, inoculations had been made from the spinal cord of the human dead of the disease into the monkey's brain and the disease had been reproduced in characteristic fashion. From the infected monkey the disease had been transferred through others to many hundred, and up to the present time the series had possibly reached hundreds of actual passages. It had been found shortly after this that the infectious material from the central nervous system of the human subject could be passed through filters sufficiently small to remove the bacteria, and there would still be a fluid highly infectious. This, he said, established the fact that the microorganisms were of well known bacteriological status, small enough to be passed through filters, and difficult to see under the microscope. Some such might be bacterial in nature and could be cultivated as were other bacteria; others were probably protozoa, such as the virus of yellow fever, and transmissible only through an intermediate host. The virus of poliomyelitis seemed to be of the former class. While it had been said that the organism was ultramicroscopic, it could be seen. It was so small, however, that nothing could be told of its structure as was possible with, for example, the tubercle bacillus. While the cause of poliomyelitis had been made known chiefly through the work of Flexner and his associates, these experiments had been confirmed and extended by others. In regard to transmission, that study had revealed to a certainty that it was by contact. On the other hand, there might be other methods of transmission Certain bizarre facts in connection with the disease were not easily explained on the basis of contact. They could not go astray, however, in taking the assumption of contact as the starting point of combating an epidemic. One difficulty in guarding against contact was because many cases were abortive to the extent that the individual showed no sign necessitating the calling of the physician and no sign which would lead the physician to be positive in his opinion whether the patient had been suffering from any infection, to say nothing of poliomyelitis. The cases with absence of paralysis were quite as dangerous to the unaffected as the paralytic. He expressed the fullest assurance that the Department of Public Health was fully equipped to deal with an epidemic, should such an unfortunate occurrence take place in Philadelphia. In the study of the epidemiology of the disease, under certain conditions the laboratory could help greatly. The laboratory, however, had done its best work in showing that individuals in contact with the infected were frequently carriers of the disease. The laboratory had also confirmed the clinical observation of the existence of a mild abortive or subparalytic form of the disease. Furthermore, the presence of the virus in the nasal secretions had been demonstrated. Emphasis was placed upon the fact that the laboratory showed the importance of prophylaxis from the standpoint of the contagiousness of the disease. In the therapeutic control of the disease the laboratory had produced nothing of practical importance beyond the fact that certain experiments by Flexner and his coworkers had shown that the serum of immunized animals and some chemicals could under certain conditions mitigate the disease in monkeys. On the other hand, the fact that these workers had not shared their work with the public was to him sufficient evidence that they had not found a cure for poliomyelitis. Anything that the newspapers might say to the contrary should not cause excitement.

Infantile Paralysis; Prevention.—Dr. J. Torrance Rugh said that the treatment of the ravages of infantile paralysis devolved ultimately upon the orthopedic surgeon. There were, however, many things which the general practitioner should know regarding the care of these patients during and following the attack. The great essential in the aftertreatment of these cases was absolute rest. They would be importuned by the family to allow the patient to sit up, or to move the affected leg or arm. They must not let it be moved; they must keep that part still, at absolute rest! The treatment as advocated by Oppenheim and elaborated by Lange of fixation in plaster of Paris to secure rest, essential for restoration of function and the carrying away of the products of the inflammation, had given by far the best results in these cases. The great trouble, however, was the difficulty in securing the cooperation of the family in allowing such fixation. Any treatment, so far as their experience went, which was directed to the nerve centres themselves had met with utter failure. Certain electrotherapeutists alleged ability to restore to a very much greater degree the nerve function of these nerve centres than could be accomplished by any other means. But here entered the great problem to which Doctor Mills had already called attention, that in all grades of infection, from the abortive to the fulminating, no man living knew how far recovery of paralysis would take place without any aid whatsoever. Some of these cases which had been totally paralyzed, ended in recovery with apparently no evidence of the disease. Therefore, to ascribe to any one method of treatment curative effects so far as the nerve centres were concerned, was entirely out of the question. Their efforts must be directed chiefly to the care of the paralyzed parts. There was too great a tendency to begin the use of massage and electricity too early. These muscles must be put at complete rest until all evidence of the acute condition had subsided. Then the tonic treatment by massage, electricity, or whatever means were employed, should be begun in the endeavor to maintain the tone of the muscles and the life of the muscle fibres. The muscles were kept at rest to guard against any strain which tended to increase degeneration of the fibres. There must be also the prevention of faulty postures. As a result of the acute inflammation in the structures faulty postures began extremely early, even before they showed themselves to the eye or the finger of the examining surgeon. If the paralysis affected the trunk muscles, the child should not be allowed to sit up. If the paralysis affected the legs, the patient should not be allowed to walk, as there was nothing to maintain the weight of the body, except the ligaments, and they were insufficient unless supported by the muscles. Therefore, when the muscles were paralyzed, the earliest thing to do was to keep the parts absolutely at rest, keep them from assuming a deformed position, and guard them against strain. When the child began to walk, the extremities should be maintained in their proper position. It was surprising in many instances, the great amount of power which would return after four or five years when these muscles which had been subjected to constant strain, had been protected and the parts maintained in the proper position. If there was any tendency to deviation from the normal position, a brace should be applied to the part. The indications for the application of braces were definite, whatever condition might be present and no brace should be applied, except to accomplish certain absolute needs. The therapeutics of a brace were as accurate as those of a drug.

Another measure of value to be employed early was that of having the patient practise voluntary movement of those muscles which had not been totally paralyzed. By giving the child voluntary control over a group of weakened muscles, the opposing muscles would be prevented from drawing the part into a deformed position, and when the child walked he would be able to maintain a correct position. In cases in which there was total loss of power, operation offered a great deal in treatment. This, however, brought in a portion of the work which belonged to the specialist, and any man who attempted work of this kind unless he was trained to it, would meet with absolute defeat in the treatment of these cases. The surgical treatment of infantile paralysis was divided into the two great classes of destructive and constructive surgery. Constructive surgery was indicated after two years had elapsed since the attack of the paralysis, and consisted chiefly in the transposition of tendons, silk inserts, and similar measures. Destructive surgery, which aimed at securing stability at the expense of certain structures of functions, should not be employed until six years had passed, and in the selection of operations, those which utilized structures already existing were to be preferred to those which made use of foreign substances for various purposes.

Dr. **Wilmer Krusen**, director of Public Health and Charities, Philadelphia, said that of the two cases of reported infantile paralysis now in the Municipal Hospital, one was a case of true infantile paralysis; the other, a case of infantile paralysis, but not of the poliomyelitic type. They had found that the child's paralysis was due to a cerebral abscess following middle ear disease. They had, therefore, only one case of true infantile paralysis. They could readily understand that with such a severe epidemic in New York and Brooklyn, their work in connection with the department of health had been most aggressive. While they believed in preparation for a possible epidemic, they did not believe it wise to frighten either the public or the profession. They had wards available in the Municipal Hospital to take care of at least 100 cases. If necessary it would be possible to have other general hospitals set aside certain space. He wanted to take this opportunity to thank the pediatrists, neurologists, orthopedists, and all others who had given their time and service in the last few weeks in assistance to the department of health. They had been trying to educate the family to send for the physician promptly when illness occurred among the children. They would pursue in poliomyelitis the same stringent measures observed in cases of smallpox.

Dr. **John F. Sinclair**, president, Philadelphia Pediatric Society, was glad that for the present the misfortune of an epidemic of infantile paralysis had not come to them. It seemed imperative, however, that they should be alive to the questions connected with this disease and be prepared to meet them if they must. Personally, he wanted to thank those who had been so ready to cooperate, the many who had shown their interest in the subject by the large attendance at this meeting, the College of Physicians for giving them the use of the room, as well as the essayists of the evening.

Dr. D. Braden Kyle laid emphasis upon the responsibility of the upper respiratory tract for the infection and spoke upon prophylaxis and treatment from this standpoint.

Dr. Charles K. Mills was not yet aware of the manner in which poliomyelitis was transferred from one geographical locality to another; they saw it appearing in widely different sections with great intermediary regions free from the disease. In the migration of the contagion not enough attention had been paid to the part played by animals and to the birds of the air. The possibilities offered a fascinating subject for study.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16, 17, and 18, 1916.

The President, Dr. W. Stanton Gleason, of Newburgh, in the Chair.

(*Continued from page 143.*)

The Pessary in Retroversion and Prolapse (*concluded*).—Dr. Robert L. Dickinson would give his patient written directions as to treatment, as in this way serious retroversion could be prevented. In the post partum group, examinations should be made at two weeks, six weeks, and three months post partum. If patients were well taken care of, then operation later could be avoided. The bad risks, the women with diabetes, tuberculosis, or sclerosed arteries, in whom resistance was poor, were poor subjects for operation. Those naturally fell into the pessary class and the pessary relieved constipation and improved general health.

To the operative class belonged the cystocele and rectocele group. He was more inclined than formerly to operate upon elderly women. They stood operation well and might have twenty years to live. They should have a choice of operation or be told that they would have to wear a pessary the rest of their lives. Working women as a rule should be operated upon. They had no time to call on the physician to be examined. In the case of young girls it was better to do an operation than to give them the office habit. There was distinct use for a pessary for a few months after operation until the organs had had time to recover tone.

With regard to the kind of pessary, there were many, and the one that the patient wore with comfort and could handle herself was the one most likely to suit that particular case. The patient should be instructed how to remove and cleanse it; scrupulous cleanliness was important, and she needed regular douching. If this was attended to, ulceration need never occur. The pessary could be taken out at night and put in again in the morning.

Dr. J. Riddle Goffe, of New York, said the usefulness and the definite limitations of the pessary in the treatment of retroversion and prolapse had been very clearly and convincingly presented by Doctor Dickinson. The pessary had a definite place in the treatment of those conditions, but it was only a temporary device, to be discarded and supplanted by operative procedure when the time and place served. Age was rarely a contraindication for surgical procedure in a woman who was able to be upon her feet. The operation of Doctor Vineberg's seemed to come into direct competition with supravaginal hysterectomy. There was no question about the superiority of the latter. In the completion of the operation the normal relation of parts was restored and the physiological function of the ligaments and the bladder maintained.

Dr. Thomas J. Watkins, of Chicago, said the pessary had a very important field, if a limited one. Its use could only be decided on by one who had done a good deal of work on the mechanics of the pelvis. As regards prolapse operations, he felt that Doctor Dickinson had mentioned a very important thing in regard to cystocele and rectocele, that was, conditions got worse, especially after the menopause, so that rectocele and cystocele must usually be corrected before they became extensive, so that operative procedures gave better results. In regard to the transposition operation, considering the results after eight or ten years, the more he studied the subject, the more and greater problems he encountered. There was no one operation that was best for prolapse of the uterus or of the bladder. Operative procedure should be modified to suit the case. Personally, he favored a modified transposition operation rather than hysterectomy.

Dr. H. S. Crossen, of St. Louis, was especially pleased to see the subject of the pessary so clearly demonstrated. He heartily seconded Doctor Watkins' suggestion that Doctor Dickinson should give the association a monograph on the result of his careful study of the pessary. The ball pessaries would slip out in half an hour. The Smith pessary and other forms would slip out. That class of cases was very troublesome; he had used the double horseshoe pessary. This should come into the hands of the general practitioner. It would be more and more used and understood. He had had a good deal of experience in dispensary work, and felt that no one could learn to use pessaries by descriptions, but only by personal practice. The horseshoe pessary could be left for a long time if the patient came at regular intervals for observation.

Dr. J. Wesley Bovee, of Washington, D. C., said in regard to the operative treatment, the further they got away from any one particular operation, or from any one form of treatment, the safer they were. Those addicted to one form of operation would have to use pessaries after operation, not as some noted surgeons had done, shortly afterward as precautionary measures, but months later as reputation savers. The best time to use a pessary was before operation. A large proportion of cases could then be helped. If the pessary was the right one it would not give symptoms. If it gave pain it was not the right one. He agreed that the soft pessary was to be condemned; the hard rubber pessary was the best in use at present. The Hodge modification of the Smith pessary was the best type.

Dr. Richard R. Smith, of Grand Rapids, Michigan, approved most heartily what had been said in regard to the indications for the use of the pessary and of operation in cases of retroversion, especially in regard to cases which should be left without treatment in any form. In young girls and in young married women before childbearing, there was nearly always a neurotic element, and the less attention called to the pelvis the better. In older women operation alone should be used in certain complicated cases. It would be well to bear in mind one thing. In women during the childbearing age there should be no operation to interfere with that important function. The function of childbearing was of infinitely more importance to women than the alleviation of any discomfort. After that period was over, other operations could be considered. He had had the best results from Doctor Watkins's operation. It had quite revolutionized treatment.

Dr. Leroy Broun, of New York, said regarding Doctor Vineberg's paper the problem was presented how to deal with large uteri involving myomata, combined with procidentia; in other words, those that could not be interposed. There were two ways: First, taking a wedge up out of the uterus and bringing it down so that it would not protrude from the vagina; and Doctor Vineberg's method of taking the uterus up into the anteroposterior diameter and making it shorter instead of narrower. There was only one objection, and that was, by pressure of the structures and closing anteriorly the anterior wall there was a predisposition to push down the cervix, such as occurred in two or three cases mentioned by Doctor Vineberg. The cervix must be well imbedded so that there could be no fulcrum action. He could not recommend such an operation in complete procidentia, but he felt that the operation that would give the best results would be complete hysterectomy, sewing together the broad ligaments, and putting the bladder on top.

Dr. Samuel W. Bandler, of New York, said on the first sign of retroversion the Smith-Hodge pessary should be introduced. When involution took place there was no longer retroversion, but retroflexion. It would be found necessary to follow this procedure in at least half of the post partum cases, and patients would do very well. The pessary could be said to be of value as a diagnostic factor. The patient came to the physician complaining of pelvic pain, and retroversion was found on examination. If, at this time, there were no complications, such as shortened ligaments, the patient could be directed to wear a pessary. If this same patient came back later and said that all her symptoms had disappeared, the diagnosis was made. The doctor could then give the patient the choice of wearing a pessary for the next twenty-five years or of having an operation and dispensing with the pessary.

The Genital Reflexes and Their Role in the Production of Symptoms Arising in the Pelvis.—Dr. Richard R. Smith, of Grand Rapids, said the genitourinary reflexes might be divided into two groups, first, those belonging to the spinal and sympathetic system; second, those of the higher cerebral centres. The first group were automatic, simple, and unconscious and were designated as subcortical, and the latter were psychic. The first group of reflexes were able to maintain normal generative functions, for women with transverse lesions of the cord were able to menstruate and conceive and have normal labors.

Dealing with various sympathetic reflexes they got such reflexes as contraction of the anus and perineum which was protective in character, contraction and retraction of the uterine musculature, and the production of secretion from the Bartholinian glands. The psychic reflexes belonged to the higher development of the brain. Their stimuli were physiological, the psychological beginning when the impressions had reached the cortex. Perceptions varied with the quality of stimuli. Only exaggerated processes reached consciousness. The mental make-up and the sum total of experience determined mostly the manner of the reflex. The purpose of some reflexes was clear, such as contraction at the fear of some object, or the production of secretion of the Bartholinian glands, but some reflexes were more obscure, such as blushing under embarrassment, or violent movements of the intestines under fright, or cessation of menstruation after shock or grief. These were all conscious reflexes, but some were not under the control of the will directly. The mechanism of emptying a full bladder illustrated the employment of both psychic and subcortical impulses. The application to gynecology was that the mental make-up of the patient might produce irrational ideas and distortions in the presence of a perfectly normal pelvis. When only slight lesions were present the mental picture must be considered as the direct cause of the symptoms arising from the pelvis. The stress of patients living under emotional unbalance produced exhaustion and fatigue, even under conditions that seemed to be conducive to normal life.

(*To be continued.*)

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Letters to the Editors

THE TREATMENT OF ANTERIOR POLIOMYELITIS.

Brooklyn, N. Y., *July 23, 1916.*

To the Editors:

A great deal is written, both in our medical journals and the lay press, about poliomyelitis, its causation, symptomatology, progress, and methods of prevention—which is all very good, but little is said about its medicinal treatment. It is practically ignored. Therapeutic nihilism is progressing disgracefully the world over. If the members of the medical profession would thumb their materia medica and master the therapeutic effects of drugs as assiduously as they study pathology, the internal secretions, surgery, the vaccines and antitoxins, I do not believe that this sudden epidemic of poliomyelitis would have reached such widespread proportions and caused such consternation among medical men.

The cause, mode of infection, contagion, pathology, etc., are fairly well recognized. Let us get down to medicinal treatment.

Veratrum viride, a vasomotor depressant, lessens the vasoconstriction and hyperemia of the cerebrospinal system; it is especially indicated in poliomyelitis when there exists a hyperemia of the cord and meninges.

Aconite, by dilating the peripheral arterioles, improves the tonicity of the mucous membrane of the nasopharynx and undoubtedly inhibits the activity of germ life at the point of invasion. I believe that if these two drugs are used from the very beginning, the progress of the disease process is arrested. You obtain more abortive cases, fewer succumb, lessening the death rate; convalescence is shorter and the repair of damaged muscles is immediate and progressive.

Being called to a child with sudden fever, with or without vomiting or convulsions, with enlarged tonsils, and irritation of the nasopharynx, without other symptoms, clean out the alimentary tract, enjoin absolute rest and quiet, and prescribe veratrum viride and aconite, and watch developments.

My prescription is:

℞ Veratri viridis (Norwood's), ...♏viii;
Tincturæ aconiti radicis, ...♏l;
Syrupi simplicis, ...℥ss;
Aquæ, q. s. ad................................℥ii.

M. Sig. One teaspoonful every hour for twenty-four hours, and then the same dose every two hours.

After the acute stage has passed, the physical agents are used, viz., radiant heat and light, electricity, static or high frequency, until cured.

Lionel C. Charbonneau, M. D.

COCAINE CATARRH "CURES."

New York, *July 13, 1916.*

To the Editors:

The enclosed clipping is from the New York Medical Journal. Perhaps a little information regarding this subject might be of interest.

> In the *Medical Review of Reviews* for June the charge is made that a physician was responsible for all the damage done by the four per cent. cocaine snuff once known as Doctor Cole's Catarrh Cure—Doctor Cole presumably being the depraved physician in question. There never was a Doctor Cole; the originator and owner of this preparation, as a matter of fact, was neither a physician nor a druggist; he was a manufacturer of several patent medicines and invented Doctor Cole, simply to secure what he considered a desirable alliteration. Thus one slur on the profession is disproved.

Somewhat over twenty-five years ago, there was a doctor in Omaha, Nebraska, by the name of B——, a nose and throat specialist of the quack order. He prepared a powder composed of boric acid, some inert vehicle, and cocaine —a four per cent. cocaine powder. This powder was sold direct to his patients and also through the retail drug stores, and if I am not very much mistaken, I was one of the first, if not the first, to detect the danger and habit forming qualities of cocaine, for within a very short time after this powder went on the market we had hundreds of people in Omaha who became addicted to its use, and for a number of years it was a hard struggle to eradicate the evils that this powder had started. If my memory is correct, this Doctor B—— had some trouble with a girl. Her father got after him and shot him, but the bullet struck his watch in the watch pocket of his trousers and he was only slightly injured. He left town almost immediately afterward.

Edward Wallace Lee, M. D.

Book Reviews

Infections of the Hands. A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand, and Forearm. By Allen B. Kanavel, M. D., Assistant Professor of Surgery, Northwestern University Medical School, Attending Surgeon, Wesley and Cook County Hospitals, Chicago. Third Edition, Thoroughly Revised. Illustrated with 161 engravings. Philadelphia and New York: Lea & Febiger, 1916. Pp. 498. (Price, $3.75.)

This is the third edition of Kanavel's work, which speaks well for its popularity and usefulness. The present edition has been thoroughly revised and brought up to date, while two chapters have been added, the first dealing with the Relation of Acute Infective Processes to Industrial Pursuits, while the second discusses Plastic Procedures Instituted for the Correction of Deformities. Dr. Henry E. Mock, who by reason of his connection with a large industrial concern possesses special knowledge of the subject, especially from the practical standpoint, collaborated with Doctor Kanavel in the preparation and compilation of the former chapter.

In Chapter XXIX the author has added a section detailing the results of his clinical experience in attempting to restore function to old contracted hands. After several of the chapters, résumés have been inserted which, it is believed, will aid the surgeon who is in haste for concrete knowledge concerning the contents of the work, but the author wishes to warn the student and surgeon that a comprehensive reading of the preliminary anatomical and experimental matter will be necessary for an accurate knowledge of the diagnosis of the various types of infection and the position of the pus in each type. In the first instance, it may be said that the book is excellently arranged and written in good concise English, a merit of no small value in a medical or surgical work. Perhaps the most important chapters are those on diagnosis and general principles of treatment, for when a reader in search of information is in doubt, he may turn to these chapters which indicate the group into which his case falls, and also direct him to the section of the book in which cases of that nature are treated more in detail.

Chapter XXV, already referred to, is of practical value, and from the points of view of prevention and treatment contains a fund of information which cannot fail to be useful to surgeons whose work lies in the care and treatment of the employees of industrial concerns. The entire question of hand and forearm infections is considered exhaustively, and the allied affections, such as erysipelas, erysipeloid, gas bacillus infection, and anthrax are discussed at length. The book concludes with a consideration of the complcations and sequelæ of infection of the hand.

Drawings made by Mr. Tom Jones replace the plates in the former editions, showing the dissections made from cross sections. The work provides a mine of information for the surgeon, which if he follows closely and skillfully and puts into practice the knowledge gained therein will undoubtedly result in the prevention and successful treatment of infections of the hand and forearm. The author particularly emphasizes the necessity for careful study of the diagnosis of tendon sheath infection, which, as he points out, is frequently overlooked until it is too late for satisfactory treatment.

Interclinical Notes

The *Survey* for July 15th discusses the local outbreak of anterior poliomyelitis as the Scourging of New York. It states that the disease was first described by an Englishman about the middle of the nineteenth century. Since 1905 the United States has distanced all other countries in the frequency of epidemics. It is interesting to learn that negroes are infrequently attacked, which seems greatly to complicate the question of etiology. The death rate of this epidemic is said to be twenty-one per cent., compared with only five per cent. in 1907.

* * *

A correspondent with the militia at the Mexican border writes to the *Sun* for July 23d of the great dissatisfaction among the enlisted men because there is apparently to be no fighting. The writer is careful to state that health conditions are excellent, and that only 1.5 per cent. of the men are on the hospital lists. The health conditions will remain good, he says, as long as the men are on the border; "the admirable medical corps of the United States army will see to that."

* * *

There are few writers for periodical literature who might not with advantage read the excellent summary in *Current Opinion* for July, of a chapter in Sir Arthur Quiller-Couch's recent book, *On the Art of Writing.* The chapter is on jargon, which Sir Arthur says has two chief characteristics. It uses circumlocution and it habitually chooses vague woolly abstract nouns rather than concrete ones. Jargon is evidently much used in papers and discussions at medical society meetings.

* * *

According to *Our Dumb Animals* for July, 1916, the director of the Zoological Gardens was on his holiday. He received a note from his chief assistant, which closed thus: "The chimpanzee seems to be pining for a companion. What shall we do until you return?"

Official News

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the week ending July 22, 1916:

Arbuckle, L. D., Assistant Surgeon, Medical Reserve Corps. Ordered to duty at the naval recruiting station, Boston, Mass.

Biello, J. A., Passed Assistant Surgeon. Ordered to temporary duty at the naval recruiting station, New York, N. Y.

Boone, J. T., Assistant Surgeon. Detached from the Marine Brigade, Haiti, and ordered to the Naval Hospital, Norfolk, Va., for treatment.

Faulkner, G. E., Assistant Surgeon, Medical Reserve Corps. Ordered to duty at the naval recruiting station, New Orleans, La.

Foote, O. C., Assistant Surgeon. Detached from the *Tallahassee* and ordered to the *Delaware.*

Glenn, C. F., Assistant Surgeon, Medical Reserve Corps. Ordered to duty at the naval recruiting station, Burlington, Vt.

Greenough, R. H., Assistant Surgeon. Commissioned an assistant surgeon, May 25, 1916.

Johnson, M. K., Surgeon. Detached from the *Montana* and ordered to the *Oklahoma.*

Langhorne, C. D., Surgeon. Detached from the *Oklahoma* and granted two months' leave of absence.

Lynch, C. P., Passed Assistant Surgeon. Commissioned a passed assistant surgeon from February 19, 1916.

McDonald, Henry, Assistant Surgeon. Detached from the *Colorado* and ordered to the *Pittsburgh.*

Priest, Howard, Assistant Surgeon. Detached from the *Delaware* and ordered to the *Tallahassee.*

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 19, 1916:

Banks, Charles E., Senior Surgeon. Ordered to proceed to New York, N. Y., for duty in the prevention of the interstate spread of poliomyelitis.

Brown, B. W., Surgeon. Ordered to proceed to New York, N. Y., for duty in the prevention of the interstate spread of poliomyelitis.

Fox, Carroll, Surgeon. Ordered to proceed to Birmingham, Ala., for the study of public health organization and administration; granted leave of absence for one month and fifteen days from July 5, 1916.

Freeman, A. W., Epidemiologist. Ordered to proceed to New York, N. Y., for duty in connection with studies of poliomyelitis.

Gardner, C. H., Surgeon. Ordered to proceed to New York, N. Y., for duty in the prevention of the interstate spread of poliomyelitis.

Guiteras, G. M., Surgeon. Granted two days' leave of absence from July 13, 1916, under paragraph 193, Service Regulations.

Harrington, F. E., Assistant Epidemiologist. Ordered to proceed to Birmingham, Ala., for special temporary duty.

Hughes, T. E., Assistant Surgeon. Relieved from duty on the Coast Guard cutter *Seminole* and ordered to proceed to New York, N. Y., for duty in the prevention of the interstate spread of poliomyelitis.

Magruder, G. M., Surgeon. Ordered to attend a conference on poliomyelitis at Portland, Ore., July 15, 1916.

Marshall, E. R., Passed Assistant Surgeon. Ordered to proceed to Boston, Mass., when convenient, for the observation of methods of examining arriving aliens.

Mayer, O. J., Acting Assistant Surgeon. Ordered to proceed to Galveston, Tex., for temporary duty, pending return to Tampico, Mexico.

Michel, Carl, Assistant Surgeon. Granted thirteen days' leave of absence from August 15, 1916.

Mullan, E. H., Passed Assistant Surgeon. Granted fourteen days' leave of absence from July 16, 1916.

Parcher, George, Passed Assistant Surgeon. Granted twenty-one days' leave of absence from July 17, 1916.

Schereschewsky, J. W., Surgeon. Ordered to proceed to Youngstown, Ohio, to arrange for the continuance of studies of the health of steel workers.

Slaughter, W. H., Assistant Surgeon. Ordered to proceed to Atlanta, Ga., for conference regarding studies of rural sanitation.

Stewart, G. McG., Acting Assistant Surgeon. Ordered to proceed to New Orleans, La., for temporary duty.

Williams, L. L., Jr., Assistant Surgeon. Relieved from duty on the Coast Guard cutter *Onondaga* and ordered to proceed to New York, N. Y., for duty in the prevention of the interstate spread of poliomyelitis.

Young, George B., Surgeon. Granted twenty-one days' leave of absence from July 20, 1916.

Casualty.

Surgeon Charles Poindexter Wertenbaker died at Charlottesville, Va., the place of his birth, July 12, 1916. He was appointed an assistant surgeon in the Public Health Service, August 18, 1888, and was promoted to be passed assistant surgeon, September 2, 1892, and to be surgeon, February 16, 1904. Surgeon Wertenbaker served at various marine hospitals and quarantine stations of the Service, and was detailed for duty during the yellow fever epidemic in 1905. He was placed on waiting orders on account of physical disability, January 1, 1916.

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Births, Marriages, and Deaths

Born.

Dalton.—In Burlington, Vt., on Thursday, July 13th, to Dr. Charles Dalton and Mrs. Dalton, a son.

Goldstein.—In New York, N. Y., on Thursday, July 13th, to Dr. A. Otto Goldstein and Mrs. Goldstein, a son.

Norton.—In Fitchburg, Mass., on Saturday, July 15th, to Dr. George Paul Norton and Mrs. Norton, a daughter.

Married.

Heston-Murphy.—In Tacoma, Wash., on Monday, July 10th, Dr. Edward Calder Heston, of Roslyn, and Miss Mary Murphy.

McHugh-McKenna.—In Hartford, Conn., on Tuesday, July 11th, Dr. Arthur M. McHugh and Miss Alice Mary McKenna.

Streett-Westcott.—In Baltimore, Md., on Wednesday, July 19th, Dr. David Corbin Streett and Miss Ferebe Guion Westcott.

Young-Bellis.—In New York, on Saturday, July 15th, Dr. John H. Young, of Montclair, N. J., and Miss Gertrude Bellis, of Washington, D. C.

Died.

Barnhart.—In Huntington, N. Y., on Thursday, July 13th, Dr. Isaiah Charles Barnhart, of Brooklyn, aged sixty-eight years.

Baxter.—In Cleveland, Ohio, on Sunday, July 9th, Dr. Harris H. Baxter, aged sixty-nine years.

Casselberry.—In Lake Forest, Ill., on Tuesday, July 11th, Dr. William Evans Casselbury, of Chicago, aged fifty-eight years.

Cotton.—In Chicago, on Wednesday, July 12th, Dr. Arthur Cleveland Cotton, aged sixty-nine years.

Drake.—In Norwich, N. Y., on Wednesday, July 12th, Dr. James B. Drake, aged sixty-three years.

Elmendorf.—In Port Chester, N. Y., on Tuesday, July 18th, Dr. Thomas C. Elmendorf, aged sixty-three years.

Flynn.—In Jeffersonville, Ind., on Sunday, July 9th, Dr. Edward N. Flynn, aged forty-eight years.

Haskell.—In St. Louis, Mo., on Thursday, July 13th, Dr. William A. Haskell, aged seventy-two years.

Hodges.—In Cavendish, Vt., on Tuesday, July 11th, Dr. Edward Francis Hodges, of Indianapolis, Ind.

Hughes.—In St. Louis, Mo., on Thursday, July 13th, Dr. Charles Hamilton Hughes, aged seventy-seven years.

Marshall.—In Cowan, Ind., on Monday, July 10th, Dr. Reuben Marshall, aged seventy-six years.

Overbeck.—In Rockville, Ind., on Monday, July 10th, Dr. Charles W. Overbeck, aged thirty-seven years.

Putnam.—In Jersey City, N. J., on Thursday, July 13th, Dr. Charles E. Putnam, aged sixty-one years.

Shill.—In Lafayette, Ind., on Saturday, July 8th, Dr. Charles W. Shill, aged sixty-five years.

Wertenbaker.—In Charlottesville, Va., on Wednesday, July 12th, Dr. Charles Poindexter Wertenbaker, surgeon, United States Public Health Service, retired, aged fifty-six years.

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Original Communications

SHOES, PHYSIOLOGICAL AND THERAPEUTIC.*

BY DEXTER D. ASHLEY, M. D.,
New York.

No one should try to combine all qualities in a single shoe to meet all conditions, occupations, and positions in life. The more quickly we find that there are vast differences in the requirements of the feet in various occupations and environments, the sooner shall we be able to avoid the ruts in dealing with the shoe problem. In practice we must consider the status of the patient. A lady who stands and walks little may wear almost any shoe with comparative comfort. The pinch comes when some shop girl who stands on her feet all day tries to wear the same style of shoe.

The lay conception of the normal foot's form, function, and natural movements is so hazy, and the mind is so saturated with the ideas of fashion in footwear, as to require the patience of a Job, the suavity of a Chesterfield, and the diplomacy of a Bismarck combined to deliver a really comfortable, physiological shoe.

Children, adolescents, and adults who are suffering severely will accept somewhat radical changes in footwear, and with these we may hope to approximate our ideals. The man who has any extensive practice in treating foot conditions, will have full opportunity to use all his medical and surgical skill. Some cases will prove most baffling from a pathological or psychological standpoint. In prescribing shoes, the doctor's path will be smoother if he can modify the shoes commonly worn by the patient, or if these are impossible, direct him to select a fairly good trade shoe to be modified. Seldom is the custom shoe perfect or exactly as designed, and the patient will expect much more from the "made to order" shoe in the way of immediate relief of symptoms, correction of deformity, and indefinite wearing qualities.

Happily the trade has provided children's shoes which somewhat approach the physiological outline of the foot. The trade offerings of shoes for men which approach the physiological outline are increasing in number. Women's and misses' shoes which conform to these lines are scarce articles. Of these some are hobby ridden, or are too rigid in design to meet the requirements of the large majority, and so repel many who are looking for a physiological foot covering. On the other hand, to the general mind an orthopedic shoe is a fright—clumsy, heavy, stiff, and deformed—an object to be avoided, owing to the fact that not a few shoes masquerading under this name entirely answer the description.

In the following paper the writer finds it convenient to consider, first, the common shoe for every day working and walking. This shoe should be a physiological one for approximately normal, strong feet. A conception will be offered of what this should be, with citations of the most common faults to be found in the trade offerings of the ordinary shoe. The dress shoe is not especially considered. It is self evident that these shoes should be light and neat, and should conform to the physiological requirements and anatomical outline of the foot, without constriction. The consideration of shoes to meet the needs of various occupations, vocations, and climatic conditions, will not be entered into. The therapeutic shoe, prescribed to meet the various symptoms of mechanical strain, weakness, or disease, to prevent deformity or correct such conditions as may be controlled or influenced, will be discussed. Under this head will be considered the prescription or custom made shoe with individual lasts, the plaster of Paris last, and some of the difficulties met by the practitioner in obtaining a shoe as prescribed. Modifications of the common shoe and the commercial therapeutic shoe will be taken up, and an examination made of the commercial offerings of therapeutic shoes designed to meet the demands of the trade.

Comparing the outline of the foot with the shoe of civilized man, ordinary shoes would appear as a monstrosity to us were it not that long association with these forms has dulled our perceptions. To make more apparent the difference between the ordinary shoe and the normal foot, the former, conventionalized, may be indicated by the outline of the isosceles triangle upon a rectangle (Fig. 11), the toe of the shoe corresponding to the most acute angle. The conventionalized outline of the normal foot would be that of a truncated obtuse angle triangle, the toes occupying the broad part of the triangle, the inner side of the foot corresponding to its long side (Fig. 12).

The physiological shoe for approximately normal, strong feet should conform to the foot outline when in action, without undue restraint. The sole should

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*See Dexter D. Ashley, this JOURNAL for February 19, 1916.

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be strong, elastic, straight to the floor line, with sufficient curve to prevent stubbing. It should be broad enough to carry the vamp, and may have a pointed or rounded tip. The centre of the sole should correspond with the centre of the foot. The welt should be wide enough to protect the vamp (see Fig. 13, illustrating various parts of the shoe).

The insole should be of flexible leather, "good grade shoulder," well hammered or rolled, and should be flat or very slightly convex in the anterior part behind the anterior metatarsal arch.

The shank should be rather narrow, yielding, and elastic, tending to the outer side, giving a neat internal arch.

The heel should be as wide as the individual's heel in a snug counter, and five eighths to one inch high for adults. It should be built straight down from the rand or lower edge of the counter on the sides, and be set well forward, centring under the os calcis, with "full pitch" behind. Individuals compelled to stand or walk for long hours upon unyielding surfaces would do well to have a rubber or cork heel, or rubber or cork covered by a lift of leather. The breast of the heel should be as high as or higher than the posterior elevation by one to one and a half lift.

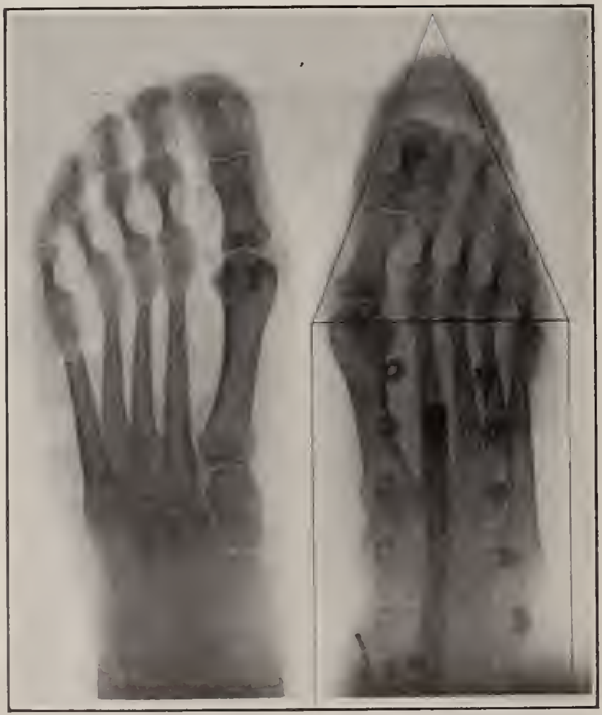

Fig. 11.—Radiographs of left foot without shoe and right foot within the shoe of the same individual. A, Note the exceeding width of the nonconstricted foot; B, note that this shoe shadow fills the isosceles triangle upon a rectangle, the conventionalized shoe.

The counter should be comparatively snug, low, and strong, grasping and conforming to the heel of the individual. The counter and upper should follow the contour of the heel behind, facilitating the placing of the heel of the shoe well forward under the calcaneus.

The heel cavity, or seat, should be slightly concave and yielding, conforming to the wearer's heel.

The vamp should be straight on the inner side to the end of the great toe, and then begin to curve or to point inward toward the centre of the shoe, to form the tip. The outer border, conforming to the foot, should increase in width forward to the end of the little toe, and then curve inward to meet the great toe curve or point. It should be broad and full across the ball, permitting free motion in the anterior part of the foot. The internal arch should be neat, with no more pressure than would be encountered in walking barefoot over slightly yielding earth.

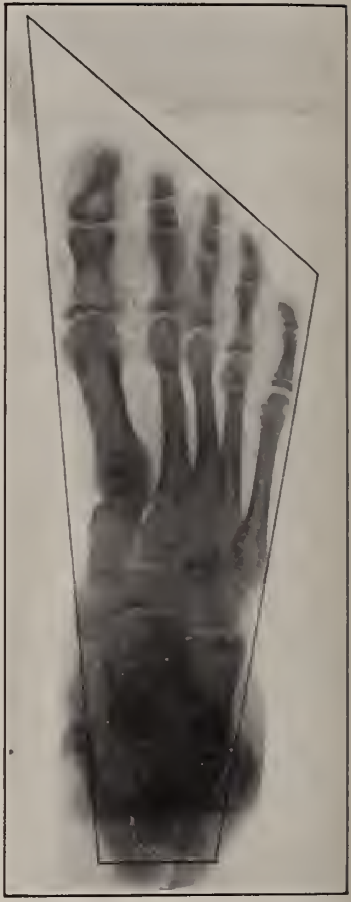

Fig. 12.—A radiograph of the foot of a ten year old child within the truncated obtuse angle triangle—the conventionalized foot.

The instep should be neat over the internal arch, and should not constrict the foot over or anterior to the tarsometatarsal joints.

Lacings in shoes afford better, more accurate adjustments to the inequalities of the foot than buttons. They should not be tight anterior to the proximal ends of the metatarsals, as this would impair the movements of the anterior foot. The tarsometatarsal joints, coming under the lacings, are frequently the seat of exostoses and rheumatoid deposits, due largely to irritation produced by constriction of the circulation at that point, or pressure of foot plates below, or both. The annular ligaments (ligamentum transversum cruris and ligamentum cruciatum cruris) suggest by their function the natural and convenient point where a close lacing may best be tolerated, which will prevent slipping up and down of the heel, or motion forward and backward in the shoe. This slipping can be controlled by using the rough side of the leather on the inside and providing a secure heel seat.

High shoes have their principal use as a protective covering.[*] They restrain the natural function

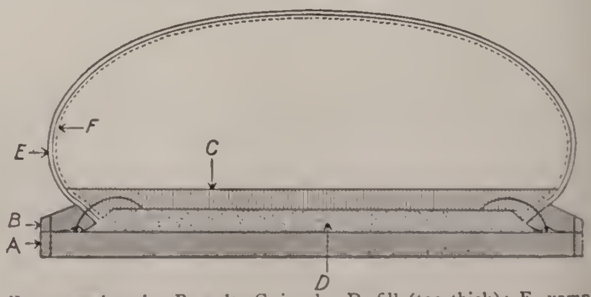

Fig. 13.—A, sole; B, welt; C, insole; D, fill (too thick); E, vamp; F, drill lining.

of the ankle in all directions, and consequently are an inhibiting factor to all strong muscular activity.

It is evident that such physiological shoes as described above would not meet with general approval today, nor would they be comfortable at first to the majority, since most feet have become accustomed to unnatural positions and support, and to place them at once in an approximately physiological position, would arouse at first many pains and joint grumblings. A new set of muscles, ligaments, and weight bearing facets is called into use. The unshod individual is a plantigrade. Most of our shoes make him nearly related to the digitigrade, the foot functioning in the position of talipes equinus, carrying the weight upon the less stable anterior part of the foot.

Without exception, the ordinary shoe is too narrow across the ball of the foot, preventing free motion of the toes. Often a wide shoe has no more leather in the vamp than a narrow one, hence the toes are pressed upon, and corns are produced, as the foot is driven forward into the anterior part of the shoe by the body thrust at every step, this thrust being enhanced and directed by the elevated heel and unstable heel seat.

The inner vamp line invariably starts to curve inward toward the centre of the shoe at the ball of the foot, pushing the great toe inward to the centre of the foot, producing deformity—hallux valgus. The natural straightforward position of the great toe, as pointed out by Meyer[1] is destroyed, and the efficiency of the foot as a machine is very materially reduced.

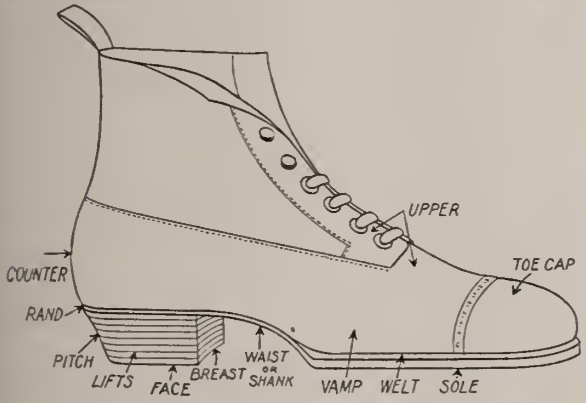

FIG. 13 A.—Illustration showing various parts of the shoe.

The counter is quite out of proportion to the size of the heel of the wearer, being too broad and permitting the heel to move from side to side.

The heel seat is wide, flat, and of adamantine hardness, frequently rough, making a square edge at union of counter and heel. In the standing position the cushion of the heel is crushed at the point of contact with the hard heel seat and escapes at either side and behind into the square space at union of heel and counter, forming callosities on the edge and side of the heel (Fig. 14). The tubercles are sometimes almost denuded of their natural cushion by the pressure atrophy caused by the unnatural weight upon the small bearing surface. This is the source of many painful foot conditions, the discomfort being attributed to the falling longitudinal arch.

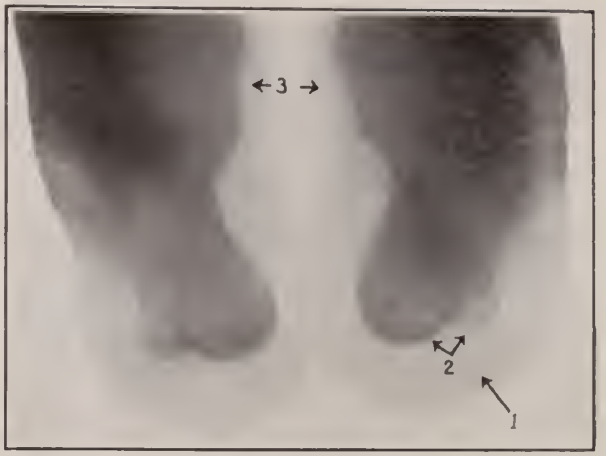

FIG. 14.—Radiograph of heels from behind. 1. Fatty (fibroconnective tissue) cushion. 2. Great and lesser tubercles seen in relief. 3. Subastragaloid joint and sustentaculum tali. This part of the foot, the heel, may be fitted snugly without impairment of function. The measure for this snug fitting counter should be taken with outside callipers. The plaster of Paris cast will not give this measurement since most heels have been flattened by the flat heel seat. The heel can generally be compressed one quarter to one half inch. If the heel seat fits the heel of the wearer there will be no slipping from side to side and the motion from behind forward wedging the toes will be reduced to the minimum.

The dead tired feeling experienced by those who stand much upon hard floors when wearing comparatively low, inelastic heels, may be referred to this faulty heel seat. All painful heels—the "policeman's" heel, the spur heel, the hemorrhagic papilloma of the heel—are either caused or influenced by this unyielding heel seat and the fact that the counter does not conform to the counter of the wearer's heel. We are likely to see more of these cases, as the comparatively low heel and wide counter of the prevailing style in men's shoes must aggravate atrophy and thinned cushions, since the lower the heel, the more weight to be carried in the heel seat. This fault has been recognized by the trade. A shoe was discovered some weeks ago, which had been designed to conform to the heel to relieve these conditions.

The heel is almost always too high and narrow, especially in women's shoes. The high heel and broad counter, or even moderately high heel—one and one half inch high—precludes the possibility of wearing a broad toe (the physiological toe with straight vamp line to end of the great toe) with sat-

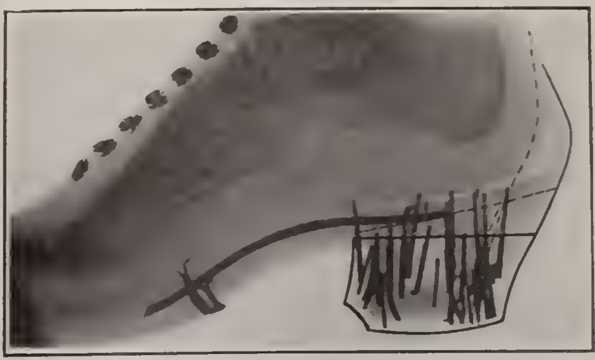

FIG. 15 A.—The "wedge heel" in a custom made shoe—counter and heel seat do not conform to the contour of the heel. The foot rests upon an inclined plane—the foot must slip forward and leave a cavity behind the heel.

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[1] Herman Meyer, *Why the Shoe Pinches.*

isfaction or even with comfort. A broad toe, with the ordinary heel seat, permits the foot to slide forward. Soon the shoe is discovered to be apparently too short, with a disagreeable sensation in the great toe, and the two outer toes become cramped upon the outer curve of the shoe.

When the anterior elevation of the breast of the heel is one fourth to one half inch less than the posterior elevation, we have a "wedge heel" (Fig. 15, A, B, C, D). It is easily appreciated that such a heel, which is very common in the ordinary shoe for men and women, would faciliate the slipping forward of the foot. The only possible advantage of the "wedge heel" is to exaggerate the height of the wearer. The heel seat becomes an inclined plane, an unstable rest, upon which the heel in the ordinary shoe slips forward at each step, thrusting the anterior foot into the "wedged toe" of the shoe. It is evident that in such a shoe the heel may be comparatively low, and the entire shoe large and loose, and yet be the fruitful cause of painful corns, bunions, hallux valgus, flexed toe, hammer toe, and callosities. Many men and women who have worn comparatively sensible, roomy shoes with low heels have these affections well marked. This same mechanical condition is produced when the heel seat is covered by a wedge of cork or rubber, or when the arch of the moderately high heeled, cheap shoe breaks down. This is the shoe which Doctor Gibney has warned us not to wear.

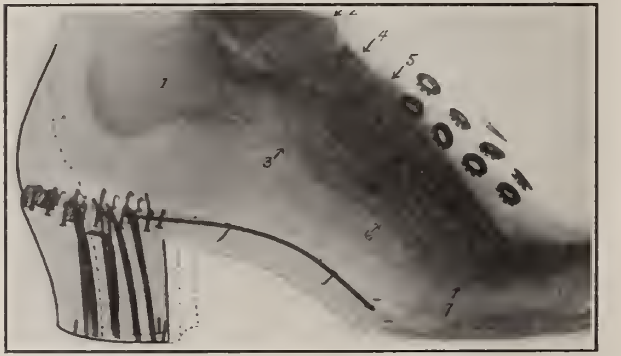

Fig. 15 B.—Ordinary shoe—one and three-fourths inch heel—marked inclined plane. Dotted lie indicates a better position for the heel which would have shortened the long shank. Just a little worse than A.

In a few shoes the breast of the heel is higher than the posterior elevation (Fig. 16). This heel, when not more than one to one and one half inch high, lifts higher in front, and when combined with a snug counter and depressed or yielding heel seat, adds greatly to the stability of the heel seat and prevents the heel from slipping forward—a combination that the writer has never met in the trade shoe.

The greater elevation of the breast may be found in some shoes approaching the physiological, especially those with the flexible shank, though their heel seat is hard and the counter too broad. Apparently the manufacturer has endeavored to support the arch of his flexible shank by the elevation of the breast. So long as the heel is below one inch, it seems to be quite efficient.

In men's shoes the heel is often too high and long, increasing the leverage of the arch by extending backward (Fig. 17). The heels of ordinary shoes always, and of stock orthopedic shoes almost always are built higher on the outer edge and side (Fig. 18), tending to destroy the balance of the foot and lower the longitudinal arch. The long, narrow heel gives no stability or correction of balance. There are not a few heels very much too wide, and these, evidently intended to facilitate balance, are quite as high or higher on the outer edge, destroying the balance. This applies especially to trade therapeutic shoes, which will be described later. Again, the heel is apt to be built straight down from the rand, slightly flanged, or extended outward and forward on the outer edge, and given a pitch outward, cut away on the inner edge, removing support at this point, all tending to destroy balance and make the foot assume a position of pronation, thrusting the weight and strain on the weaker structures of the inner side of the foot. Without exception shoes that are considered sensible have heels that are unduly lengthened behind, being one half to three fourths inch longer than they should be, considerably increasing the weight of the shoe and the leverage on the longitudinal arches. This is to be seen especially in men's shoes (Fig. 17). When the heel is built straight down from the counter, as frequently happens, we have the "drag heel." The cheap shoe with high heel and broken shank gives another illustration of the "drag heel" effect upon the arch (Fig. 17, A, B, C). The well worn shoe of the derelict illustrates the worse effect of the "drag heel."

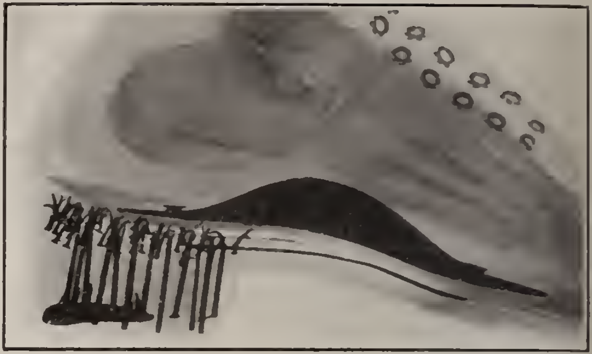

Fig. 15 C.—Wedge heel, by wearing off the anterior part of face and breast of the heel becomes a drag-heel. The long shank bridged by a foot plate has given way. The iron clip nailed to the outer and back side of the face to prevent its wearing away, and the long shank have helped to make this a bad heel.

Skiagraphs of the foot (Figs. 15 and 17), taken

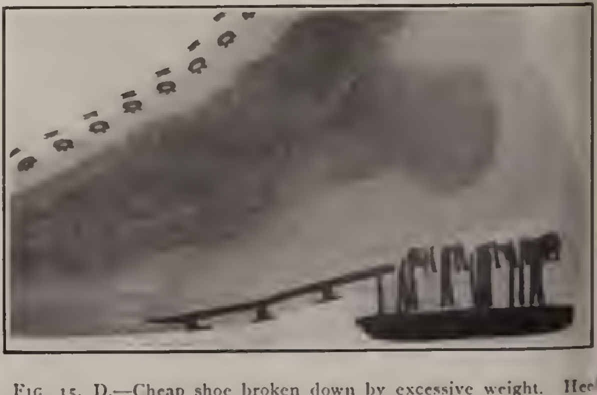

Fig. 15. D.—Cheap shoe broken down by excessive weight. Hee tips up behind under weight, breast and anterior face having bee worn away—the drag heel of the derelict. This gives a good example of the position of the foot, and the added leverage upon the arch by the neglected heel.

through the shoe, well illustrate this mechanical disadvantage and faulty construction. Note the undue prolongation of the heel of the shoe and the cavity behind the heel of the wearer. When the heel is lowered to a height of one inch and built straight down from the rand, this mechanical disadvantage becomes very evident, especially if the shoe combines an elastic or flexible shank. This is an unnecessary disadvantage of the low heeled shoe. The rand may be shifted well forward if the counter follows the contour of the wearer's heel. This would permit the first heel lift to be three eighths to one half inch farther forward, even in low heels. The heel should be built with "full pitch" behind, when the posterior heel is brought forward under the calcaneus, approaching the support of the Cuban or Spanish heel. The more we lower the heel, the more care should be given to the position of the heel line, both for appearance and for prevention of unnecessary leverage upon the arch.

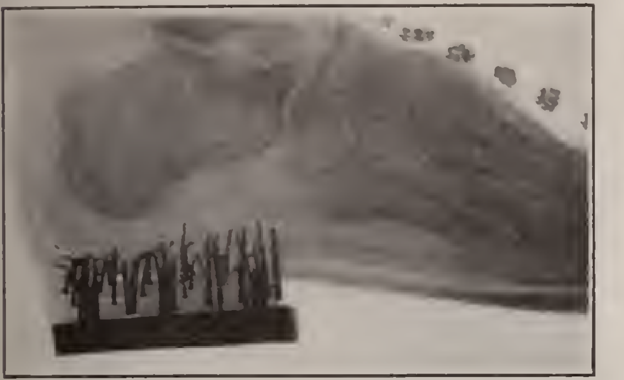

Fig. 16.—This shoe built by trade on an especially prepared last for this foot. This is an example of the heel with the breast higher than the posterior elevation. Heel fits quite securely in heel seat and counter. A "full pitch" to the heel behind would have relieved weight and made a neater appearance. Pen line indicates depression of depth of heel seat. Nails are on the sides, not in the heel. The shoe was found to be out of balance, owing to the sole having been cut away too much in the region of the ball of the great toe. The foot had a distinct tendency to pronate. This illustrates the difficulty of obtaining a shoe as required after furnishing the last.

One of the greatest problems that the orthopedist meets in treating weak feet is to provide a heel that will not offend the sensibility, the preconceived sense of elegance, beauty, fashion, or fancy. With many patients the excuses for high heels are very apparent. The writer must admit sympathy with exceedingly short individuals, be they men or women. The tall young lady, too, is often an acute sufferer from the high heel and pointed toe which mask while they distort, warping and crushing the foot into a semblance characterized by society as a civilized pedal extremity. It is contended that the heel elevates the wearer out of the mud and slush of the streets. To attain this end, the sole should be elevated also. On the contrary, the excessively high heel is generally accompanied by a very thin sole. The soles of women's walking shoes are usually too thin. The common Japanese or Chinese shoe is more hygienic than these shoes which place the foot almost upon the ground, adding materially by this exposure to the danger of arthritis of the foot.

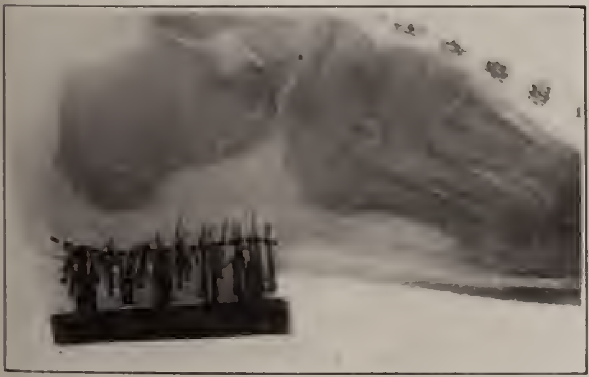

Fig. 17 A.—The long "drag-heel"—this heel is too long, wide, high, flat and hard. This style of heel is peculiar to numerous makes of trade shoes. Noting the position of this individual's heel in this shoe, it will not require much discernment to realize that this foot is working at a great disadvantage. The exceeding width of the heel counter cannot be depicted in the x ray. Heel seat is very insecure and toes are wedged.

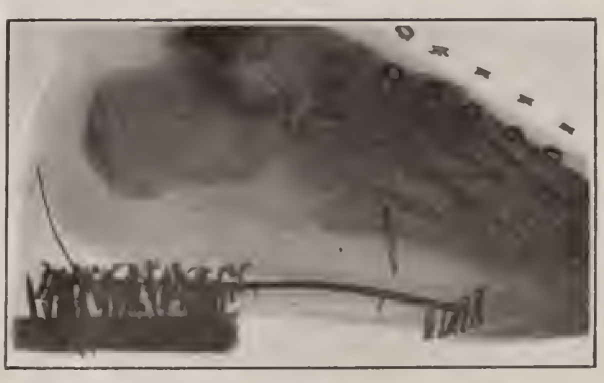

Fig. 17 B. "Drag heel" in the low heel custom made shoe. Heel seat is hard and flat, slightly relieved by rubber heel—square corner at edge of counter and heel. Wearer complains of dead tired feeling. Heel cushion is flattened by weight in low flat heel seat. Examine the lasts upon which these shoes are made and it will be seen how impossible it would be to make the counter and heel seat conform to heel. The lasts are *flat in the heel and square at union of counter and heel.*

Before finishing for the present this subject of heels, the writer wishes to say that we shall be disappointed with our results if we endeavor at once to lower the heels to the physiological limit of three eighths to one half inch elevation. First, this will be notably so in those whose work necessitates standing for long hours upon hard surfaces; second, with those who have been accustomed to wearing comparatively high heels, yet have not acquired the too painful anterior foot. The heel cushion is not prepared to protect the tubercles of the calcaneus—the weight bearing surface of the heel—and Nature will set up a vigorous protest to an abrupt transfer of the greater weight to the heels. The heel cushions must

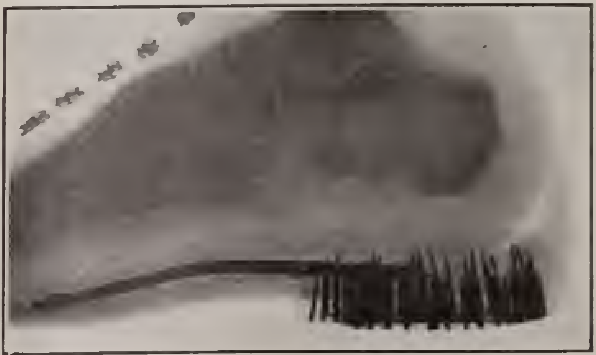

Fig. 17 C.—Well known trade shoes with outlines approaching the physiological, except the heel counter which is too long. Heel seat is insecure,—too wide, hard and not conforming to heel outline.

have a more normal heel seat, and time to accustom the parts to a function to which they are naturally adapted. Third, those who have acquired the short tendo Achillis—the muscle bound foot—will be made exceedingly uncomfortable in the low heeled shoe.

The trade has recognized the varying requirements of the pavement walker and the man in the open air, as illustrated in the outing shoes which are made either heelless or with a heel very low when compared with that of the ordinary shoe. Many persons have attributed their flat or weak foot conditions to wearing the outing shoe on a long tramp, and upon this experience condemn the low heel generally as being unphysiological. At first glance the evidence might seem to justify the conclusion. A foot that has been accustomed to a high heel, with all muscles, ligaments, and bones adjusted to that position, assuming at once the normal position in the low heeled or no heeled shoe, would surely suffer painful strain of all parts, which might result in flat or weak foot; just as any healthy exercise may be detrimental to health when practised too strenuously by unaccustomed muscles. On the other hand, a low heel is not all there is to a physiological shoe. An outing shoe may be short and narrow, precluding the possibility of normal foot action, especially of the great toe.

Another source of weakness, by disturbing the balance, appears in the broad sole which is sometimes extended to the outer side by a broad welt, carrying the centre of the shoe toward the outer side of the foot, tending to abduct the foot. In this same shoe we are apt to find the sole very much cut away on the inner side in the vicinity of the ball—the welt is too narrow. This is a glaring fault in trade shoes of otherwise good physiological lines in their uppers. This cutting away of the inner welt destroys the balance of the shoe and gives the foot a decided cant in pronation. The sole should be made with an extension to the inner side of one fourth to three eighths inch, or sufficient to make the centre of the shoe correspond with the centre of the foot, and with the greatest width at the ball to restore balance. This does not necessarily change the straight inner vamp line of Meyer.

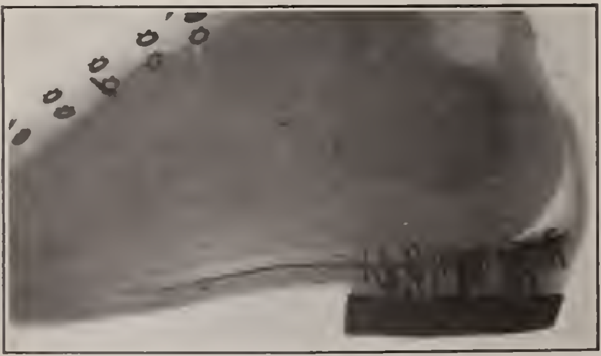

FIG. 17 D.—Custom-made shoe. Heel having good pitch behind relieves weight of shoe and makes a neater heel. Space behind heel is very noticeable—counter not corresponding to contour of heel. Heel seat flat. *Rubber heel* relieves the shock.

Note—Examples shown in Figs. 17, A, B, C, and D have the common fault of too great length of heel behind, increasing weight of shoe and leverage upon the long arch. The heel seat is flat and a space is seen behind the individual's heel, counter not conforming to heel outline.

Another point of weakness peculiar to the ordinary shoe, especially prominent in shoes which approach the physiological outline in the upper, is to be noted in the excessive length from the breast of the heel to the ball—the long shank. This faulty construction makes such shoes prone to break down early, exaggerating the effect of the wedge heel or drag heel, and consequently tending to destroy the mechanical action of the foot. This fault may be remedied in part by giving a "full pitch heel."

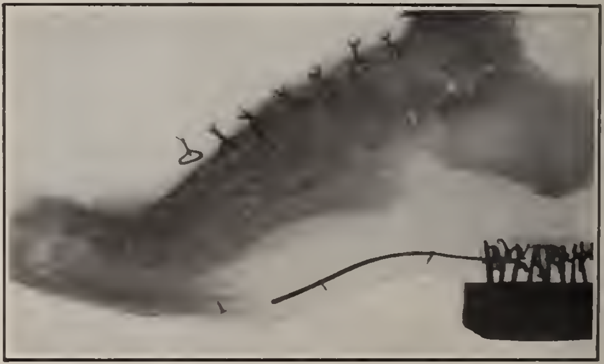

FIG. 18.—Rocker sole.

The insole is generally hollowed out under the anterior metatarsal arch—the "turned" sole—and the sole curves upward at the ball—the "rocker" sole (Fig. 11). This is the shoe which, combined with the narrow toe, produces hammer toe, metatarsalgia, Morton's disease, Morton's neuralgia, etc. A shoe may be anatomically good in outline and be ruined by a bad insole or by removing it from the last before it is thoroughly dry.

The shoe must have sufficient length to accommodate the added length of the foot when bearing the weight of the body. Major Munson and the Army Shoe Board found that the soldier's foot becomes three eighths inch longer and three sixteenths inch broader when bearing the weight of the body than when at rest, and nine sixteenths inch longer and one fourth inch wider than when at rest when loaded with his marching pack of forty pounds. This indicates the necessity for wearing a longer shoe as we become stouter, and of fitting every one with shoes much longer than is apparently necessary when the foot is at rest. Foot measurements should be made while the owner is bearing all expected weight, if we would have subsequently full and free action of the anterior foot.

346 LEXINGTON AVENUE.

Stabilizing Flail Foot in Infantile Paralysis.—Edwin W. Ryerson (*American Journal of Orthopedic Surgery*, July, 1916) believes that astragalectomy and fixation of the tendons by the Gallie method should be resorted to more frequently in flail and weak feet. He modifies Gallie's method by putting the tendon high up, laying the tendon in the periosteal groove, arranging the end through a drilled hole in the bone at the upper end of the groove, and finally bringing it down and suturing it to the portion previously laid in the groove.

HERPES CORNEÆ "FEBRILIS."*

With Special Reference to Etiology,

By Samuel Theobald, M. D.,
Baltimore.
Clinical Professor of Ophthalmology, Johns Hopkins Medical School; Ophthalmic Surgeon, Johns Hopkins Hospital, and Baltimore Eye, Ear, and Throat Hospital.

Unless my experience has been exceptional, herpetic keratitis is a more common affection than is usually supposed. A habit with me, for many years, of testing the sensibility of the cornea in every case of superficial keratitis in which the etiology was in doubt may, perhaps, account in some measure for this conviction; for unquestionably the most characteristic sign of herpetic keratitis is corneal hypesthesia.[1]

It may be well to state at the outset that the term, herpetic keratitis, is used, as Fuchs employed it, in a broad sense; neuropathic keratitis, the postmalarial keratitis of Kipp, and the dendritic keratitis of Emmert being regarded simply as types of corneal herpes, the essential and common feature of these different types being a disturbance of the nerve supply of the cornea.

It does not seem that the qualifying term, *febrilis,* commonly applied to simple herpes of the cornea, is well chosen; for though herpes labialis and, perhaps, more general facial herpes not infrequently occur as an accompaniment of "colds," attended by fever, this, according to my observation, is not true of corneal herpes, which, if we except the postmalarial cases, more often than not occurs without assignable cause.

Beside the corneal hypesthesia, which is very rarely confined to the infiltrated or ulcerated areas of the cornea, as some maintain, the characteristic signs and symptoms of herpetic keratitis, commonly accepted, are the unilateral character of the affection; the diffuse and irregular form of the corneal opacities, sometimes of the dendritic type, but more often presenting a maplike appearance; the persistence of the opacities notwithstanding the fact that the substantia propria is seldom deeply involved; the obstinacy of the affection, and, not infrequently, a decided tendency to recurrence. The severe pain, which some describe, is not in my experience a usual symptom.

I have long felt that, in all probability, the primary lesion which gives rise to simple herpetic keratitis, and which explains the corneal hypesthesia, is situated in the ciliary ganglion. This lesion, it may be fairly assumed, is comparable to that which occurs in the Gasserian ganglion in herpes zoster ophthalmicus; but, since it involves only the ciliary nerves, the resultant disturbance of nutrition, the hypesthesia and the inflammatory changes which follow are necessarily confined to the eye itself, differing radically in this respect from those which are usually observed in herpes zoster ophthalmicus, where the primary lesion is in the Gasserian ganglion, and which involve, not only the eye, but the lids, the forehead, and scalp, and exceptionally the side of the nose.

I am aware that this belief is not in accord with the commonly accepted view regarding the character of the ciliary ganglion, which holds that it is purely an efferent ganglion, and that the fibres from its sensory root are not in relation with cells in the ganglion, in other words, that the ganglion is not a "station" for these sensory fibres.

If this view is correct, it is manifest that a lesion confined to the ciliary ganglion could not cause the corneal hypesthesia, and the accompanying nutritional and inflammatory changes which are characteristic of simple herpetic keratitis. But it may be safely asserted that the correctness of this conception of the nature of the ciliary ganglion has not been definitely demonstrated.

In his paper Ueber die Doppelnatur des Ganglion ciliare,[2] published, it is true, in 1881, W. Krause, as the result of research made upon rabbits, reached the conclusion that the ciliary ganglion was not a simple sympathetic ganglion, but was double in its nature, one portion of it resembling the ganglia upon the posterior roots of the spinal nerves.

More recently, Frederick Walton Carpenter, of the Harvard Laboratory of Comparative Zoology, as a result of his exhaustive study of the Development of the Oculomotor Nerve, the Ciliary Ganglion, and the Abducent Nerve in the Chick,[3] reaches a similar conclusion, at least as to the double nature of the ciliary ganglion. "The evidence," he states (p. 205), "derived from the study of both its development and its histology points to the double nature of the ciliary ganglion of the fowl," and, again, on p. 207, he says, "the larger, ventral region of the ciliary ganglion bears little resemblance to a sympathetic ganglion. The cells in it are of greater size, pericellular fibrils are not abundant, and its neuraxons are heavily medullated." He differs, however, from Krause, whom he quotes as looking "upon the [ciliary] ganglion in vertebrates lower than mammals as a homologue of a spinal ganglion," in that he considers the ciliary ganglion of the fowl "as composed of cells which fall into two categories, one being, as far as the evidence goes, in all essential respects, typically sympathetic, the other belonging to neither the sympathetic nor cerebrospinal system." On p. 144 he says: "It," the ciliary ganglion, "is almost invariably stated to be sympathetic in nature (as first suggested by Arnold), although it differs from typical sympathetic ganglia in giving origin to medullated peripheral nerves (the short ciliaries) instead of nonmedullated fibres," and on p. 150 he alludes to the investigations of Stefani, "who was led to the conclusion that the short ciliary nerves have their centres, i. e., their ganglion cells, in the ciliary ganglion, by observing the effect on the cells of that ganglion when atropine is applied to the eye."

It may be added, as not without interest, that Fuchs, whose high authority and exact knowledge we all recognize, evidently did not accept Arnold's views as to the purely sympathetic character of the ciliary ganglion, else he would not have made the statement: "An inflammatory affection of the trigeminus, which is located either in the trunk of the nerve itself or in the Gasserian or *ciliary ganglion,* lies at the bottom of herpes zoster ophthalmicus."[4] It would seem, then, that there is no well founded anatomical or physiological objection to my belief that the primary lesion responsible for simple herpetic keratitis is situated in the ciliary ganglion.

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*Read before the American Ophthalmological Society, Washington, May 9, 1916.

[1] As the sensibility of the cornea differs greatly in normal eyes, we should be careful, in determining the existence of hypesthesia, to make the test upon both eyes, as a matter of control. A spill of tissue paper I have found convenient for this purpose.

[2] *Morphol. Jahrb.*, viii, p. 43.

[3] *Bulletin of the Museum of Comparative Zoology at Harvard College,* xlviii, 2, Jan., 1906.

Opposed to the view that the lesion may be in the Gasserian ganglion, it may be said that while simple herpes of the cornea, as has been stated before, is of relatively frequent occurrence, herpes zoster ophthalmicus, which as commonly observed we know *is* due to disease of the Gasserian ganglion, is a rare affection; and this contrast is emphasized by the fact that the picture which the latter presents is so typical that an error in diagnosis can scarcely be made, even by a tyro, while it is not improbable that a considerable number of cases of simple herpetic keratitis are not recognized as such, even by those who cannot be regarded as novices. Furthermore, if the primary lesion is in the Gasserian ganglion, it is difficult to explain why the peripheral manifestations should be confined to the cornea, and why this peculiar sort of lesion should occur so much more frequently than the more extensive pathological condition which gives rise to the usual type of herpes zoster ophthalmicus.

The only other explanation of the etiology of simple herpetic keratitis would seem to be that the ciliary nerves, in their short course from the ganglion to the posterior pole of the eyeball, are primarily involved, which, to say the least, does not appear to be a probable hypothesis.

As Dr. W. H. Howell, head of the physiological department, and Dr. Florence R. Sabin, of the anatomical department, of the Johns Hopkins Medical School—both of whom have afforded me helpful assistance in the preparation of this paper—feel that by the employment of modern methods of research it should be possible to clear up the present uncertainty regarding the true character of the ciliary ganglion, I am not without hope, if the right man can be found to undertake the exact and painstaking work required, that under the supervision of one or the other this much to be desired end may be attained.

TREATMENT.

As to the treatment of herpetic keratitis, I may say that the local remedies which I have found most useful are holocaine and atropine, and that not infrequently one, sometimes both of these are supplemented by instillations of dionin.

Holocaine is usually my first choice, to avoid the inconvenience of mydriasis, and it is employed in a one grain—if there is much ciliary irritation in a two grain—to the ounce solution, with the addition always of boric acid, ten grains to the ounce. If the response to this is not satisfactory, atropine—two to four grains to the ounce, with the addition of boric acid in the strength just mentioned—is substituted. Not infrequently, as has been indicated, both of these agents are employed, and, if the keratitis proves intractable, dionin, in five per cent. solution, applied twice or thrice daily, in conjunction with one or the other, possibly with both, is tried.

The constitutional remedies in which I have learned to place confidence, are quinine, in generous doses, and potassium iodide, each of which is given with the idea that I am attacking the primary lesion supposedly in the ciliary ganglion. The former, commonly first prescribed, is given in doses sufficient to produce some cinchonism, usually three grains, four times a day. If the response to this, after a fair trial, is not satisfactory, potassium iodide in moderate doses, usually ten grains three times a day, is given instead. Arsenic, which some think useful, I have not found as efficacious as the two drugs mentioned.

A rapid subsidence of the keratitis is seldom observed, and we should be prepared and, what is more important, should prepare the patient for a somewhat tedious recovery. The first observed evidences of improvement, as generally recognized, are a diminution of the ciliary irritation—the photophobia, lacrymation, and blepharospasm—and a lessening of the conjunctival injection, which is only exceptionally very pronounced at any stage, to be followed later by a gradual change for the better in the condition of the cornea—the restoration of lost tissue, which is seldom considerable, the reformation of the epithelium, and, last of all, the disappearance of the opacities, which, not very infrequently, is incomplete, and of the hypesthesia, which is commonly long delayed, and which, I am inclined to believe, is also, in some instances, incomplete.

CATHEDRAL AND HOWARD STREETS.

THE MANAGEMENT OF THE COMPLICATIONS OF PREGNANCY.

By JOHN A. McGLINN, A. B., M. D.,
Philadelphia.

It is impossible in the space allotted me to do more than cover superficially a few of the complications of pregnancy. Instead of selecting a number of subjects, I shall consider a few that I have met recently in my own practice.

Retrodisplaced pregnant uterus. Retrodisplacement occurs comparatively infrequently in the nulliparous. When it is present it is frequently the cause of sterility. This displacement is common in the multiparous woman and, while sterility may result, nevertheless conception is rarely interfered with. If a woman with this displacement does become pregnant, abortion is likely to result. If abortion does not result, the uterus may become incarcerated behind the promontory of the sacrum, or spontaneous replacement of the uterus may occur. If incarceration occurs, a rupture of the uterus is likely to result or sacculation with displacement of the cervix may supervene so that it becomes impossible for normal labor to take place.

Unless the displacement is associated with adhesions, few symptoms are present until the uterus is enlarged enough to fill the pelvis and press on adjacent organs. Adhesions are rare in these cases, for the reason that if adhesions were present the pathological condition of the uterine annexa would be such that pregnancy could not occur.

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[4] *Textbook of Ophthalmology,* American Edition, p. 621. I have taken the liberty of italicizing the words, ciliary ganglion, in this quotation.

The bladder is about the first organ to give rise to symptoms. As the fundus of the uterus enlarges, the cervix is pressed up under the symphysis and the neck of the bladder is impinged upon. The bladder is also displaced upward and backward. The impingement on, and the displacement of the bladder cause irritability and frequent desire to urinate is a common result. In some cases the bladder cannot empty itself and the constant overflow of retained urine occurs. If the bladder does not become distended, it shows a distinct tumor above the symphysis and may be mistaken for the fundus of the uterus or a cystic tumor and complicate the diagnosis. It is advisable, therefore, to emphasize the cardinal rule, "Always catheterize the bladder before making a diagnosis in the case of a pelvic abdominal tumor." In addition to the bladder symptoms, pelvic pain, the feeling of fullness in the pelvis, and rectal irritability are constant symptoms. It is well to bear in mind that pressure on the ureters may occur and be followed by uremia.

In the management of these cases, special emphasis should be laid on prophylaxis. The care of a case of pregnancy is not finished with the delivery. Every woman after labor should be examined at the end of the puerperium to note the condition of her pelvic organs. If a displacement is found, the uterus should be replaced and held in position with a properly fitting pessary. These are the cases in which a pessary will cure a displacement. Of course, the treatment presupposes an earlier examination with the correction of any laceration of the birth canal which may have been present.

The management of an actual case depends on when it is seen and the conditions present. Perhaps this phase of the treatment can best be illustrated by the recital of a few cases.

Two cases recently delivered, one a primipara, the other a secundipara, came under my observation in the second month of pregnancy. A routine examination disclosed the uterus in each case to be caught behind the symphysis before incarceration or symptoms developed. Both uteri were replaced by manual manipulation aided by the knee chest position. After replacement, pessaries were inserted and the uteri held in correct position until pregnancy had reached the fourth month, and the uteri were well out of the pelvis, with no chance of the displacement recurring. Pregnancy advanced normally and both patients were delivered at term. Both cases exhibited an aggravated type of vomiting which cleared up immediately with the correction of the displacement. It is well to bear in mind that displacement of the pregnant uterus is a common cause of the aggravated type of vomiting. I cannot too strongly urge the advisability of a routine pelvic examination in the early months of pregnancy.

Within the past year I have had two cases of incarcerated pregnant uterus, one in a primipara at five months, and one in a secundipara at four months. It was impossible in these cases to replace the uterus manually, even under anesthesia. In both cases the abdomen was opened and the uterus freed from incarceration by internal manipulation. The primipara at five months miscarried at the end of a week. The secundipara was delivered at term of a living child. After operation both patients received large doses of opium.

Other forms of treatment are advised, abortion and rupture of the membranes. Abortion is not easy to perform owing to the inaccessible position of the cervix. Posterior vaginal hysterectomy has been advocated by De Lee to overcome this difficulty. The idea of rupture of the membranes is to reduce the size of the uterus so that it can be replaced and assumes the possibility of the membrane healing and pregnancy continuing. Of course, this is an unlikely sequence. Personally, I am opposed to the last two measures unless laparotomy is positively contraindicated.

Ovarian cyst. Ovarian cysts of large size are infrequent complications of pregnancy. If present, they are always a serious complication. It is impossible to know in any safe and definite way the contents of an ovarian cyst before removal. Associated with pregnancy there is always the danger of direct rupture or rupture after twisting of the pedicle with discharge of the contents into the peritoneal cavity. If the contents happen to be septic, malignant, or irritating, death is likely to occur. Again, a portion of the cyst is practically always pelvic, so that the cervix is displaced and the superior strait is encroached upon by the growth, and if pregnancy goes to term, obstructed labor is likely to result. Obstetricians and gynecologists, on account of the dangers of this complication, are practically unanimous that an ovarian cyst complicating pregnancy should be removed as soon as diagnosed. It is advisable again to counsel catheterization of the bladder before operating to remove a cyst. I have seen several "ovarian cysts" cured by the use of a catheter. I have had two ovarian cysts complicating pregnancy, one with a twisted pedicle. Both were removed by section, and both patients went to term and were delivered of living babies.

Right sided abdominal pain is a frequent and distressing complication of pregnancy. It is almost always diagnosed as appendicitis, but it must be borne in mind that infection of the right urinary tract is a more frequent cause than the appendix. There is little similarity in the symptoms and physical signs of the two conditions, except the site of the pain. In pyelitis and ureteritis the pain usually radiates toward the lumbar region, while in appendicitis the pain is more apt to radiate toward the umbilicus or ensiform. In pyelitis and ureteritis, recurring chills are the rule and gastrointestinal symptoms are absent, whereas in appendicitis chills are absent as a rule and gastrointestinal symptoms, nausea and vomiting are more or less constant. Infections of the urinary tract have associated bladder symptoms, which are negative in appendicular infections. In pyelitis and ureteritis, rigidity of the abdominal wall is absent and the greatest amount of tenderness is over the kidney. In appendicitis the rigidity of the abdomen is a constant finding and the greatest tenderness is found over the appendix. The urine in kidney and ureter infections shows pus and bacteria. In appendicitis, while bacteriuria is common, pus is usually absent.

Autopsies on pregnant women have shown that torsion of the right ureter with distention and retention of urine is a frequent finding. The retention of the urine in the ureter and pelvis of the kidney is a common predisposing factor of infection. Infection of the retained urine frequently takes place, and the colon bacillus is the common infecting organism.

The management of these cases is as follows: Place the woman at rest in bed and have her assume the knee chest position frequently during the day. The diet should consist essentially of milk and water, and buttermilk is to be preferred to sweet milk. Hexamethylenamine in large doses should be given, as much as sixty grains a day. If there is intolerance to this drug, salol or methylene blue may be substituted. If this treatment fails, a cure can usually be obtained by inserting a catheter into the ureter and washing out the ureter and pelvis of the kidney with some nonirritating and mild antiseptic solution. While this is a satisfactory treatment, it is frequently difficult and dangerous. It should be remembered that the ureter is usually distorted with the walls thinned out and there is grave danger of perforation of the ureter with the catheter. It has been advised to empty the uterus in these cases, but while I have had many cases I have yet to see one in which I deemed this procedure advisable. De Lee advises against the use of bacterial vaccines while the uterus is still gravid. When the infective agent has been the colon bacillus, I have found an autogenous vaccine the most satisfactory form of treatment and have never seen untoward results. It is my belief that if the symptoms of kidney and ureteral infection do not clear up under the use of hexamethylenamine or vaccines, the case is probably one of kidney or ureteral calculi, and an x ray study of the case should be made. This is simply an expression of an opinion, not based on experience. All the cases that I have had in my own practice have cleared up under treatment. I believe the great thing in the treatment is the extra large doses of hexamethylenamine. I have failed to obtain satisfactory results when the drug has been administered in the usual doses.

Appendicitis is a most formidable complication of pregnancy. It is not necessary to speak specifically of the diagnosis, as I have already referred to it in the differential diagnosis of pyelitis and ureteritis. The salvation of a patient with this complication depends on early recognition and immediate operation. Appendicitis cannot be cured by an ice bag and a dose of salts, but patients can be killed by this treatment. Delayed operation is particularly dangerous in pregnancy at any time after the uterus has become an abdominal organ, because the uterus is likely to form one wall of the abscess. In these cases, owing to the necessary manipulation and the constant irritation of the drain, abortion is likely to occur with the breaking down of protecting adhesions to be followed by diffuse peritonitis and almost certain death.

I have always been impressed by the frequency of abortion, even after a simple appendicectomy where the uterus has not been handled at all.

I have removed ovarian tumors complicating pregnancy and have done myomectomy on a gravid uterus and gestation has not been disturbed, but a large percentage of my appendix cases have resulted in abortion. I have never been able to arrive at a satisfactory explanation of this phenomenon. Of course, in advanced pregnancy the abdominal walls retract, once incised, and the incision can be closed only with considerable tension. The pressure and irritation of the contracted abdominal walls would cause the uterus to contract and produce an abortion, but this factor would hold no matter for what reason the abdomen had been opened. In late pregnancy, when the appendix is displaced and a large incision is necessary to locate and remove it, it is next to impossible to close the incision. In some cases it is necessary to do a Cæsarean section and empty the uterus before the incision can be closed satisfactorily. The cardinal rule in the management of appendicitis complicating pregnancy is early diagnosis and immediate operation.

Intestinal obstruction. I have had two cases of intestinal obstruction complicating pregnancy. One was due to a volvulus in the small bowel and the other to a growth of the descending colon. The first patient recovered from the operation, went to term, and was delivered of a living baby. In the second case a portion of the colon was resected and an end to end anastomosis made. The woman miscarried about two weeks after operation. The pathological report of the growth removed at operation was that it was benign. The patient turned up about a year later at another clinic with general carcinomatosis of the peritoneal cavity.

The management of intestinal obstruction complicating pregnancy is the same as in cases independent of pregnancy. The operation is complicated by the presence of pregnancy and there is always the possibility and dangers of postoperative abortion.

Fibroid tumors of uterus. I have recently had under observation two cases of pregnancy complicated by fibroids of the uterus. Both were primiparæ pregnant five months. In one case the tumor was situated in the posterior wall of the uterus at the level of the internal os. At operation it was found inadvisable to attempt a myomectomy. The only alternatives were hysterectomy or noninterference. This latter course was adopted for the reason that the patient was a primipara, exceedingly anxious for a child. To have performed hysterectomy would have destroyed the child she was carrying and of course render her sterile. The abdomen was closed with the expectation of pregnancy continuing to be followed by Cæsarean section at term, Fortunately the patient aborted, two weeks later, of an anencephalic monster. This case will be the subject of a separate report.

In the other patient, the tumor was situated on the lateral wall of the uterus, and displaced the cervix to one side. The growth, which was the size of an orange, was removed by myomectomy. Pregnancy has continued normally since the operation and the patient expects to be delivered next month.

There are several important points to be remembered in connection with fibroids complicating pregnancy. The first is that as a matter of fact the tumors are so situated that as a rule they do not obstruct labor. Even when the tumor is situated low in the pelvis, it frequently recedes beyond the presenting part. The second is that myomectomy is a comparatively safe and successful operation in properly selected cases. The entire subject of fibroids as a complication of pregnancy is too complex for detailed consideration here. The lesson I wish to impress from the recital of two of my recent cases is that there are modes of treatment other than hysterectomy.

Atresia and septa of the vagina. I have had three cases occur in this category. One case was particularly interesting. A patient was having electrical treatment for a pelvic condition, and pregnancy was not recognized. During one of the treatments she accidentally brushed against the rheostat and the full force of current was turned on, which resulted in a severe burn of the upper portion of the vagina. The burn healed with obliteration of the vaginal vault. I saw her first when she was six months pregnant. The upper portion of the vagina was closed off and the cervix was not approachable. The patient was allowed to go near term, when she was delivered by abdominal Cæsarean section. Then the uterus was opened, a finger was carried through the cervix and the vaginal obstruction was found to be so thick that it was my judgment that an opening through it could not be maintained to provide for menstruation, and the operation was completed by a hysterectomy.

The other two cases were of septa of the vagina, one longitudinal associated with a bifid uterus. The septum in this case was removed and the patient delivered without difficulty several months later. The other case was of a transverse septum in a multipara. The septum was not congenital and was probably inflammatory in origin. In this case the septum was removed and labor was uncomplicated.

Congenital stenosis and septa of the vagina sometimes offer an insuperable bar to normal labor. The great danger is injury to the bladder and rectum, followed by hemorrhage and infection. Good judgment must be exercised in handling cases of this character, and in many of them abdominal Cæsarean section is the best method of delivery.

Acute infections of the vagina and vulva. Postconception gonorrheal infection of the vagina and vulva is not an infrequent complication of pregnancy. Every pregnant woman has more or less discharge, but if it is innocuous it is not profuse or irritating. If a pregnant woman complains of a profuse or irritating discharge, suspicion should be immediately directed toward the possibility of gonorrhea and measures taken to arrive at a correct diagnosis. If gonorrhea is diagnosed, treatment should be immediately instituted to eradicate it before labor sets in. There is not only danger to the mother from the standpoint of puerperal infection, but the danger of ophthalmia neonatorum must be considered. It is not my purpose at this time to consider the treatment of acute gonorrhea in the female. Just this much in passing—I have found the yeast treatment most efficacious in this disease. It should be emphasized that though the disease is apparently cured and there have been repeated negative smears for gonococci, we cannot be sure that the disease is entirely eradicated. Gonococci may be present deep in the tissues and set free by the traumatism of labor and their virulence exacerbated. In these cases it is not only justifiable but advisable to give a copious antiseptic vaginal douche at the beginning of labor, and to continue the douche and to observe the utmost vulvar cleanliness during the puerperium. The instillation of silver into the child's eyes must not be neglected, and I believe, in addition to this in a case with a frank gonorrheal history, that the eyes should be irrigated frequently during the first two weeks of life and also that the instillation of silver should be repeated on the third day. I had one such case where dependence was placed entirely upon the usual treatment, and ophthalmia developed ten days later. Fortunately it was a mild infection and yielded promptly to treatment.

If infection occurs in the vulvovaginal glands, temporizing treatment should not be attempted. I have had such a case within the past week. In this case the entire gland was eradicated and this is the treatment which should always be followed.

I have purposely omitted in this short paper any reference to toxemias of pregnancy because I have already had the privilege of presenting this subject to the profession and also because it is so important that it should not be considered in connection with other subjects. I cannot close this paper, however, without referring to one phase of this subject. Those of us who are in close touch with obstetrical literature and with lay writing as well and who are familiar with the thoughts of some of the leaders of the profession, and who see cases in consultation with general practitioners, cannot but be alarmed at the growing tendency to hold in little sacredness the life of the unborn child. When presumably reputable doctors will advise and well known journals will print the advice to eliminate the criminal abortionist by the surgeon taking over their work of crime, so as to eliminate the maternal dangers, then I think it time for the profession to arise in its might and protest against violation of the sacredness of the medical profession. The child in utero has a right that none can gainsay and the question of therapeutic abortion cannot be solved lightly. And yet hardly a day passes that we are not asked, not to see and study the case, but to put the patient in the hospital and abort her immediately just because vomiting is aggravated. As a matter of fact, very few cases of toxemia of early pregnancy call for the termination of gestation. The majority of such cases are not toxic at all, and the condition is cured under proper treatment. Even when the condition is toxic, the majority of cases can be tided over to term or at least to viability with absolute safety to the mother. This question is not only a moral one, but it is a great economic one. America needs her children, and it is just as important to conserve their life in utero as it is after they are born.

113 SOUTH TWENTIETH STREET.

Nasal Accessory Sinuses.—C. A. Veasey (*Jour. Ophth. and Otol.*, April, 1916) states that many toxemias of the gastrointestinal tract, as well as of other portions of the body, are due to infections originating in the nasal accessory sinuses.

SYPHILIS AND TUBERCULOSIS IN THE SAME LUNG.

By Robert A. Keilty, M. D.,
Philadelphia.
(From the McManes Laboratory of Pathology, University of Pennsylvania.)

Syphilis in the form of chronic interstitial pneumonitis, with bronchiectasis and tuberculosis in the form of miliary and conglomerate tubercles with caseation, were present in the left lung and tuberculosis almost alone in the right lung. I am indebted for the following history and permission to report the case to Dr. David Riesman and his staff at the Philadelphia General Hospital. The following history was obtained:

Case. L. B., a male, colored, laborer, aged twenty-three years, was admitted February 1, 1912, and died February 29, 1912. He complained of cough, expectoration, and dyspnea, with pain on the left side and general weakness. Three months before his admission, his trouble began with cough; three weeks before admission, the cough became worse, with a diffuse expectoration and pain on the left side. With this there was failing strength and loss of weight, but no sweats. Upon admission his temperature was 100.3° F., pulse 84, and respirations 25; a profuse, yellow, foul expectoration; the sputum separated into two layers, the upper solid and the lower fluid. This showed elastic tissue, débris, and many organisms with negative tubercle bacilli.

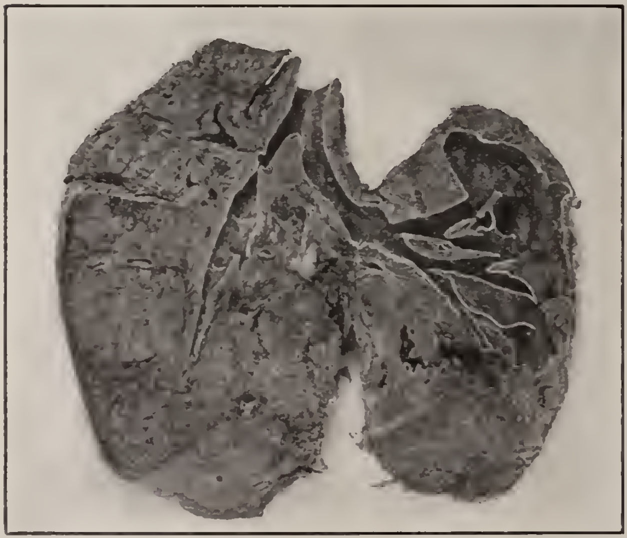

Fig. 1.—An anterior view of the cross section of both lungs without excision from the bronchi. The left shows the cylindrical dilatation of the larger branches of the bronchi terminating in cavities. The tuberculous process is well seen on the right side.

Physical examination showed an anemic chest, with dullness, flatness, and friction posteriorly on the left. Bronchial breathing, bronchophony, pectoriloquy, and egophony were present below the left scapula. The right chest was hyperresonant, with infiltration at the right apex anteriorly and good resonance posteriorly. A diagnosis of pulmonary gangrene was made, the patient was transferred to the surgical ward, and operated upon on February 17, 1912. An incision was made in the sixth interspace in the posterior axillary line on the left. The exploratory needle showed no pus or fluid; digital examination palpated pleural tuberculous nodules. The patient improved somewhat, but grew weaker and died. The urine analysis showed a small amount of albumin and a few casts. The blood showed a moderate secondary anemia, with a leucocytosis of 24,000 and 10,000. Temperature fluctuation was around 103° F., pulse about 120, and respirations never over 35.

Autopsy findings: An emaciated adult black male, weighed about 108 pounds; the right arm had been amputated and scars were present on the shins; the meatus of the penis presented a firm contracted scar.

The right thorax contained 100 c. c. of fluid, with patchy fibrinous adhesions. The left had no fluid but a fibrinopurulent exudate obliterating the cavity in places. The parietal and visceral layers of the pleura were decidedly thickened and adherent to the pericardium. The left lung was firm throughout, crepitated at the apex, and the pleural surface showed an extensive fibrinopurulent exudate easily scraped off, leaving a bluish surface with white fibrous points. On the lung surface corresponding to the operative incision was a cavity three cm. in diameter, with rough and jagged edges. Upon section the organ cut with resistance. The root, especially running to the lower lobe, showed branching white lines much like the lines of a palm leaf fan. This was fibrous in character. The left bronchus with its larger branches was dilated and the tree opened into two large cavities, one in the upper and one in the lower lobe. These cavities were fairly regular, had smooth walls with many dilated bronchioles opening into them. The content was a moist, coarsely granular, inspissated material. Where the lung was not involved in this latter process, there were small, irregular, caseous areas, not very numerous, however. In the lower part of the lower lobe there was a small, irregular cavity, which did not communicate with the bronchi, but which was irregular in outline and presented a ragged wall. The right lung measured twenty-five by ten by ten cm., stood up firmly, and its surface was pale yellow and less markedly fibrous. The larger branches of the bronchi in this lung were dilated without the formation of cavity. The fanlike extension of fibrous tissue was not so apparent. The cut surface was moist, red, and granular, with a conglomerate caseous involvement which affected all lobes.

For the microscopical examination nine sections of lung were made. Four of these were stained by the Leviditti method, one for the tubercle bacillus, and four with hemotoxylin and eosin. Two small groups of spirochetes were found in the fibrous tissue of the root of the left lung. This was confirmed by Dr. A. J. Smith. The tubercle bacilli were scattered, but easily demonstrable. One slide from the right lung showed a general congestion and some dilatation of the alveolar spaces. There were numerous tubercles, miliary, conglomerate, and caseous. A section from the bronchiectatic cavity of the left lung showed a thick fibrous wall with numerous new bloodvessels forming. In the periphery of the wall were seen nodules which had a central necrotic area, surrounded by a lymphoid zone and irregular endothelioid proliferation. There was some question whether these were miliary gummata or tubercles. Other slides showed fibrinous exudate on the surface of the pleura, congestion of alveolar walls, and numerous small miliary tubercles. Where the fibrosis was marked, the epithelial cells of the alveolar walls were numerous and showed a metaplasia into a squamous type of cell.

CONCLUSION.

In the summary of this case the following interesting facts are presented: A colored male, aged twenty-three years, shows a progressive loss of weight, with cough, dyspnea, and a profuse fetid expectoration of three weeks' duration (seven weeks before death). The physical signs point to infiltration and cavity in the lower left lung, with infiltration in the right. In the absence of tubercle bacilli in the sputum and with a history of a rapid course, a diagnosis of pulmonary gangrene led to operation, when the tuberculous nature of the case was revealed.

At death the autopsy demonstrated the left lung to be the seat of a cylindrical dilatation of the bronchi, with two fairly large bronchiectatic cavities and a generalized overgrowth of fibrous tissue. Presumably engrafted upon this, or possibly primarily present and secondarily stimulated by the syphilitic process, a tuberculous process of miliary and conglomerate tubercles with caseation was present. Microscopically some of these tubercles closely resembled gummata. The tubercle bacillus and Spirochæta pallida were demonstrable in appropriately stained preparations.

REMOVAL OF AN INTERSTITIAL FIBROMYOMA.

Removal Due to Hemorrhage, Immediately Following High Forceps and Manual Placental Delivery,

By John J. Sheehey, M. D.,
New York.

This is a report of a unique case of extraction of an intramural fibromyoma situated in the lower uterine segment, at full term, immediately after manual delivery of the placenta, on account of hemorrhage.

Case. In an emergency I was called to attend Mrs. M., aged thirty-six years, multipara, three children, two years apart, first child ten years ago, second stillborn, each a forceps delivery. She had been twelve hours in labor; the os well dilated and quite dilatable; head unengaged, L. O. A., pains short, sharp, exhausting; no seeming progress; violent uterine contractions. Three hours after examination, one c. c. of pituitrin was given hypodermically, and in due time chloroform, less than an ounce, to the surgical degree; high forceps were adjusted with the usual difficulty, and delivery accomplished. The placenta which detached itself was retained, but was readily extracted.

Fig.—Doctor Sheehey's intrauterine myoma.

In extracting the placenta an intrauterine myoma was discovered in the lower segment of the uterus. Hemorrhage occurred immediately after placental delivery. The Credé method failed, as did bimanual manipulation. The hand was introduced to the fundus and a tumor about the size of an orange, hard and lobular, was gradually enucleated. The hand was pushed high up, anteriorly above the tumor and with some difficulty the fingers gradually separated the tumor from the muscular tissue and peritoneal covering; as this was done, the uterine covering underwent prolapse through the uterine wall and remained so until contractions of uterus took place, when it resumed its normal position. The hemorrhage was immediately controlled. No sepsis or other complication followed.

The fibromyoma measured 6.32 by 6.08 by 20.32 cm.

The pathological examination of the tumor was made by Dr. Archibald Murray, of the Hoagland Laboratory.

Fibromyoma of the uterus causing hemorrhage, during the third stage of labor, demands quick judgment and immediate action. Any extensive operation under such conditions is dangerous. In studying the case it appears that the fibroid prevented regular uterine contractions, but the placenta detached itself, and was held in the uterus by the size and position of the tumor.

A careful search through the surgeon general's office at Washington did not show a similar case. Fibrinous tumors have been reported that had been removed, and some submucous ones that had been crushed by forceps delivery. It is the consensus that sepsis follows the removal per vaginam of a fibromyoma after forceps and manual placental delivery at term. Sepsis should not follow. It did not supervene here, nor is there any reason why sepsis should occur if the procedure has been conducted properly.

349 Union Street, Brooklyn.

THE NEPHRITIC TOXEMIA OF PREGNANCY.

Etiology and Treatment,

By Arnold H. May, M. D.,
Buffalo, N. Y.

The great group of the toxemias of pregnancy consist principally of the conditions known as eclampsia and preeclamptic state, pernicious vomiting of pregnancy, and the nephritic toxemia of pregnancy. The last condition occurs most frequently during the latter half of gestation; and may or may not follow upon an already impaired kidney. It may be acute or chronic, and it is a significant fact that it may occur about the same time in each subsequent pregnancy. In all these cases it is important to know the condition of the kidney, and particularly the way this organ reacts at different periods of pregnancy. In most instances the higher degree of function of the kidneys during pregnancy, in the excretion of added metabolic products, will produce a condition in which a diversity of factors may quickly effect the histological structures.

In pregnancy there is a gradual progressive abdominal increase, so that at the fourth month the uterus is no longer a pelvic organ; and with increase in growth, it almost reaches the liver. The uterus is, moreover, movable above and attached below to the cervix. In the erect position, during the latter part of pregnancy, the anterior abdominal walls form the principal support for the organ, whereas in the recumbent position the uterus lies upon the vertebral column. After the fourth month, the organ increases more rapidly in length than in breadth. With the increase in size of the uterus, toward the latter half of pregnancy, the woman upon reclining assumes the dorsal, and more rarely the lateral position. This constant lying on the back, a position most often assumed by the pregnant woman, results in pressure, intermittent or constant, upon the kidneys or their excretory apparatus, the pelves, and the ureters. The abdominal position in the recumbent state is untenable in the latter half of pregnancy. In the course of the exertion of this pressure, there occurs a damming back of the urinary stream, which may be only transient during that period in which the patient is in the recumbent position, and is relieved when the upright, or less often, when the lateral position is assumed. As was said, this damming back of the stream may be transient, but when the pregnant woman is ill, may be constant, owing to the fact that she then assumes the recumbent position. The increased intraureteral pressure caused by the damming back of the urinary stream causes an increased strain, or produces trauma to the histological parenchyma of the kidneys. This trauma, however slight or great, depending upon its duration, produces a greater reaction than usual, because of the increased strain upon the excretory function of the kidney during pregnancy. As a result of this strain, not necessarily a hydronephrosis, but the entire kidney function may be distorted, resulting in a pathological condition productive of the clinical picture of the nephritic toxemia of pregnancy. Again it is apparent how naturally these women whose kidneys are impaired previously to pregnancy by disease are more likely to succumb to this trauma, and suffer the nephritic toxemia of pregnancy. The increasing demands upon the kidneys during pregnancy may then be a predisposing, but not a primary factor in the causation of this condition.

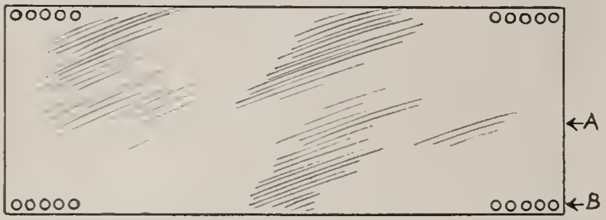

FIG. 1.—A, rubber sheet; B, holes to regulate depression of sheet.

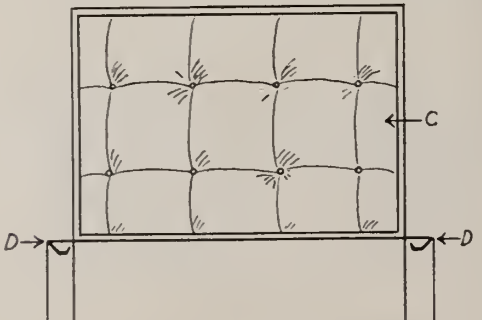

FIG. 2.—Plan of surface of bed; C, individual mattress; D, bars for the attachment of holes in sheet; E, space for rubber sheet. A bed of this character can be improvised.

The etiology of this condition, then, may be a growing organ variously weighted depending upon child development, which presses upon the renal excretory apparatus. With this in mind the writer has suggested a mode of treatment. Particularly is this method advocated, when it is remembered that in this condition the patient lies in bed; semiconscious, edematous, breathing stertorously, and yet in the dorsal position; the kidney in such a manner sustains the original shock, which was primarily responsible for the existing condition. The writer believes that in these cases where there is a predisposition to this disease, which can be determined by the condition of the kidneys before pregnancy, this treatment should be used as a matter of prophylaxis; where the disease already exists, it constitutes an adjuvant factor of the greatest importance in its treatment. The idea is to permit the patient to assume the recumbent position, but simultaneously to remove all weight (pressure) from the kidney excretory apparatus. This can be accomplished by the use of a special bed, which can be improvised for private or hospital use. The bed, as roughly shown in Fig. 2, consists of a head piece and foot piece, separated by an area of about two feet, each part having (head and foot) a separate spring and mattress. Between these parts the bed is open, except for an adjustable sling made either of rubber or cloth, preferably the former. The rubber sheet (Fig. 1) is sufficiently long so that it can be depressed to various degrees to accommodate the protuberant abdomen. The bed may be of any desired height. The patient assumes the recumbent position with the face downward. The protuberant abdomen is supported sufficiently by the sling to withstand great pressure upon the anterior abdominal wall, but at the same time to relieve pressure exerted upon the posterior abdominal wall, the kidneys, and their excretory apparatus. By this means a great degree of comfort may be assured the patient, the anterior abdominal wall is properly supported, while at the same time all pressure is withdrawn from the kidney; the shock resulting from such pressure is thus averted. This mode of treatment may be applied both as a prophylactic measure, where there is a predisposition to the disease, and as an important adjuvant measure in the treatment of the condition. Its application to the preeclamptic and eclamptic conditions, where there is such a profound kidney disturbance, will be determined by clinical observation of its use.

177 WALNUT STREET.

Pituitary Extract in Adiposis dolorosa.—Charles M. Nice (*Medical Record*, July 8, 1916) describes a case in a girl of twenty-two years, five feet and three inches in height, who weighed 262 pounds. No improvement followed the use of thyroid extract, but daily hypodermic use of pituitary extract produced rapid and continuous progress, with great improvement in the mental condition, and walking was rendered possible within two weeks, although the patient had been in bed for six months.

THE PATHOGENESIS OF PSORIASIS.

A Clinical Study; The Effect of Emetine Hydrochloride,

By Abner H. Cook, M. D.,
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Associate Visiting Physician, Leo N. Levi Memorial Hospital.

In reviewing the recent literature on psoriasis the articles found most instructive are those of Fox (1) and Holland (2) on the treatment, and on the etiology Schamberg, Ringer, Raiziss, Kolmer (3) researches, and Menzer's (4) article on psoriasis as a symptom of constitutional bacterial disease. Holland treats with a vaccine and Fox with autogenous serum, and the observations of Menzer suggest the presence in the body of some infecting organism, whereas the work of Schamberg, Ringer, Raiziss, and Kolmer indicates that the disease is due to disturbed protein metabolism.

It is interesting to note that the theory of a neuropathogenesis of psoriasis seems to have been abandoned; nothing can be found in the recent literature to support the theory, and recent research workers do not mention it. Also, careful searches for a specific organism have been made with negative results; especially painstaking were those of Schamberg, Ringer, Raiziss, and Kolmer.

The cases constituting the material for this study are ten in number, all in males, aged from twenty-two to forty-one years, whose vocations varied from laborer to banker. The skin disease in each case was unquestionably psoriasis; where there was a doubt in the diagnosis, the case was not studied. The study was begun by accident, curiosity having been excited by the following case:

Case I. Male, aged thirty-nine years, weight 129 pounds, married, banker, first came under my care, February 3, 1913, suffering from a severe arthritis, involving both knees and the sixth, seventh, eighth, and ninth thoracic vertebral articulations. Had had several previous attacks of arthritis, the last in the winter of 1911. The onset of the present attacks of arthritis dated from December 24, 1912. The knee joints became suddenly inflamed, and later the vertebral articulations became involved. There was fever from the onset; the patient had lost about thirty pounds in weight.

Present condition: Patient was a thin, sallow, emaciated man, whose expression denoted suffering; temperature 102° F. The thorax and abdomen were negative; particular attention was paid to the lungs, as the possibility of tuberculosis was imminent. A dark red psoriatic eruption was present over both elbows and extended down over the crest of the ulnas, a patch the size of the palm of the hand was present over the sternum, a circinate patch about three and a half inches in diameter was situated above the right external malleolus, and several small patches were scattered over the anterior surfaces of both thighs. The rash had been present for several years; at times almost totally disappearing, only to flare up with the next attack of arthritis. The von Pirquet, serum, Wassermann, sputum, and urinary examinations were all negative. The blood was: Hemoglobin fifty per cent., white cells 9,200, red corpuscles 3,450,000, color index 0.7.

Treatment: Hot Springs baths, rheumatism and mixed infection phylacogen, salicylates, colchicum, iodides, and the whole list of empiric remedies that is recommended as valuable in arthritis, was exhausted. The patient grew steadily worse, pain more severe, weight decreased twelve pounds, and the fever continued; therefore, he left Hot Springs, March 28, 1913.

On February 8, 1915, the patient again presented himself, giving a history of complete recovery from the attack of 1913, during the summer of that year. The psoriatic eruption had almost completely disappeared during the intermission. There was no attack in the winter of 1913-14, but during the first week in January, 1915, arthritic symptoms reappeared. The onset was insidious, no fever developed, the same joints were involved as before, and the psoriasis covered about the same areas. The examination disclosed the same conditions as before, except that the joint involvement was not nearly so severe; he had lost but ten pounds in weight, had no rise of temperature, and a severe pyorrhœa alveolaris, involving an area from the lower left lateral incisor to the lower right premolar tooth, was discovered; the patient stated that this condition had existed for years. Endamœbia buccalis was present.

Administration of one half grain of emetine hydrochloride by hypodermic injection was begun February 10th and continued daily for seven days, after which one week of rest was allowed. On February 23d, there was but little pus; two endamebas were found in three slides, and there was slight improvement in the arthritis. On February 24th emetine was again instituted as before and continued for seven days, then followed another week of rest. An examination, on March 9th, revealed a complete recovery from pyorrhea, no pus or endamebas were present, the gums were beginning to assume a firm and healthy appearance, and the teeth to tighten up. The joints had resumed their normal shape and size, and there was but little pain upon pressure or movement. The patient called my attention to the fact that the psoriasis had begun to fade. The third treatment with emetine, the same as the two previous, was begun on March 10th and continued until March 16th. On March 31st the patient left for home completely relieved of his pyorrhea, rheumatism, and psoriasis. During the entire treatment he had used as a wash for the gums, the fluid extract of ipecac.

That there was an etiological connection, in this case, between the pyorrhœa alveolaris, arthritis, and psoriasis is evident. The relationship between arthritis and pyorrhœa alveolaris, as well as other infections, has been established; also the frequent occurrence of psoriasis in patients suffering from arthritis has been noted by many competent observers. With these facts known, the points for study suggested by this case were: 1, The relationship between psoriasis and pyorrhœa alveolaris; 2, the role of emetine hydrochloride as a remedy for psoriasis, and, 3, the relationship between psoriasis and other infections.

For the purpose of determining these questions, the study of a series of cases was undertaken. I was able to collect nine patients for the study, extending over a period of nine months. Each patient was examined for pyorrhœa alveolaris and the presence of the Endamœba buccalis; was treated, regardless of the mouth findings, with one half grain of emetine hydrochloride hypodermically daily for seven days and treatment was discontinued for seven days. Another seven days' treatment was followed by seven days' intermission, and a final seven day treatment; also a wash of the fluid extract of ipecac for the gums was given during the entire treatment. If the psoriasis still remained, a careful search was made for some other source of infection; this was treated as conditions indicated, and the results were noted.

PSORIASIS AND PYORRHEA.

Of the nine cases, well marked pyorrhœa alveolaris was found in three with the endameba present. In two cases the endameba was found, but no pyorrhea, i. e., pus was found only in microscopic quantity: and in four cases, the search for the endameba was negative.

TREATMENT WITH EMETINE HYDROCHLORIDE.

In five cases in which pyorrhea or endameba was present, all were free from endameba and pus at the end of the first week of treatment and week of rest, except two; in these pus and endameba were still present. One of these was cleared at the end of the second course; the other still had pus at the conclusion of the treatment and refused further treatment, or to permit further observation. In the two cases in which the pyorrhea was cured and psoriasis completely disappeared, treatment was instituted in one on April 3, 1915, which was dismissed on June 8, 1915; in the other, treatment was instituted on October 23, 1915, and the patient was dismissed January 3, 1916. The remaining two cases presented only endameba and no pus; in these the psoriasis remained unchanged.

In four cases in which pyorrhea or endameba was not present, the results were absolutely negative; the psoriatic eruption was not affected by the treatment.

PSORIASIS AND OTHER INFECTIONS.

The cases remaining uncured, minus the one refusing further treatment, were carefully searched for infections. In two of these a careful and extensive study failed to reveal any infection or coexisting disease, therefore they were dismissed. Both had extensive psoriatic lesions. The results in the remaining four cases were as follows:

Case II. Male, aged twenty-six years, weight 143 pounds, single, laborer. History: Severe malarial infection in the summer and fall of 1907. Gonorrhea 1910, and again 1912. Chancre, followed by secondaries, at the time of last gonorrhea, "took pills about six months." In 1914, red spot appeared on back and had gradually grown worse. Examination: Well nourished and healthy in appearance. Thorax and abdomen negative. No evidence of disease, except enlargement of posterior cervical, epitrochlear, and inguinal lymph glands and a psoriatic eruption on the back. There was one large circinate area, with a pale red centre and bright red periphery, which had a diameter from above downward of five and a quarter inches and three and three quarter inches across, between the scapulæ. In addition, there were twenty or thirty small bright red areas, varying from the size of a dime to a dollar, scattered over back and shoulders. Urine negative, serum Wassermann +++. No endameba nor pyorrhea.

Treatment: Emetine hydrochloride, as described in outline, concluded on September 23, 1915. No effect upon psoriasis. Injections of one half grain of mercuric succinimide and gradually increasing doses of iodide of potassium instituted September 26, 1915, and continued until December 2, 1915. Salivation developed and the patient quit treatment. Effect upon psoriasis, negative.

Case III. Male, aged forty-one years, weight 155 pounds, married, traveling salesman. History: Typhoid fever 1891, grippe 1893. Denied venereal infection. Rectal abscess 1906. There was a soreness around anus, and frequently underclothes were stained by discharge. "Rheumatism" winter of 1907 and again 1908. In 1910, small red area appeared over sternum; this gradually grew, but at times appeared to be better. Small areas scattered over chest and abdomen, which came and went. Examination: Heart, slight mitral regurgitation, lungs and abdomen negative. Joints tender upon pressure. Large dark red patch of psoriasis over sternum; several smaller areas on chest, abdomen, thighs, and buttocks. Fistula in ano, with external opening about one and one half inch to the right of the anus, and internal opening just within the internal sphincter; there was a cavity of considerable size containing pus, fecal matter, and débris. Urine and blood negative. No pyorrhea nor endameba.

Treatment: After a failure to cure the psoriasis with emetine the patient left Hot Springs in July, 1915, but returned for treatment of the fistula September 10, 1915. Operated on September 12th and on October 15th; returned to his home cured of the fistula. There was a slight improvement in the psoriasis.

Effect on psoriasis: January 15, 1916, patient returned to Hot Springs on business. The fistula was entirely well and there was no evidence of psoriasis.

Case IV. Male, aged thirty-four years, weight 135 pounds, single, laborer. History: Scarlet fever 1898, pneumonia 1904. Several attacks of malaria. Denied syphilis; gonorrhea many times, last infection, September, 1914, lasting until December, 1914. Several small red spots appeared on trunk, arms, thighs, and scalp in April, 1915, and gradually grew worse.

Examination: Chest, abdomen, joints, and muscles negative. Prostate enlarged and tender, left seminal vesicle thickened, indurated, and tender. Thirty to forty bright red spots, varying from the size of a dime to that of a half dollar, scattered over trunk, arms, and thighs. Many dark red spots the size of a dime on the scalp, but no loss of hair. Urine contained pus cells, hyaline and granular casts, and albumin, Wassermann negative. Endamœba buccalis obtained from scrapings of the roots of the teeth; no pyorrhea. Seminal and prostatic fluid contained staphylococci, streptococci, and colon bacilli, but no gonococci.

Treatment: Emetine treatment concluded August 10, 1915, no endameba present, but the effect on the psoriasis was negative. Massage of vesicles and prostate and irrigations with potassium permanganate solution instituted. Autogenous vaccine of organisms cultivated from seminal and prostatic fluid; 1,000,000,000 to the c. c., administered in gradually increasing doses to the maximum of one c. c., at intervals of three to seven days, as conditions warranted. Treatment instituted August 20, and on December 31, 1915, patient was dismissed, free from pus, bacteria, and psoriasis.

Case V. Male, aged thirty-three years, weight 139 pounds, single, laborer. History: Several mild attacks of rheumatism, the last in 1912. Frequent colds, and each winter had had sore throat. Skin disease appeared, 1910. Worse in winter, and in summer nearly completely disappeared. Worse now than ever. Denied syphilis; three attacks of gonorrhea, the last about 1913.

Examination: Heart, lungs, abdomen, muscles, and joints negative. Both tonsils very large, red, and boggy, pus exuding from crypts; pillars of fauces reddened and pharynx chronically inflamed.

Areas of psoriasis over both forearms and arms, extending up to the shoulder. A few small lesions were scattered over the trunk. The size of the lesions varied from one eighth of an inch to one inch in diameter. Some had coalesced, forming a large circinate lesion over deltoid muscle of left side. Color was dark red, and at times there was slight itching. All laboratory examinations were negative.

Treatment: June 8, tonsillectomy. Throat and nose treated with antiseptics.

Effect on psoriasis: August 17th, patient was dismissed as cured, no psoriasis being evident.

RECAPITULATION.

Of the ten patients all were treated with emetine hydrochloride and three recoveries resulted; these three had pyorrhœa alveolaris with the Endamœba buccalis. One case of pyorrhea failed to respond to the three courses of emetine, and there was no improvement in his psoriasis; he refused further treatment and was dismissed. One patient had a seminal vesiculitis, and after eradicating the disease with autogenous vaccine and other appropriate measures, the psoriasis cleared up. Fistula in ano, discharging pus, was found in one case; after an operation the fistula healed, and a complete recovery from psoriasis resulted. The removal of the infected tonsils was followed by the disappearance of psoriasis in one case. Syphilis was the only infection found in one case, and iodides and mercury had no effect upon the psoriasis. Two patients were found to have psoriasis, but no other disease or infection, consequently they were dismissed without relief.

CONCLUSION.

The small number of cases available renders the study far from complete; it is certain, however, that emetine hydrochloride has no direct effect upon psoriasis. It is probable that the cures from emetine treatment were due to the killing of Endamœba buccalis and to the subsequent death of the accompanying organisms.

The cases of recovery from psoriasis, after the removal or cure of the other infections, strongly suggest that these infections caused the disease. Further, on account of the character of the infections, it is suggested that the organisms most likely causing psoriasis were the staphylococci and streptococci.

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304, 305 DUGAN-STUART BUILDING.

MEDICAL WOMEN,

In History and in Present Day Practice,

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(*Concluded from page 198.*)

In a recent book on English medical women, Miss A. H. Bennett, who, by the way, is not a medical woman, but a journalist, writes:

> It was the first five ladies who made a fresh application[1] for admittance to Edinburgh University, which was received quite favorably by the Senatus and the University Court. Doubtless it was easier to admit these "blue stocking" ladies than to refuse them. . . . Besides, there was the safeguard of the General Council of the University, whose assent was necessary before arrangements could be made for their admittance. The meeting of the council took place a few days before the winter session, and some time after the examination by which alone the medical students could gain entrance to the university for that term. Another visit was therefore paid to the dean of the medical faculty, who, as a great concession, allowed the ladies to present themselves for matriculation on condition that the examination should be considered void if the council decided not to admit women to the university. . . . The motion of Professor Mason, seconded by Professor Hughes Bennett, that "women be allowed to matriculate and form separate classes," passed by a large majority. The university felt that by this vote it had shown great breadth of mind, and such generosity that now it might at least make the affair a paying one. Consequently, the ladies were left to make their own arrangements for the separate classes, and for each class a guarantee of a hundred guineas was demanded. This the women agreed to, and received their precious cards proclaiming in red letters that they were *Cives academiæ edinensis*. . . . And now trouble began. After the first examination it was found that Miss Pechey had taken such a high place in chemistry that it was possible and even probable that she might win one of the Hope scholarships. This, from the men's point of view, was quite unendurable. They had gone against their traditions and upbringing in admitting the ladies to the classes, and the ladies, instead of showing gratitude by remaining in the background, not only competed with their best men, but seemed quite likely to win. . . . The two examinations resulted in four fifths of the women being in the honors list, Miss Pechey proving herself the best student of chemistry in her year. . . . The professor (Crum Brown) announced that the man below Miss Pechey would receive the scholarship, as the women's class was not eligible. Instead of meekly accepting the decision, Miss Pechey appealed to the Senatus. It was all very annoying and disturbing, and quite contrary to the professor's idea of womanly behavior, but, to his relief, the Senatus upheld his decision. . . . The excitement spread, and all forces of society, including the daily papers, were engaged in the struggle for or against the ladies. . . . As one of the friendly professors pathetically remarked at the time, if they would only be content to keep in the background, work on unobtrusively, lay claim to *no* distinction, and avoid all rivalry with the students, so much jealousy and trouble would be prevented. In other words, if these exceptionally brilliant women were to gauge the capacity of the men students, and then carefully refrain from doing better than the most stupid, they might be treated with kindly condescension.

Doctor Wollstein sums up the subsequent history: "After the first session the professors refused to teach the women and the male students mobbed them. An appeal to the courts and even the parliament resulted"—after the second year—"in defeat of the women, who were obliged to go to Switzerland for their degrees." In 1874 the idea of founding a medical school for women in London took shape, Dr. Jex-Blake being chiefly instrumental in the school's organization. All obstacles were finally overcome when the Royal Free Hospital opened its wards to the women and the University of London, and the Conjoint Irish Boards consented to grant examinations and degrees to women. In 1886 a separate school for women was successfully opened in Edinburgh, and Dr. Jex-Blake was the first woman appointed as lecturer in a British university, holding the extramural lectureship in midwifery at Edinburgh and later at St. Andrews.

It would take too much space and be rather boresome to enumerate all the historical steps by which women have impressed their fitness and ability to practise medicine upon the general public, the hospitals, and colleges until in 1908, fifty per cent. of all the medical schools of the United States were granting degrees to women and every English university (except Oxford and Cambridge), all the Scotch universities, the Royal University of Ireland and Trinity College, Dublin, and the University College at Cardiff were open as well. Doctor Wollstein summarized the situation in 1908 most ably: "A fairly complete list would read as follows: The admission to medical degrees having been accomplished, first, in the United States in 1859, Switzerland followed in 1864, France in 1867, Sweden in 1870, Holland in 1873, England in 1877, Denmark in 1875, Italy in 1876, St. Petersburg in 1878, Finland in 1879, Scotland in 1886, Belgium in 1890, then Portugal, Bulgaria, Roumania, Greece and Mexico, then Austria in 1897, and finally Germany in 1900."

It is from lack of adequate hospital opportunities and staff appointments that women suffer most at present, though the outlook in the country at large is better today than it was even eight years ago. In the east these opportunities are still unjustly limited, as are also the appointments to teaching positions in the medical faculties. This discrimination can hardly be laid at the doors of the incompetency of the medical women with any degree of justice, and it is to be hoped that an adjustment may soon be reached whereby the women are appointed to faculty and to hospital staff in a fairly just proportion to their relative numbers in the profession.

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[1] Miss Jex-Blake in a previous application, had been refused on the ground of its "not being advisable for the university to make alterations in the interests of one lady."

According to the twelfth census of 1910 the number of males in the United States who were gainfully employed was 22,489,425; of females gainfully employed, there were 4,833,630. Of these, 124,615 males and 7,387 females were returned as physicians and surgeons; in other words, there was about one medical man to every 179 men in other occupations and about one medical woman to every 653 women in other employments, whereas the proportion of women to men in the medical profession was about one to sixteen and of women to men gainfully employed about one to five, and the proportion of women to men in the population was about one to one, there being 24,851,013 males and 23,485,559 females in the census area of the United States who were sixteen years of age or older. To put these figures in another form: Of the males old enough to work, 90.5 per cent. were breadwinners; of the females, 20.6 per cent. Of the male breadwinners about 0.6 per cent. were physicians and surgeons; of the female breadwinners about 0.2 per cent. were physicians and surgeons; and of the whole number of the medical profession, 5.6 per cent. were women.

The history of medicine, having never been without the names of women practitioners for any appreciable time, goes far to prove that their medical work and medical writings were of average merit to say the least. That women are particularly adapted to the detail work required by laboratory research will be readily admitted and is amply demonstrated by the success in this field not only of a large number of nonmedical women, trained in other sciences or in specific lines of laboratory work, but also by the contributions of such medical women of the present generation as Frau Lydia Rabinovitch-Kempner, Frau Vogt, and Dr. Rachel Hirsch, of Berlin; Madame Curie, Madame Klumpke-Déjérine, and Madame Metchnikoff, of Paris; Dr. Lilian Welsh and Dr. Florence R. Sabin, of Baltimore, Md.; Dr. Janet Lane-Claypon, Dr. Ida S. MacLean, and Dr. A. Louise McIlray, of London, England; Dr. Marie Kjöiseth, of Christiania, Norway; of Dr. Lilian South (lately vice-president of the American Medical Association), of Bowling Green, Ky.; of Dr. Harriet F. Holmes, Dr. Lydia M. De Witt, and Dr. Gladys R. Henry, of Chicago, Ill.; of Dr. Martha Wollstein, Dr. Phebe L. DuBois, Dr. Louise Pearce, Dr. Anna I. von Sholly, Dr. Eleanor E. N. Van Alstyne, Dr. Bertha Van H. Anthony, Dr. Jacolyn Van Vliet Manning, and Dr. Anna W. Williams, all of New York, Dr. Adelaide W. Peckham, of Philadelphia, Pa., and others too numerous to mention.

In social service—which a Boston confrère considers the field *par excellence* for women—we find such well known women as Dr. S. Josephine Baker, director Child Hygiene Department of the New York city board of health; Dr. Frances Bradley, formerly of Atlanta, Ga., now in Government service in the Children's Bureau, Washington, D. C.; Dr. Janet Lane-Claypon, of London, England; Dr. Helen Y. Campbell, of Glasgow, Scotland; Dr. Lenna L. Meanes, of Des Moines, Iowa; Dr. Helen C. Putnam, of Providence, R. I., and Dr. Evangeline Young, of Boston, Mass., are all well known for work in infant welfare; Dr. Alice Hamilton, of Chicago, had made researches in occupational disease and with flies and typhoid, that were epoch making, and Dr. Caroline Hedger's (also of Chicago) work in the stockyards was a wonderful contribution to preventive medicine. Other women are entitled to credit in this field of service, especially the host of them who have ably cooperated in the campaign of public health education inaugurated in 1909 by the American Medical Association, but to enumerate them would need a volume, and this gratuitous philanthropic work was done by them as an incident to their scientific medical work and not as a specific field of service.

A brief and very incomplete list of the women entitled to be called well known in their specialties is herewith appended:

Internists.—The late Mary Putnam Jacobi, Elizabeth Cushier, Helen Baldwin, Sara J. McNutt, Emily C. Charles, of New York city; Eliza M. Mosher, of Brooklyn, N. Y.; Marion Craig Potter, of Rochester, N. Y.; Julia G. McNutt, of Albany, N. Y.; Sara M. Edwards, of Newark, N. J.; Ella Prentice Upham, of Asbury Park, N. J.; Evangeline W. Young, of Boston, Mass.; Kate Campbell Mead, of Middletown, Conn.; Mary B. Jewett, formerly of New York city, now of Florida; Mary Taylor Bissell, of New York; A. Louise McIlray, of London, England; Frances Culbert Van Gasken, of Philadelphia, Pa.; Sara A. Bond, of Boston; Josephine Beede, of Boston; Mary Hobart, of Boston; Emma Call, of Boston; Blanche A. Denig, of Boston; Hu King Eng, Mary Stone, of China.

Gynecology and obstetrics.—Anna E. Broomall, Ella B. Everitt, of Philadelphia, Pa.; Alice Weld Tallant, of Philadelphia, Pa.; Mary Gage Day, of Kingston, N. Y.; Elizabeth Jarrett, of New York city; Sara J. McNutt, of New York city; Rosalie Slaughter Morton, of New York city; Anna M. Galbraith, of New York city; Grace Peckham Murray, of New York city; Clelia Duel Mosher, of San Francisco, Cal.; Florence N. Ward, of San Francisco, Cal.; Bertha Van Hoosen, of Chicago, Ill.; Miss Janet Campbell, of Liverpool, England; Dr. A. Louise McIlray, of London, England; Dr. Annie McCall, of London, England; Mrs. Ethel Vaughan-Sawyer, of London, England; M. Marie Knudson, of Boston, Mass.; Marian Nute, of Boston, Mass.; Hannah G. Myrick, of Boston, Mass.; Rosetta Sherwood Hall, of Korea.

Pediatrics.—The late Dr. Mary Putnam Jacobi, of New York city; Sara Welt-Kakels, of New York city; Annie S. Daniel, of New York city; Mary Fulton, of China; Emelyn S. Coolidge, of New York city; Lenna L. Meanes, of Des Moines, Iowa; Millicent M. A. Cosgrave, of San Francisco, Cal.; Alice E. Sanderson, of London, England; Eleanor C. Jones, of Philadelphia, Pa.; Louise Taylor Jones, of Washington, D. C.; Annie Lee Hamilton, of Boston, Mass.; Beth Vincent, of Boston, Mass.

Surgery.—Adelaide Brown, of San Francisco, Cal.; Emily Dunning Barringer, of New York city; Rosalie Slaughter Morton, of New York city; Alice Gregory, of New York city; Elizabeth Hamilton Muncie, of New York city (Brooklyn); Late Rose Talbott Bullard, of Los Angeles, Cal. (died Dec. 22, 1915); Bertha Van Hoosen, of Chicago, Ill.; Martha Welpton, of Des Moines, Iowa; Miss Janet Campbell, of Liverpool, England; Mary de Garis, of Melbourne, Australia; Louise Garrett Anderson, of London, England; Florence Stoney, of London, England; Mrs. Mary A. Scharlieb, of London, England; Miss Aldrich Blake, of London, England; Caroline M. Purnell, of Philadelphia; Mary A. Smith, of Boston; Elizabeth T. Gray, of Boston; Augusta Williams, of Boston; Jane Kelly Sabine, of Boston; Emma B. Culbertson, of Boston; Sarah E. Palmer, of Boston; Florence Duckering, of Boston; Mary W. Haskins, of Detroit, Mich.; Elizabeth Reifsnyder, of Northern China.

Mental and nervous diseases.—Maria Montessori, of Rome, Italy; Helen Boyle, of Brighton, England; Helen

MacMurchy, of Toronto, Canada; Helen Kuhlman, of Buffalo, New York; Mary Lawson Neff, of New York city; Isabelle Thompson Smart, of New York city; Harriet C. B. Alexander, of Chicago, Ill.; Eleanora S. Everhard, of Dayton, Ohio; Gertrude Felker, of Dayton, Ohio; Mabel D. Ordway, of Boston, Mass.; Edith R. Spaulding, of Boston, Mass.; Mme. Klumpke-Déjérine, of Paris, France.

Orthopedic surgery.—Frau Grete Schuler-Helbing, of Berlin, Germany; Matilda K. Wallin, of New York city; Mary Hess Brown, of New York city.

Anesthesia.—Bertha Van Hoosen, of Chicago, Ill.; Mary Dickinson Berry, of London, England.

Electrotherapy.—Mary Arnold Snow, of New York city; Margaret Cleaves, of New York city; Gladys L. Carr, of Boston, Mass.

Specialists in diseases of eye, ear, nose, and throat.—Elizabeth, Queen of the Belgians; Late Emma E. Musson, of Philadelphia, Pa. (died Dec. 28, 1913); Mary P. Eddy, of Sidon, Syria; L. Rosa H. Gantt, of Spartanburg, S. C.; Helen Cooley Palmer, of Los Angeles, Cal.; Maud Carvill, of Boston, Mass.; Margaret Noyes, of Boston; Louisa P. Tingley, of Boston; Isabella D. Kerr, of Boston; Alice E. Wakefield, of New York city; Laura E. Hunt, of Philadelphia, Pa.

Dermatology.—Daisy M. Orleman-Robinson, of New York city.

Gastroenteric diseases.—Mary Dunning Rose, of New York city.

Cardiac diseases.—Maude E. Abbott, of Montreal, Canada.

Tuberculosis.—Mary P. Eddy, of Sidon, Syria; Mary E. Lapham, of Highlands, N. C.; Evelyn Fisher Frisbee, of Albuquerque, N. M.; Lydia Rabinowitsch, of Berlin, Germany.

This would hardly suggest that the sphere of woman's work in medicine is limited today; these medical practitioners are all recognized by the profession locally, many of them are known in all parts of the country, some even internationally, all have made and published original contributions to the medical literature of the day, much of this original work being of intrinsic and permanent value, so far as anything in medical science is really permanent. Practically no mention has been made of the host of medical women missionaries, whose stupendous medical work and well earned fame deserve an article devoted entirely to its consideration; it could not be at all adequately handled here.

Thus we may summarize the answer to "What have women accomplished in medicine since they began its practice?" by the statements: 1. They have made a large proportion of permanent contributions to medical science, especially if we take into consideration the fact that historically they have always been in a minority in the profession; and, 2, repeatedly crowded back and even out of the profession by the aggressiveness and numbers of their medical brethren, they have as repeatedly—and let us hope at last permanently—proved their ability to compete on equal terms with a fair degree of success and at least an average proportion of scientific achievement of the first rank. They have done this in spite of a most obstinate spirit of opposition on the part of their medical brethren; in spite of the seemingly insurmountable obstacles placed in their path by dogged masculine determination. Their courage has been dauntless, each attack more determined than those preceding, and actuated by the keenest sense of justice and of fair play.

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101 WEST EIGHTIETH STREET.

SOME ORTHOPEDIC PRINCIPLES IN PEDIATRIC PRACTICE.*

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Orthopedics and pediatrics are to a certain degree interrelated. The word, orthopedic, comes from two Greek words meaning "straight" and "child" and the compound word means "to make the child straight." Thus the derivation of this term resembles that of pediatrics. In the early days of orthopedics, the pioneers really set themselves only to correct deformities of children. Though lately the work has spread to include the larger field of bone and joint diseases met in adults, still a great deal of practice is among children. It will, therefore, be interesting to those who have a great deal of pediatric practice, to get a short résumé of the cases we meet among the children and what in general is to be done for them.

Before giving details, I will emphasize a few points:

The orthopedist unfortunately often hears that the family physician has given assurance that the child would outgrow its bow legs; that the early pains of tuberculous bone and joint disease were "growing pains"; that the nontuberculous processes were "rheumatism"; that functional scoliosis was a matter of no importance. It is also an almost daily experience with the orthopedist to see a child brought in on account of a limp in one leg of a greater or less duration, and to hear the parents state that the trouble was all in the knee and due to a slight trauma, which was verified by their attending physician. With the child stripped, an observation of the gait, will, as a rule, at once disclose that the trouble is not in the knee.

This proves the necessity of examining the child, completely undressed, while it is lying down and while walking. Even with moderate observation, these erroneous diagnoses will be avoided. We must also keep in mind Wolf's law, that all prolonged alteration of the function of any part of the body, either congenital or acquired, is surely followed by anatomical changes. Thus, in addition to the original deformity, the ensuing changes in bones, muscles, and other structures make the restoration of function more difficult. Therefore, to obtain the best results, any deformity in a child should be attended to as early as possible.

The pediatric cases that are brought to the orthopedist can be classified as congenital and acquired. I will take up first the acquired deformities, as these are more frequent and also less noticeable to the parents than the congenital ones. Thus there is greater responsibility for the attending physician who sees them.

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*Read before Bronx County Medical Society, June 21, 1916.

ACQUIRED DEFORMITIES.

1. *Tuberculosis of the bones and joints.* Constitutes the majority of acquired forms. The usual time of attack is during the years of active growth and the preferred sites are the spine and the ends of the long bones near important joints, such as the hip and knee, which usually become infected and distorted, and are often destroyed. The general belief is that bovine infection is an important source of disease in children (Fraser, 10). It is reasonable to suppose that the intestinal tract is the route of infection in these youngsters, and depends upon infected milk supply.

The relation of trauma to bone and joint tuberculosis is still disputed, but may assert that a moderate contusion rather than a serious injury is more apt to be followed by tuberculous arthritis:

> Of the clinical features, one has to remember that as a rule, the onset is extremely insidious and it is usually monarticular. At first the symptoms are mild, and pain is absent or not marked. If in the spine, a certain stiffness of posture and awkwardness in movement may be noted early. If in the lower extremity, a lameness passing off and recurring. Stiffness and muscular wasting of the affected limb may be marked. Later on, there is marked local swelling and local or referred pain. It occurs characteristically as night cries. Later on, abscess and sinus formation with amyloid visceral changes are present. Temperature is usually normal. In the joint cases, characteristic limitation of motion and deformity are striking features (Taylor, 24).

The diagnosis must depend entirely on the clinical findings and not wait for the radiographic verification as the plate is often negative in early cases.

In regard to treatment, the general system must be watched in the same way as pulmonary tuberculosis. Lately sunlight therapy under the leadership of Rollier has been instituted at Leysin (17) and it is considered that this marks the greatest advance in the treatment for many years. Of the local treatments, there is nothing better than immobilization and fixation. It makes no difference whether this is done by recumbency, plaster of Paris fixation, splints, braces, or one of the spinal operations. Anklylosis should be the main aim, watching at the same time to prevent deformities.

2. *Infantile paralysis.* The second infantile affection which requires the aid of the orthopedist is anterior poliomyelitis. Since 1907, when we had the severe epidemic in New York, scientific knowledge of the nature of the organism, the pathology, symptomatology, and prognosis have made great strides. I am sure that all have kept up with this progress, so there is no need of going into detail. I will mention only the orthopedic treatment:

> In the acute stage, when the patient is generally paralyzed in one or more limbs, tender to touch and on motion, the best treatment is rest, keeping the limbs in proper position to prevent contractions, especially of the tendo Achillis which may occur to a troublesome extent in the first two or three weeks. It seems rational not to attempt to stimulate the seriously disordered nerve centres by massage, passive motion, or electricity. Electricity will never kill the organism as claimed by pseudoscientists. No massage should be given until after sensitiveness has disappeared.
>
> In the convalescent phase, after tenderness has gone, the sooner the patient is put on his feet and resumes activity, the better it is. It is advisable to defer active treatments for four weeks after the onset, provided of course, that the tenderness has left by that time. Active treatments consist of massage, electricity, and muscle training. Massage will improve the local and general circulation, facilitate the flow of lymph, and retard muscular deterioration; it will not regenerate the nerves. The value of electricity has been greatly overestimated. The unintelligent use of electricity month after month to the exclusion of other measures, has been one of the handicaps which has stood in the way of the best progress in many cases.
>
> Muscle training, by which we mean medical gymnastic work, is the most important of the three. In its obvious forms, muscle training consists in aiding the patient to perform a certain movement with the hope of stimulating an impulse from the brain to the muscles. Another and very useful form of muscle training consists in getting the patient on his feet at the earliest possible moment. If the patient cannot do it himself, braces should be used, even crutches may be allowed in the beginning. Of course if any fixed deformity exists, it must be removed before treatment of any sort can be satisfactorily applied. Two or three years after the attack, operative measures may have to be undertaken, but this is out of the scope of this paper. Such cases may be referred to the orthopedist.

There seems to be no time limit as to improvement. In urging exercises and muscle training, one has to guard carefully against fatigue and overuse. (Lovett, 14, 15, 16.)

3. *Rhachitic deformities.* Another class of a common acquired infantile affection is rickets. This disease is due to improper diet and not to any congenital deficiency. Among four hundred babies born consecutively at Fordham Hospital which, by the courtesy of Dr. J. Telfair, the attending obstetrician of the hospital, were submitted to my examination for evidences of congenital rickets, I found only six cases. This corroborates the findings of most observers. The pediatrists, with their improved methods of feeding, have greatly diminished its occurrence. We still find, however, knock knees, bow legs, anterior curves of the tibia, coxa vara, and curved spines.

These deformities are never outgrown as commonly supposed, although some compensatory deformity may occur which conceals the gross manifestation and thus removes some of the external curves.

The defects may easily be corrected. If the infant is seen early, correcting the posture and putting the curved spine at rest or the application of braces will do the work. If seen later, operative procedures in the form of subcutaneous osteotomy and osteoclasis offer good prospects. The bone is broken through and put in the corrected position in plaster (1, 5).

4. *Weak and flat feet* are quite common and are evidently due to insufficiency of the muscles supporting the arch of the foot. The affection is usually a part of general physical debility or lack of muscle tone. Many cases are due to rickets or unsuspected anterior poliomyelitis. Shoes, especially those compressing the fore part of the foot and having heels, likewise those with a stiff shank inside, are contributing factors, by weakening the feet of the growing children.

In the way of treatment, attention must be given to prophylaxis as well as to general hygiene, proper gait, and proper footwear. It is best to order for children moccasins or sandals, and at other times shoes with broad toes and loose uppers. Proper foot exercises may be added. If these precautions are carried out, no stiff flat foot plate will have to be employed (4, 8, 27).

5. *Scoliosis.* The last class we shall consider is scoliosis. In school children, the occurrence of lateral curvature, round shoulders, and other faulty anteroposterior postures are common, especially functional or false scoliosis. Among the causes, we find that poor hygiene, improper clothing, unsuitable school seats and desks (9, 21), and the carrying of heavy bundles of books under the arm play an important part. Empyema is a frequent contributor to incurable scoliosis. Some spinal deformities may be due to an inequality of the limbs.

Preventive treatment is important. Children should have proper clothing which does not pull from the shoulders. Proper exercises and adjustable chairs and desks at school are essential. Deformity of the lower limbs should be rectified. Failure to order exercises for the lungs after empyema is unpardonable.

The treatment of organic or structural scoliosis, which has been stimulated greatly by Abbot's work, has disappointed us. But if these cases come early under observation, a great deal can be done to improve them. Every child that carries one shoulder higher than the other probably has some kind of a lateral curve. The same is true of those who have a so called high hip, and these should be attended to early.

CONGENITAL DEFORMITIES.

1. *Congenital dislocation of the hip* has been carefully observed by the profession on account of Lorenz's visit to this country. Physicians are fortunately alert to that deformity. As the limb is noticed by the parents as soon as the child begins to walk, the patient is immediately brought to the family physician, who has, therefore, a chance to advise early treatment. Lorenz's bloodless operation is usually preformed. Sometimes several attempts have to be made before the head of the femur is retained. If unsuccessful, an open operation may be resorted to. After reduction, the head should be held in place for several months or a year, best by plaster of Paris fixation. If anteversion of the neck exists, it may be necessary to do an osteotomy.

2. *Club foot.* Another congenital deformity which attracts the attention of the physician quite early is club foot, usually as soon as delivery is completed. Occasionally he postpones treatment till the child begins to walk—which is a serious mistake:

> The deformity is a congenital displacement of the bones of the foot, chiefly at the midtarsal articulation with adapted alteration in the soft tissues, ligaments, tendons, and in the shape of the cartilage and bone in the joint surfaces of the astragulus and os calcis.
>
> The treatments should be started early within the first weeks of life. It is a source of the greatest gratification that it is now possible in almost every case of congenital club foot in which treatment is instituted at birth, to completely overcorrect the deformity in the first months of life. (Silver, 23.)

Treatment, in brief, consists in the gradual or forcible correction of the misplaced bones, with retention in an overcorrected position for a sufficient length of time for the cartilage, ligaments, and muscles to adapt themselves to the normal positions so that the correction becomes permanent. We use plaster of Paris fixation splints, which have to be changed frequently. We must remember that in infants it is hard to hold the foot in plaster. It is therefore necessary to include at the same time the flexed knee in a right angled position (20). Club foot is often combined with spina bifida, hence every child should be examined for the presence of a tuft of hair or a cleft in the spinous processes (7).

3. *Congenital spastic paralysis.* A stumbling block to the orthopedist and neurological surgeon is congenital cerebral spastic paralysis (hemiplegia, paraplegia, and diplegia) and spastic spinal paralysis (Little's disease). Still, the chances of improvement are better now than a few years ago. We may use appliances making locomotion possible and correcting a tendency to relapse. Tenotomies or myotomies should be done freely.

There are some new operations, such as Stoffel's, Foerster's, and Sharpe's. They seem to be promising, but are still in the experimental stage.

4. *Erb's palsy.* Of the numerous other congenital diseases we must mention Erb's palsy. Though Thomas (25), of Philadelphia, has written a great deal about the theory that this is caused by subluxation of the shoulder and tearing of the capsule, still the consensus is with Clarke, Taylor, and Prout (6), that it is due to injury to the fibres of the brachial flexus. It is usually the result of difficult labor and by forcible separation of the head and shoulder on the affected side. In treating we have to determine whether there is a fracture or not, then operate to unite the injured plexus.

5. *Torticollis.* We must not forget to mention torticollis or wry neck, which is quite common and must be attended to early. Cutting of the sternocleidomastoid is usually indicated. The results are good.

There are many other interesting conditions met in pediatric practice which are seen and treated by the orthopedist beside those I have described. I have merely endeavored to give a brief summary of facts. I hope that my readers have been able to gather a hint here and there from this paper which will be of use in the future. One thing I should like to impress upon them before closing, and that is the necessity of early diagnosis and the patient, long continued treatment necessary for these unfortunate cripples.

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In the preparation of this paper the writer has made free use of some of the following articles and he wishes to acknowledge his indebtedness to the authors. This short bibliography may be of use to those who are anxious to go over more carefully some particular topic of the paper.

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SOME EYE SYMPTOMS OF DIAGNOSTIC VALUE.*

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I have not attempted in this paper to consider all of the diseases in which the eyes may be affected functionally or by organic change, but only those in which such affections occur rather regularly and in which, when they do occur, the eye symptoms become one of the prime diagnostic features of the disease. It is of no value to know, from a diagnostic standpoint, that a paralysis of one of the motor nerves of the eye may develop in typhoid fever. Its occurrence would create only a mild interest. But such a symptom arising in a man in apparent health would be of the deepest significance and would indicate a serious lesion of the central nervous system. I have, therefore, tried to confine myself to those diseases in which eye symptoms, when they occur, are an aid in diagnosis. I have arranged my symptoms roughly, but not strictly, on an anatomical basis, taking first the exterior of the eye and proceeding to the deeper portions as they present themselves.

In this arrangement exophthalmic goitre is the first disease to be considered. In its typical form it presents an eye symptom which is *sine qua non*. But not all cases are typical and the exophthalmos is not essential. When present it may be bilateral or unilateral; ordinarily the former. In addition to this classical symptom, there are other symptoms exhibited by the eye and they may be present when exophthalmos is absent. These are the Graefe sign, the Dalrymple sign, and the Stellwag sign. The Graefe sign consists in absence of the downward movement of the upper lids when the eyeballs are turned downward. The Dalrymple sign refers to the staring expression presented by patients with this type of goitre and is due to the widening of the palpebral fissure. The Stellwag sign is the infrequent winking of these patients. In these cases it is said the eyes may remain a minute or more without winking. Normally winking occurs from two to five times a minute. These signs are not pathognomonic, but are said to exist at some time throughout the course of the disease in most cases, and may be of diagnostic aid.

Thrombosis of the cavernous sinus is a cause of exophthalmos; marked edema of the lids is an accompanying symptom. The infection of the sinus may occur by extension from the lateral sinus and is here of otitic origin. It may originate in an infected nasal accessory cavity. Cellulitis and furuncle of the face are common sources of the infection; the tonsils and teeth are occasionally at fault.

When considering the eye as a source of diagnosis, syphilis in one or another of its manifestations looms up large. This protean disease is disclosed by both external observation and fundus examination. A complaint of double vision in an adult when turning the eyes to the right or to the left or up or down, is a sufficient reason for taking a blood specimen for the Wassermann test. The paralysis of exterior muscles thus indicated may be marked enough to be easily seen if the eye is moved to a sufficient degree in the direction of the action of the affected muscle or muscles. The seat of the lesion in the syphilitic paralyses varies. It may be in the orbit, being a direct involvement of the muscle or nerve by gummata or by orbital periostitis; there may be gummata and meningitis at the base; gummata or degenerations in the nuclei. A nuclear lesion is the commonest cause. The third nerve is the nerve most commonly attacked and it may be involved in one or all of its branches. The paralysis is usually progressive without treatment, though it may be transient, resembling in this the tabetic paralysis.

Syphilis, however, is not the only cause of exterior ocular paralyses. Other diseases to be mentioned are diphtheria, cerebrospinal meningitis, and tuberculous meningitis. Cerebrospinal meningitis frequently causes an abducens paralysis. The paralyses of diphtheria are interesting inasmuch as they appear during convalescence and are, therefore, of importance in calling attention to a preceding infection, the true nature of which was perhaps unsuspected. In fact, a paralysis of any of the muscles of the eye in a child who otherwise appears well, will usually be due to a preceding diphtheria. An involvement of the ciliary muscles is the one most frequently present and is disclosed by a complaint of hazy vision. Postdiphtheritic paralyses of ocular muscles almost invariably disappear completely. Cerebral hemorrhage and other causes of pressure in the brain, such as tumor and abscess, are to be kept in mind as sometimes causing ocular paralysis. Disease of the nasal accessory sinuses also rarely exhibits this symptom and the presence of a paralysis may lead to the discovery of the condition.

With a *transient* paralysis of any of the extrinsic eye muscles, tabes would be first thought of. If it is combined with irregularly shaped pupils (another early sign), the diagnosis of an oncoming tabes would be quite safe in most cases. Another pretabetic symptom sometimes present is inequality of the pupils. This symptom does not occur so frequently in tabes, however, as in paresis, in which disease it is of prime importance. An irregular pupil is present in a large majority of the cases; exterior ocular paralysis in about one third. Any of the muscles may be involved in tabes, the external rectus most frequently, with one or more muscles of the third nerve group a close second. Ptosis is commonly seen. Rarely there is a paralysis of all the exterior muscles of the eye or ophthalmoplegia externa.

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The Argyll Robertson pupil is the most important eye symptom in this disease, since a pupil of this character combined with loss of knee jerk, with or without optic atrophy, establishes a diagnosis. In no other disease is it found so frequently or present over so long a period of time. It vies with irregular pupils for first place as the *earliest* symptom. It is almost invariably bilateral and is frequently associated with miosis, though it may coexist with any size of pupil. It occurs in seventy to eighty per cent. of all tabetics. It is present in some other diseases of the central nervous system, in paresis particularly, though not so regularly and only for a short period.

Another symptom which is suggestive of tabes even when it is the only symptom present, is optic atrophy. It makes its appearance early and is bilateral and progressive, often leading to complete blindness. This symptom has been noted fifteen or twenty years before other tabetic signs were evident. It is said that twenty-five per cent. of tabetics acquire this change in the optic nerve.

To continue with the consideration of the exterior muscles, it is to be recalled that multiple sclerosis also presents paralysis as a frequent symptom, about twenty per cent. of all cases, according to Hirsch, having this symptom. Here again the paralysis is transitory, being marked by frequent exacerbations and intermissions. The abducens is the nerve most frequently involved. There may be an involvement of the associated movements of the eyes to the right or to the left, the externus of one eye and the internus of its fellow being attacked.

Nystagmus, when present, is the most important differential eye symptom in this disease. It may be a true nystagmus or a pseudonystagmus. There is only one other disease of the central nervous system in which it occurs with any frequency, and that is syringomyelia, in which it is the only eye symptom worthy of mention. Optic atrophy occurs in a certain number of those afflicted with multiple sclerosis, but in this disease it does not develop to the extreme degree found in tabes. It may involve only a portion of the disc and in some cases even an improvement in this symptom has been noted. The pupillary reflexes remain normal in most cases, which is a fact of significance in the diagnosis. Tremor, scanning speech, and nystagmus are the characteristic symptoms of this disease.

Paresis. In this disease the extrinsic eye muscles are rarely involved to a marked degree. This may be a valuable differential sign between paresis and tabes and syphilis. In paresis the paralysis is slight when present at all, and sometimes is noted only by diplopia. The pupillary signs are the most important of the eye symptoms, and are of the greatest value in determining the presence of paresis. Inequality of the pupils is among the earliest signs, and may be present before any other typical physical sign is noted. Irregularity sometimes accompanies the inequality. Miosis is present in about one third of the cases. The Argyll Robertson pupil is present during a part of the time in a fair percentage of paretics, but is not of long duration, differing in this from the same sign in tabes in which it exists throughout the greater part of the course of the disease. The loss of accommodation is an early sign. Optic atrophy often falling short of a total involvement of the nerve may develop at an early stage.

Myasthenia gravis. In this disease ptosis is a marked symptom and may be the first noted. It is usually bilateral and occurs in almost all cases. There may be an ophthalmoplegia externa. Double ptosis, double facial paralysis with paresis of the muscles of mastication, dyspnea, and general bodily weakness is the characteristic group of symptoms.

Before leaving the exterior of the eye attention should be called to inflammations of the cornea (keratitis), which may be the means of revealing the existence of an inherited syphilis. They may also be due to an acquired infection. Certain opacities of the cornea are also a suspicious sign. Phlyctenulæ of the cornea and conjunctiva are scrofulous indications and should lead to an investigation of the general condition of the patient, who may react to tuberculin.

The iris is the subject of inflammations from various causes, syphilis being in the lead. A plastic iritis may therefore be a valuable indicative sign. Old iritic adhesions are likewise to be laid under suspicion. Other syphilitic manifestations in the iris are papillary iritis occurring in the secondary stage, in which small nodules are observed at the pupillary margin, usually in both eyes, and gummatous iritis in which a single nodular mass is found in the ciliary zone.

Then there is the form known as rheumatic iritis. The term, rheumatic, is in a state of metamorphosis. Formerly a rheumatic attack was a visitation of God. It came from an unknown source. Hence many acute lesions of unknown origin were called rheumatic. Today we believe rheumatism to be an infection and we search for the focus. Probably with diligent search most cases of iritis would be traced to some focus of infection existing elsewhere in the body. Hence the teeth, tonsils, and other known haunts of infective material should be investigated when we are confronted with an iritis in which the local conditions give no clue to the origin of the inflammation. The eradication of such a nidus of infection may add immeasurably to the general sense of well being of the patient, beside removing a source of real danger, and his attack of iritis will not have been in vain.

A gonorrheal urethritis is one of these sources of infection and, according to Weeks, many of the cases of attacks of so called rheumatic arthritis which precede an attack of iritis, if closely investigated would be proved to be gonorrheal in origin. Likewise some cases of iritis without the history of an arthritic attack may exhibit a urethritis. This form of iritis is therefore of interest in that it may lead to the discovery and proper treatment of a source of infection which had been neglected or improperly treated. Tuberculosis of the iris is not very common, but its presence either in the miliary form or as a solitary tubercle may be the means of calling attention to a pulmonary tuberculosis, since it is necessarily secondary to some focus without the eye. It occurs only in children and young adults. Syphilitic and tuberculous lesions of the ciliary body are similar to those of the iris.

A condition in which the iris, ciliary body, and choroid each have a part is uveitis. This is a low form of inflammation, most common in young adult life. It is characterized by the formation of minute opacities in the vitreous and aqueous. These opacities are most easily seen as they lie against the posterior surface of the cornea, where they form easily recognized deposits. A tuberculous origin for this condition is to be sought for, as this is perhaps the commonest cause. Syphilis, gonorrhea, and other infective agents are not to be overlooked.

A portion of the eye of great interest to us is the retinal layer. Lesions of this membrane furnish information of the greatest value to the physician and to the patient. A retinitis presenting hemorrhages and exudates is one of the most interesting of the lesions. This may be due to nephritis, diabetes, or arteriosclerosis. Tuberculous retinitis in the young is also a source. Albuminuric retinitis is said to display characteristic features, but the other diseases mentioned may simulate this form very closely. However, the point of interest and value is that the discovery of this lesion has led to an examination of the urine with the disclosure, possibly, of grave conditions.

The nephritis found with a retinitis is usually of the interstitial variety, and the patient rarely lives more than a few years after the discovery of the retinal lesion. This unfavorable prognosis does not apply to the retinitis occurring in the albuminuria of pregnancy. In connection with nephritis should be mentioned sudden blindness which becomes complete in a few hours. This may come on without any lesion of the fundus, and is due to uremic intoxication of the optic nerve and retina, or of the cerebral cortex, or of both. The pupillary reactions are normal in such an attack, and there may be no other signs of uremia. If the patient survives the uremic attack the amaurosis disappears completely. Diabetes and nephritis may coexist in the one case with a common retinitis.

Embolus of a retinal artery (sudden blindness) may be due to an endocarditis, and such an accident will direct attention to the heart. Of course, other sources of emboli may operate here. The retinal vessels may be the source of valuable information, even when hemorrhage is not present. I refer to evidences of sclerosis of these vessels. The retinal vessels are the only portions of the vascular system open to direct and fairly intimate inspection. When we add to this that they are very tiny in calibre, the largest being only a fraction of a mm. in size and the smallest about 0.01 mm., the possibility of discovering general vascular wall changes at a very early stage of the process is easily seen. Sclerosis of these vessels presents a definite picture, easily diagnosed. Vascular changes are of vital importance to every one past middle life, and an early detection of this condition is of the utmost value.

Dr. Edward Jackson, of Denver, has expressed this so aptly, that his words will bear repeating: "A great many of those who suffer from angiosclerosis go to some one for advice with reference to wearing glasses. If every one of them could be submitted to a careful ophthalmoscopic examination by a competent ophthalmologist the intelligent regulation of the lives of those affected would constitute one of the great triumphs of preventive medicine. This disease comes at the time when age predisposes men to listen to wisdom and lengthen out their remaining years. Though the knowledge of the danger may often come too late, it would often be of great value. Everything we can do to make more general the early recognition of angiosclerosis will bring added lustre to the crown of medical science and added service to our fellow men." A condition of some interest involving the retina, and of importance as a confirmatory sign, is the cherry spot of amaurotic family idiocy. It is situated at the macula and is invariably present in this disease. It is always accompanied at a later stage by optic atrophy.

Neuroretinitis is a common syphilitic manifestation, as are choroiditis and chorioretinitis. Choroiditis should always be suspected of being syphilitic until some other cause is proved. This is the commonest cause, and both the acquired and the hereditary form may be followed by it.

A congenital choroiditis is a sign of the latter form. The discovery of a tuberculous choroiditis (in which the tubercles are seen scattered throughout the choroid) may rarely be of help in clearing up the diagnosis in an obscure case of miliary tuberculosis. It sometimes accompanies tuberculous meningitis, and when present, the choroiditis positively establishes the diagnosis.

The diagnostic importance of atrophy of the optic nerve in tabes, multiple sclerosis, and paresis has been mentioned. In neuritis of the optic nerve we must look for syphilis, a frequent cause. In the form of neuritis known as choked disc, we have an important symptom of brain tumor. This is not the only cause of this type of neuritis, as it may also be due to meningitis, to abscess of the brain, or to hydrocephalus. The symptom is due to pressure within the skull and may be of aid in differentiation in some cases.

In the foregoing I have attempted only to call attention to eye symptoms which, when they occur, are rather obvious. Incidentally the value of the ophthalmoscope is implied. This implement should be equally prized with the sphygmomanometer and the stethoscope.

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Comparative Toxicity of Morphine and Morphine-narcotine (Narcophin).—David I. Macht (*American Journal of the Medical Sciences*, July, 1916) has studied the comparative toxicity of these drugs on various animals and finds that in general it is about equal, and concludes that it is not advisable to administer narcophin clinically in doses larger than those of morphine.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXII.—What are your methods of resuscitation and aftercare of persons apparently drowned? (Closed.)

CLXXIII.—How do you perform circumcision? (Answers due not later than August 15th.)

CLXXIV.—How do you treat ivy poisoning? (Answers due not later than September 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXI has been awarded to Dr. Lionel C. Charbonneau, of Brooklyn, New York, whose paper appears below.

PRIZE QUESTION NO. CLXXI.

THE TREATMENT OF SPRAINED ANKLE.

By LIONEL C. CHARBONNEAU, M. D.,
New York.

Our past masters, Gross, Paget, Erickson, Bryant, *et alii,* were unanimous in their treatment of sprains. They enjoined rest, the application of starch bandages, plaster of Paris casts, and, at times, strapping. Erickson epitomizes their views when he says: "In the vast majority of these injuries all that is necessary is to put the part at rest for two weeks. It may require months and even years to restore complete usefulness to a sprained joint. A sprain is often more severe than either a fracture or dislocation of the same joint."

Surgeons today exhort a little more; beside the usual rest and lotions, they advise gentle massage and early passive motion, which will restore the normal function of the joint, but requires considerable patience and time.

It has been my good fortune to treat a great many sprains among members of the theatrical profession, baseball players, and athletes in general. The deformity, after a severe accident, may occasion a doubt as to the existence of a fracture. A fluoroscopic examination or skiagraph is made to determine extent of injury. All sprains are treated alike.

A soft metal electrode is placed over the injured parts, held in position with a roller bandage, the positive side of the static machine is connected with a rheophore, usually a chain, to the metal electrode, the negative side is grounded, and the static wave current is given. A spark gap of from two to three inches at the beginning of treatment is readily tolerated by the patient. The gap is lengthened from two to twelve inches as tolerance increases; two or three interruptions to the second should not be exceeded. The static wave is given for twenty minutes, the electrode is removed, and the patient is connected with the negative side of the machine and the brush discharge is given as we sweep the electrode over the injured parts for fifteen minutes. The treatment is terminated by applying indirect sparks, avoiding bony prominences. In a recent sprain, the treatment is repeated within four or five hours, omitting the indirect sparks. In the majority of cases the patient returns on the following day practically well. After one or two more treatments the patient is discharged. If the sprain has existed twenty-four hours or longer, the treatment is repeated each day until cured, which seldom requires more than five days.

In so called "chronic sprains" or "irritable joints" the attendant must distinguish between rheumatism, gout, and syphilis. It happens, at times, that the physical agent, electricity, cannot be administered to sprains, owing either to idiosyncrasy, or refusal on the part of the patient, or because the doctor is not familiar with the agent. Where and when electricity cannot be used, submerge the sprained joint in hot water, employing gentle massage and passive motion for twenty minutes, dry the parts thoroughly, rub well into the skin an ointment of menthol, one dram to the ounce; the menthol relieves pain by reflex constriction of the peripheral arteries. A snugly fitting bandage terminates the treatment. The séance is to be repeated, night and morning. The normal function of the parts will not be fully restored for, perhaps, two weeks—a remarkable contrast compared with the immediate results obtained from the electrical method.

N. B. In recent sprains the second electrical treatment should be given within four or five hours after the first, if brilliant and "miraculous" results are desired. I have treated many severe sprains with great deformity to the parts. The macroscopical appearance would make me hesitate in giving a favorable prognosis, and on the following morning the patient would make his or her appearance at the office without support or cane, saying, "Doctor, I would have telephoned to inform you that I was well, but I knew you would not believe it; give me another treatment for good measure." Every physician can obtain similar results.

N'oubliez pas, celui qui veut, celui-là peut.

Dr. J. Otis Carrington, of Malden, Mass., writes:

Treatment should be directed to the relief of pain and swelling, restoration of the ankle to normal, and especial care directed to the prevention of weakness and ankylosis. When the sprain is first seen and is recent, the first effort should be to prevent further effusion of blood by the use of cold applications and pressure. The limb should be elevated and firmly bandaged and an ice bag applied, care being taken not to bandage too tightly on account of shrinkage when dry. When pain is great, a solution of lead water and laudanum applied to the joint is useful. The following liniment is also useful:

℞	Tincturæ aconiti,	10 grams;
	Tincturæ opii,	30 grams;
	Linimenti belladonnæ,	60 grams;
	Linimenti chloroformis,	q. s. ad. 180 grams.

M. Sig. For local use.

Heat, locally, is often efficacious for pain, when cold fails to relieve. We combat inflammation with the usual remedies, and when pain continues troublesome administer Dover's powder in ten grain doses.

Enforced rest, firm pressure, and support of the ankle by strapping with zinc oxide adhesive tape should be used. Great care should be exercised in strapping so that the support is firm and uniform and will not loosen. The adhesive tape should be one and one half inch wide and of two lengths, eighteen inches and twelve inches. Holding the foot in dorsal flexion and abduction, start with an eighteen inch strip well behind at the junction of the lower with the middle third of the leg on the uninjured side, and carry it down under the heel with considerable tension across the side and up on the other side of the joint. The middle of the twelve inch strap is applied to the heel, and the two ends are carried over the foot, but not far enough to meet. Leg strips and foot strips, i. e., long and short, should alternate, interlacing and overlapping about one third of the previous strip each time until the joint is covered. Strapping supports the ankle, prevents the effusion of blood, supplies the necessary pressure, and at the same time fixes the joint and supports the torn ligaments.

After two or three days, massage should be employed, followed later by passive motion. In the early stages massage should be very light, consisting of gentle stroking movements from above the ankle toward the trunk. They assist the absorption of extravasated blood and lymph, relieve pressure on sensory nerves, and diminish pain. Massage should last from twenty to thirty minutes. As the swelling subsides, we massage more firmly, including the joint. Passive motion should be very gentle at first, limited to a few movements at a time, and gradually increasing the number of movements and the time.

Massage and passive motion are important and should be gradually increased from once to three or four times a day. It is only by these means that weakness and ankylosis can be prevented. At this stage heat is a valuable synergist in loosening tightened ligaments and joints.

If the injury has been slight, we support the joint with strapping and allow the patient to use it cautiously. We do not allow a patient with a slightly sprained ankle to "walk it off." We keep it at rest until strapped; then sometimes, in slight sprains, exercise may do good by preventing stiffness. Each case is a law unto itself.

Dr. I. M. Leavy, of New York, remarks:

The usual and most satisfactory treatment for the ordinary ankle sprain is the adhesive plaster strapping, originated by Gibney, and applied as follows: Strips of zinc oxide adhesive plaster are used of one inch width, the first to be placed with its centre under the os calcis and the ends reaching about two or three inches above the malleoli on each side. The second, with its centre behind the heel, reaches forward to the tarsometatarsal joint without the ends meeting each other. The next strip covers one half the first and follows it in the same way; and another strip covers one half the second, in like manner, alternately forming a criss cross arrangement until the entire ankle and heel are encased in adhesive plaster, except for the narrow space on the dorsum of the foot. Special care should be taken that the adhesive is applied smoothly and that wrinkles are eliminated; points of greatest tenderness may be reinforced by additional strips. A gauze or muslin bandage may be applied over the strapping, to retain it in place and prevent the edges from becoming loose.

The modifications of this method are many, and some are very efficacious in that they are applicable to the character of the injury—as in the occurrence of sprains on the inner side of the ankle; in such a case adhesive plaster is best applied in the manner devised by Whitman.

Two or three strips of zinc oxide plaster, about two inches in width, are applied, beginning at the outer side of the leg, just below the knee joint, carried down over the external malleolus, with the foot inverted; at right angles to the leg, tension is put on the plaster and it is drawn under the os calcis up on the inner side of the leg to opposite the beginning. One or two narrow straps are applied around the leg circularly to hold the longitudinal one in place. Then one inch strips are used for reinforcement, starting about two or three inches in front of the external malleolus, continuing under the arch of the foot, to the tarsometatarsal joint, each covering one half of the preceding strip, until most of the arch and the heel are covered.

In cases of sprain to the outer side of the ankle the adhesive plaster may be applied in the same way, with the foot in eversion. With the adhesive dressings the patient is encouraged to walk if possible, as a natural means for increasing circulation and restoring function.

Usually two or three applications of adhesive will suffice. For the subsequent weakness of the foot after the period of immobilization, tonicity will be aided materially by alternate douching with hot and cold water and deep massage.

Dr. Jesse D. Friedman, of New Kensington, Pa., suggests:

During the first twenty-four hours apply cold to the ankle. Later, heat and massage, about twice a day, are begun. The cold is applied at first either in the form of cold compresses or as an ice bag, and the heat as hot compresses or a hot water bag or bottle.

The injured joint should at once be put at rest and the limb elevated. Rest of the joint is obtained by a firm bandage or by adhesive strapping. In my work I combine both—first strap and then apply the bandage over it. By fixing the joint in this way, we obtain support for the joint and elastic compression, which in itself limits the excessive reaction. As the external lateral ligament is usually stretched or torn, the adhesive strapping is applied over this area. I use strips about half an inch wide and long enough to reach from the arch around the sole and over the outer border of the foot across the ankle joint. Each strip overlaps the previous one, and each succeeding strip is placed higher, so that finally the joint and the external malleolus are covered. Before applying the adhesive, it may be beneficial to paint the skin over the joint with equal parts of tincture of iodine and tincture of aconite. Where pain is great, local application of lotio plumbi et opii may be efficacious.

In young patients, difficult to keep at rest, a plaster cast may be employed, the method of application being the same as for the adhesive.

Later, as the reaction subsides, massage is employed. In doing this a liniment may be used, such as chloroform or camphor liniment. Massage should not be delayed too long nor employed too vigorously, but instituted about the second or third day, with the intention to promote healing and prevent stiffness.

Dr. Louis Neuwelt, of New York, believes:

A sprained ankle should be treated by firm bandaging before swelling ensues, to give the joint functional rest for the first two or three days, to limit the swelling, and to hasten the absorption of the effusion; later, when the pain has subsided, massage and passive motion may be given. For severe pain, morphine may be administered.

In a mild sprain, or if the patient is seen shortly after the injury, the ankle is immobilized at once in plaster of Paris for a few days, or strapped with zinc oxide adhesive plaster, applied, to avoid circular constriction, in the following way: The adhesive strips are cut one half inch wide and in two lengths, twelve and eighteen inches. Place a long strip in front of the big toe, carry the strip back around the heel, keeping just above the contour of the sole, and bring the strip back across the dorsum of the foot to the starting point. All the strips should be drawn across tightly. Then a short strip is placed above the ankle, carried under the heel, and up toward the opposite side. The long and short strips are placed alternately in this fashion, each overlapping the one preceding, until the foot is nearly covered. The whole foot is then covered with a roller bandage and kept at rest. No weight should be put on the injured foot, and the dressing should be left on until the pain and swelling have subsided. If the plaster becomes loosened, additional strips are superimposed.

Should the patient be seen some time after the injury, or after the swelling has set in, apply pressure with a wet dressing of aluminum acetate and an ice bag over it. After a day or two, if there is no relief, use hot fomentations, or place the foot in hot water for twenty minutes every three or four hours.

Massage is a most valuable means of aiding recovery in sprains, especially where there is disturbed circulation in the joint. After the swelling has disappeared, massage with the palmar surface of the hand may be given. If tenderness persists, the health tissues just above the ankle should be stroked gently in the direction of the blood and lymph currents (toward the heart), and the joint approached gradually. At first very little force is used, but the movements may be gradually increased in vigor, and toward the end active manipulation is used. Walking is now allowed, but only with a crutch. If massage causes a return of the swelling, discontinue it for a few days, to be tried again later.

Hot air bakings for one hour during the intervals of massage, and continued for several days, have given good results.

Dr. L. Hubert, of New York, observes:

In sprains of the ankle of mild degree measures to stimulate the local circulation are begun at once while the joint is used only moderately. As soon as possible after the injury the ankle joint is baked in a hot air oven, massaged for a few minutes, or massaged without baking. Either massage or baking or both alternately are then used daily for two periods of half an hour each. The massage periods are gradually separated by a longer interval and alternate douches of hot and cold water added. Vibratory massage is also of use.

The joint is supported by a bandage and moderate use is encouraged. We can also allow the patient to walk, the ankle efficiently supported by adhesive plaster strapping, applied as follows: Overlapping straps about twelve inches long and half an inch wide are applied to the foot with the sole inverted. The first strap starts at the outer border of the foot, near the little toe, passes horizontally along the back of the heel, ending on the inner side of the foot about its middle. The second strap is applied vertically and passes from the lower part of the calf of the leg down alongside the tendo Achillis, under the heel, and terminates above and behind the malleolus. The other straps are similarly applied, a little above and overlapping by about one half the first and second straps respectively until the whole ankle is covered. To suit any special indication the manner of strapping can be modified. In sprains of a severe type, where, because of the great effusion of blood we expect an extensive tearing of the ligaments, also in children, neurasthenics, and where arthritis deformans of any degree is present, it is best to keep the foot at rest in a plaster of Paris or wood splint for about two weeks. By this time the effusion has nearly subsided and then we begin massage, active and passive motion. If the massage is irritating it should be stopped. Hot air baking is useful and should be given daily for about half an hour. A hot douche, followed by a cold one, when the effusion has all subsided, is also effectual. Restricted but gradually increasing use should be allowed the joint after the effusion has disappeared, but unrestricted use is only permissible after the synovial membrane has become apparently normal and the use of the joint is not accompanied or followed by severe pain. I prefer this procedure to ice application and massage, which are commonly used from the start, in order to diminish or to get rid of the bloody effusion. Stiffness and muscle atrophy are not to be feared with the short fixation, which is only long enough to quiet the inflammation in the joint, whereas without fixation the healing of the ligaments may be incomplete. The result is a stiffness of the ligamentous apparatus and an uncertainty of the foot, which led to frequent repetitions of the sprain, chronic sprain, and flat foot.

By proper treatment and after care a sprain of the ankle should heal without leaving any functional disturbances, but we frequently meet chronic sprains which we have to treat. At first we use complete rest and fixation of the joint, until the irritation of constant use has been partly recovered from. In slight cases restricted use is enough. A local hot air bath daily is of great value. As soon as the excessive irritation has subsided, massage not only of the ankle joint but of the whole limb is indicated. Alternating hot and cold douches, electricity, and liniments where massage is not available, are other measures of use .

We should not forget that in some cases of chronic sprain of the ankle associated with flat foot we have a shortened gastrocnemius as a complicating factor, and in such cases the muscle must be lengthened by stretching.

(*To be continued.*)

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Contemporary Comment

Newspaper Notoriety.—We are quite willing to admit, remarks the *Journal of the Indiana State Medical Association* for June 15, 1916, that occasionally a doctor's name gets into the daily papers without his knowledge or consent, but when you repeatedly see some doctor's name mentioned in daily papers in connection with medical and surgical cases, it is a safe bet that the doctor permitted or even solicited the use of his name. When a doctor's name is connected with a technical write up of a case it is a certainty that he is responsible for the information and the privilege of using his name in connection with it. Newspaper reporters not infrequently say that news concerning an operation is legitimate news for publication, but we do not believe so, and no information of any kind whatsoever concerning an operation should come from the attending physician.

The Healthfulness of Crying for Infants.—A "good cry" is an expression often made use of, observes *Pediatrics* for June, 1916, and at first sight seems decidedly misapplied, but upon a little consideration it will be allowed that after all in many instances it is not an inappropriate term. Of course, crying is usually associated in one's mind with grief or pain, although even when such is the case crying is a relief and thus does good. There are many occasions, however, when crying, and violent crying, is of the most decided benefit to children. In reference to this the *Hospital* says: "In children a great change takes place during crying in the manner in which the respiration is carried on. Expirations are prolonged sometimes for as much as half a minute, and are interrupted by short inspirations. During expiration, the glottis is contracted so that intrapulmonary pressure rises considerably, and there can be little doubt that it is the equal distribution of this increased air pressure throughout the whole of the chest leading to dilatation of portions of the lung that have become more or less collapsed, that is the explanation of the great benefit which often results from crying, in cases of infantile bronchitis, and of the large discharge of bronchial mucus which so often follows. Children may become very blue during the paroxysm, but the deep respirations, which succeed quickly, restore the circulation to a better condition than before in consequence of the large lung space available. It might be added, in cases of empyema, too, when pus has collected, that if a child when being operated on cries, it is a great help toward getting rid of the purulent matter."

Prevention and Cure of Pellagra.—The Public Health Service is systematically popularizing the diet theory of pellagra prevention, and timely circulars have been issued dealing with the detail in diet to be followed at this season, when pellagra usually develops. The circular states the diet recommended by the health service will not produce results if followed for a few days only—it must be continuously and consistently used. A rigid, unvaried diet is undesirable, but the necessity of minimizing carbohydrates and to increase the quantity of fresh animal protein and fresh legumes (peas and beans) is emphasized.

We may not go all the way with the theory of the Public Health Service, remarks Dr. Isadore Dyer in the *American Journal of Tropical Diseases and Preventive Medicine* for May, 1916, but it is certain that the experiments done by Goldberger and his associates have conclusively demonstrated the importance of diet in the progress and in the relief of pellagra; we are not ready to accept the almost arbitrary dictum that diet alone causes pellagra; and we are emphatic in the belief that most cases of pellagra will get well under medication, irrespective of diet.

Opinion generally is divided in the question of the cause and treatment of pellagra, and so long as this is true, it is wisest to rest on the middle ground—make the diet well balanced and varied and at the same time cure the patient, with or without drugs, by whatever means will bring the result. The majority of pellagra cases are removed from the possibilities of institutional care and must depend upon the provisions of the houses—under ordinary conditions. It is important then that some other advice may be ready when the diet either does not produce results or where it cannot be maintained according to the rules laid down. The suggestion that is developed in considering a balanced diet as essential would lead to the conjecture that after all it is some one thing or some things lacking in the diet which affect assimilation. If the exact deficiency could be defined in chemical terms—the remedy might offer itself. The coagulability of the blood in pellagra is considerably reduced and the administration of gelatin seems to have corrected this to some degree. The nutritive element in gelatin may have additional value in this correction.

We still rely upon gelatin, citrus fruits, and hydrobromide of quinine in treating pellagra, and the large and growing majority of patients recovering under this régime agree that the disease disappears whether the treatment cures or not.

Editorial Notes and Comments

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THE THERAPEUTICS OF CANCER.

For obvious reasons, the physician reaches out for every agent which offers the faintest promise to cure or ameliorate cancer. Generally, the remedial agents sought are of two kinds: Those which act on the malignant growth and those that are supposed to affect the cause. To the first belong the numerous escharotics, from arsenic to radium; to the second belong the remedies which affect metabolism or act on the etiological factor, whatever that may be. The action of escharotics is simple enough; the results, however, depend on so many factors that the outcome is uncertain. The main difficulty in the application of destructive agents is practically the same as is encountered in the removal of malignant growths by the knife, namely, that one of the chief characteristics of cancer is to break through natural barriers and infiltrate surrounding tissues; when it comes to attacking such a growth, the problem assumes a grave aspect. It is like conducting war against an enemy who employs guerrilla tactics. There is no way of attacking the outspreading cancer without at the same time injuring the normal cells which surround it. It is true that selective action is asserted for such agents as the Röntgen ray and radium, but the results obtained so far leave us more or less in doubt as to the soundness of that view. We may readily understand how a superficial, more or less circumscribed cancer can be successfully destroyed by the x ray or radium, or chemical escharotics, for that matter; but when it comes to deep seated cancers, particularly those with metastasis into the glands or distant organs, our imagination must suffer considerable strain to conceive a selective action of these agents on the cancer tissue alone. The argument generally advanced, that radioactive substances attack young or immature cells in preference to formed and mature cells, may be controverted by pointing out that in the tissues surrounding the cancer there is an abundance of newly formed cells. These are found in the areas of inflammation surrounding the malignant growths, in the course of regeneration which takes place after the destruction of the cancer, and in the normal blood and lymph streams. Moreover, it appears strange that the very agency which is supposed to destroy immature cells should also produce them, as is the case in x ray cancer. It seems reasonable to suppose that in cases in which the malignant growths are favorably influenced by the x ray or radium, the beneficial result is probably due to the autolysis induced by the stimulating effect of these agents and the consequent production of immunity, as a result of the action of autolysins on the surrounding tissue. This supposition is strengthened by the fact that a constitutional effect follows a deep therapeutic dose of the x ray.

The internal administration of drugs is thought either to influence metabolism or else affect the cause of cancer. Thus, Jaboulay employed quinine on the theory that the cause of cancer is a protozoon similar to the plasmodium of malaria and equally affected by the drug. He reported a number of cases of cancer successfully treated. The late Doctor Michailoff obtained brilliant results from the administration of iodides, maintaining that the latter possess an affinity for the cancer cells in which they produce degenerative changes. G. A. Garnak (*Roussky Vratch,* April 30, 1916) combined the ideas of Jaboulay and Michailoff and treated a number of cancer patients with quinine hydroiodide in doses of 0.5 gram three to four times daily. This preparation is found in commerce, but can be prepared extemporaneously by mixing 0.95 gram quinine hydrochloride with 0.4 gram potassium iodide. The author asserts for this preparation the disappearance of the malignant growth and of the glandular metastasis, as well as improvement in the patient's condition. In cancer of the esophagus, when patients were unable to take food the administration of this preparation for one to two weeks so far improved their condition that they returned to work. Owing to his departure to the war, the author was compelled to interrupt his observations; his results, however, have been so remarkably encouraging that he hastens to communicate them in a preliminary report.

Garnak's statements appear extravagant and highly improbable, yet there is absolutely no harm in his method, and if it does prove another of the many will-o'-the-wisps we have been chasing so long, one more disappointment will make but slight difference.

THE PROGNOSIS IN ECLAMPSIA.

Such a serious outcome as diffuse or subcapsular hemorrhage or cerebral hemorrhage in cases of eclampsia is unfortunately only too well known, and the etiology is likewise demonstrated, but there is nothing more difficult in practice than to formulate a prognosis when dealing with a case of eclampsia. Usually the paroxysms appear during labor, rarely post partum, and other things being equal, eclampsia during labor is less serious than at other times, particularly at the end of labor, i. e., at the time when we can rapidly bring the delivery to a close. The emptying of the uterus is to be looked upon as a most favorable factor for recovery of the mother, and it is for this reason that to the majority of obstetricians eclampsia arising during pregnancy or post partum is far more alarming.

The prognosis will be all the more serious when eclampsia occurs early in pregnancy, as it indicates an acute and rapid intoxication. Writers differ as to the degree of gravity when eclampsia arises for the first time post partum. Tarnier considered it to be unusually serious because it indicated a severe and persistent intoxication, while, as pointed out by Boissard, the quantity of albumin contained in the urine is an element which, at present, has lost much of its significance from the standpoint of the prognosis. Many instances are recorded of death in which the urine contained no albumin, while on the other hand the intensity of the intoxication and the extent of changes in the liver were the most important elements in the case.

It is a well known fact that in women thoroughly intoxicated, the urine has lost its toxic properties, and the eclampsia will be all the more serious the greater the toxicity of the blood serum becomes. It is nevertheless true that if the presence of albumin does not represent a factor of gravity, it is an important symptom which should not be lost sight of and is the indication for a carefully directed treatment. It has been shown that the eclamptic accidents are due to phenomena making themselves evident generally by the presence of a considerable amount of albumin in the urine, the latter usually being scanty in quantity, and accompanied by hypertension and disturbances of vision.

For this reason a treatment by diet and drugs, having for aim to control the premonitory phenomena of the eclamptic paroxysms, has been employed, likewise frequent examinations of the parturient woman, but unfortunately, notwithstanding the great development of outpatient consultations for this purpose given in dispensaries and lying-in hospitals, many patients still seek advice only when they suffer from headache or from edema of the lower limbs. Even when they have timely warning, many women will not follow up the diet and other necessary hygienic treatment, so that with all care on the part of the physician disasters are still too frequent.

In considering the immediate prognosis it will be found convenient to divide the cases into three classes. In the first are placed patients in whom eclampsia has developed during pregnancy or just before labor. In the second class those in whom the accidents occurred during labor, and thirdly those who presented eclamptic disturbances after the child had been delivered. In each of these classes, primiparæ and multiparæ have been considered separately. The conclusions arrived at by Gauchon (*Thèse de Paris,* 1913), after a careful study of thirty-five cases, may, we think, be taken as representative. He found that the immediate prognosis gave a maternal mortality of 25.3 per cent. and a fetal mortality of forty-four per cent.

A woman who has had eclampsia in a former pregnancy may suffer serious accidents if she again becomes pregnant, as the return of the eclampsia is pretty certain, and under these circumstances Gauchon found that the maternal mortality was 2.8 per cent., while that of the fetus was sixty per cent.

THE FEELINGS.

The camps of the psychologists have been about equally divided in their interpretation of the relation of bodily changes to the mental processes which take place in emotional disturbances. There is the theory, older and more familiar, that the physical changes, such as quickening or slowing of the heart, blanching or blushing of the skin, laughing or crying, etc., are the results of nervous overflow following the mental disturbance brought about by the experience of the moment. The opposite theory, originated by Lange and favored by James, holds that our feelings are the psychic results which follow bodily changes; that we are frightened because our knees tremble, are pleased with ourselves after we have blushed, etc.

Where conscientious thinkers are diametrically opposed in their ideas, it seems that the truth must lie in some middle course of thought, and recent physiological studies make it more and more clear that the physiological phenomena accompanying psychical changes which we call the emotions or feelings, neither precede nor follow, but are part and parcel of the same thing. What is of more and of very great importance, is that mind and body, psychical and physiological activities, meet on the common ground of the feelings; that certain disturbances of mind will produce certain feelings, that certain disturbances of body will also evoke certain feelings. A bodily injury may abolish appetite and hinder digestion, or affect blood pressure; and, on the other hand, distress originating wholly in the mind, from envy, worry, fear, or homesickness, may, in like manner, affect the appetite, retard digestion, and affect blood pressure. We have all had a general notion of such a relationship of mind and body, but recent physiological discoveries, especially in regard to the ductless glands and their relation to the nervous system, have made our knowledge of the matter more definite. We can begin to see from a scientific standpoint why so much bodily disturbance arises, in whole or in part, in the mind, and why a correction of mental conditions means so much to the health.

An attempt to explain why certain bodily disturbances accompany certain feelings—why the heart quickens with fright, why the digestive activities are stopped by fear, why we blush or turn pale on occasion, was attempted by Darwin, Spencer, and others. Some of these changes have seemed, on evolutionary grounds, to have been useful, but why any of them should have had a depressive effect is a mystery. Possibly they are a means of evolutionary correction by which Nature has arranged that those who think depressing thoughts—who tend to morbid states of mind—shall, just as those who transgress physical laws, be weeded out through the bodily depression which is sure to accompany such psychic states.

RESEARCH AS A NATIONAL DUTY.

Willis R. Whitney, in *Science* for May 5, 1916, makes a powerful and timely plea for national consideration of scientific research as a necessary function if the nation is to assume international leadership. While he speaks in particular of the national importance and rare opportunity in chemistry, his remarks apply with equal truth to science in general. He emphasizes the fact that the need and opportunity for research are always present, and that we "are retarded only by the inertia that is in us." He points out the commercial development of great industries from researches which at the time had apparently no practical bearing. He lays particular emphasis on what we, as Americans, are prone to forget or ignore, that commercial as well as intellectual and industrial leadership goes to that nation which can make a constant contribution to the sums of new knowledge. So succinctly has he phrased his argument, that its gist can best be given by assembling some of the key sentences.

"Scientific research, or research in the natural sciences and industries, might be defined as the pioneer work of the developed country. In this light it is easy to see that our turn has come. Not long ago our pioneer work was of another kind. It was opening up the undeveloped land. It was actively and well done. But the work must change because our requirements have altered. I want you to realize that in America we are going ahead in the future at a rate dependent entirely upon our preparation. Laboratories are a relatively modern thing. I want you to see that we must be foremost in systematic organized research, or we will be distanced by other countries which already well recognize the value of new knowledge. When so much of our material welfare, the condition and extent of our manufactures, the quality of our agricultural efforts, and the health of our people depend upon the rate of our acquirement of new knowledge, there ought to be much greater effort made along the lines of research than is at present the case. . . . We are living in the Garden of the Gods, but we are still eating grass. . . . I think the stadium should be the accessory of the laboratory, and that in reality a research laboratory is more compatible with the object of a university than is the more common training table. . . .

Research is preparation. It is preparing in our decade for the problems and the necessary work of the next. There are various kinds of preparedness. We are hearing a great deal about one of them nowdays—immediate preparedness for national defense. But there is a more farsighted preparedness that no one has adequately described and of which the building of new laboratories is a sign. This type is the very best type of preparedness if begun in time. The continued study of the secrets of nature, the uncovering of buried treasures which always seem buried just deep enough to develop the digger—these are the criteria of a strengthening nation. Research presents a way and the only certain way of insuring peace, of preparing successfully for defense, and of being successful in war. It is the lasting, undeviating factor which has always dominated. . . .

When nothing new is being done by us it will be a sure token of our decay. When we stop increasing our experimental activities or fall for a considerable time behind the activities of other countries, we may expect to see our light become merely a memory, like that of Greece or Rome. I cannot look beyond the period when research shall cease in a country and still imagine that country a power in the world."

Whitney considers the university the natural parent and propagator of research and the spirit of research. His plea is indeed timely, and while medical science is no doubt in a healthy state as measured by his standard, physicians for that very reason can the more appreciate the need and the importance of what he has so admirably brought to attention.

A RURAL REMEDY FOR WHOOPING COUGH.

T. Mark Hovell, of London, at the repeated request of many friends, communicates to the *British Medical Journal* for July 1st a rural remedy for whooping cough which appears to be not known generally to the profession. It consists of peeling the cloves of garlic, as the segments of the bulb are called, cutting them into thin slices, and wearing them under the soles of the feet between two pairs of socks, for if placed next the skin the pressure produced by walking is apt to cause irritation. The garlic can usually be smelt in the breath within half an hour after the slices have begun to be worn, and the whoop and spasm usually disappear within forty-eight hours. The garlic should be worn for a week or ten days or longer, according to the severity of the case. Among the French Canadian *habitants,* we know that onions are used in exactly the same way. Garlic may also be administered by eating it as a form of bread sauce, made by chopping up the cloves when peeled, boiling them in milk, and mixing them with breadcrumbs.

News Items

American Association of University Professors.—It is planned to hold the annual meeting of this association in New York city on Friday and Saturday, December 30th and 31st.

The Washington State Medical Association, in convention, has elected Dr. George M. Horton, of Seattle, president for the year 1917. He will succeed Dr. J. M. Semple, of Spokane, who was elected a year ago and took the chair this week for the present year.

The Montana Medical Association at Miles City, July 13th, adjourned after a two days' convention. Kalispell was chosen as the place for next year's meeting and officers were elected as follows: President, Dr. J. A. Donovan, of Butte; first vice-president, Dr. Arthur Morrow, of Kalispell; second vice-president, Dr. R. H. Beach, of Glendive; third vice-president, Dr. Arthur Jones, of Butte; secretary-treasurer, Dr. E. J. Balsam, of Billings.

Eugenics Research Association.—At the annual meeting of the Eugenics Research Association held at Cold Spring Harbor on June 22d, Professor Adolf Meyer was elected president in succession to Professor J. McKeen Cattell. The association will join in the Convocation Week meeting of the American Association in New York at the end of the present year.

New Official Journal.—The Minnesota Public Health Association has begun to publish a journal, the first issue, the July number, just having come from the press. It will appear regularly the first of each month hereafter. Dr. I. J. Murphy is editor of the journal and executive secretary of the association. Requests for the publication should be sent to the Minnesota Public Health Association, Old Capitol, St. Paul.

Northwestern Medical Society.—At the annual meeting of the Northwestern Medical Society, at Long Pine, Nebraska, July 18th, the officers elected for the ensuing year were: Dr. G. O. Remy, of Ainsworth, president; Dr. E. T. Wilson, of O'Neill, vice-president; Dr. J. M. Tische, of Wood Lake, secretary; Dr. Thomas J. Lawson, of Long Pine, treasurer. Wood Lake was selected for the next meeting, on the last Tuesday in October, 1917.

American Medicopharmaceutical League.—A regular monthly meeting of the executive committee of this organization took place on Monday evening, July 24th, at 451 Forty-seventh Street, Brooklyn. Two papers on infantile paralysis were read and discussed. The next meeting of the committee will be held on Monday, August 28th. Dr. Ramon Guiteras, of New York, is president of the league, and Dr. Samuel F. Brothers, of Brooklyn, is corresponding secretary.

Award of the Albert Medal.—The Albert medal of the Royal Society was awarded, on June 29th, to Professor Elie Metchnikoff, two weeks before his death, "in recognition of the value of his investigations into the causes of immunity in infective diseases, which have led to important changes in medical practice, and to the establishment of principles certain to have a most beneficial influence on the improvement of public health."

Postponement of the Amalgamation of Medical Schools.—It is stated that the members of the United Medical Committee, in charge of the medical school of the University of Pennsylvania and the Jefferson Medical College, of Philadelphia, have agreed that it is advisable to postpone the consummation of the union agreed on by the plan adopted by the trustees of the two institutions, in order that further opportunity may be afforded for considering a number of important matters relative to the mode of administration of the new school, and have, therefore, determined that each of the schools shall conduct, separately from and independently of the other and of the United Medical Committee, the work of its college term for 1916-17.

Changes at the Rockefeller Institute.—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announce the following promotions and appointments: Dr. Alphonse R. Dochez, hitherto an associate in medicine, has been made an associate member. Dr. Henry T. Chickering has been appointed resident physician in the hospital to succeed Doctor Dochez. The following have been made associates: Dr. Louise Pearce, pathology and bacteriology; Dr. Frederick L. Gates, pathology and bacteriology. The following have been made assistants: Dr. Oswald Robertson, pathology and bacteriology; Ernest Wildman, chemistry. The following new appointments have been made: Dr. Rhoda Erdmann, associate in the department of animal pathology; Dr. Rufus A. Morrison, assistant in medicine and assistant resident physician; Dr. John Northrop, assistant in the department of experimental biology; Dr. Jean Oliver, assistant in the department of pathology and bacteriology; Dr. Ernest W. Smillie, Fellow in the department of animal pathology; Dr. William D. Witherbee, assistant. Dr. Hardolph Wasteneys, hitherto an associate in the department of experimental biology, has accepted an appointment as associate professor of pharmacology in the University of California.

Gifts to Hospitals.—The will of Mrs. Helen C. Juilliard gives $50,000 to the American Museum of Natural History, $25,000 to Colorado College, $100,000 each to St. John's Guild and the Lincoln Hospital, and $50,000 to the New York Orthopedic Hospital.

The Guggenheim brothers, associated as M. Guggenheim Sons & Co. and in the American Smelting and Refining Company, have added $165,000 to their donations to Mount Sinai Hospital, making their total gifts in memory of their parents $665,000.

Announcement is made of a gift to the Johns Hopkins Hospital of the sum of $95,000 by Dr. Kenneth Dows, of New York. The money is to be devoted to the investigation of tuberculosis and the better teaching of physicians and students in the recognition and management of the disease and the care of the patients who seek treatment for it at the hospital.

The Lowell General Hospital, Massachusetts, has recently received a gift of $200,000 from Mr. Frederick Fanning Ayer. This sum is intended mainly as an endowment for the hospital.

Three gifts totalizing $57,600 have been presented to the Babies' Hospital, Philadelphia, during the past week. Of this sum, $50,000 is given anonymously by a prominent Philadelphia woman.

Typhoid Fever in Toronto.—In 1910, the death rate from typhoid in Toronto per 100,000 population was 40.8. In 1915 it was 1.9, leading all cities of 350,000 population and over in America. This represents a saving of 195 lives per annum, which, assuming that only one patient of every ten or fifteen dies, means the prevention of over 2,000 cases. The largest factor in the reduction of the rate is considered to be the chlorinating of the water supply, and its bacteriological examination six times a year. No milk typhoid has been in Toronto since 1912, owing to the requirement for pasteurization of all milk entering the city (except certified milk). Nor has there been any typhoid from oysters or raw vegetables. Contact infection has been discounted by circulars of information on typhoid and its spread and advocating inoculation. The danger of fly transmission has been considerably cut down by publicity campaigns against flies and by the abolition of outdoor privies. In examining the results of the epidemiological examination of the 151 cases of typhoid in Toronto for 1915, one of the most striking features is that sixty-nine of these cases were infected outside the city. Of the eighty-two cases infected in Toronto, thirteen, or more than fifteen per cent., were found to be due to either direct or indirect contact.

To Coordinate Poliomyelitis Research.—In order to enlist the active cooperation of the leading laboratory workers in this country in the study of the many problems presented in the epidemic occurrence of poliomyelitis, the commissioner of health last week invited the following well known pathologists and bacteriologists to meet in this city August 3d and 4th to consider the problems and to plan out a well coordinated series of investigations likely to effect their solution: Dr. George J. Adami, of McGill University; Dr. Charles Bass, of Tulane University; Dr. Ludwig Hektoen, of the University of Chicago; Dr. Paul Lewis, of Vanderbilt University; Dr. Francis W. Peabody, of Peter Bent Brigham Hospital, Boston; Dr. Milton J. Rosenau, of Harvard University; Dr. Theobald Smith, of the Rockefeller Foundation; Dr. Victor Vaughan, of the University of Michigan, and Dr. William H. Welch, of Johns Hopkins University.

Associated with these will be the following representatives of the prominent research laboratories in this city: Dr. William J. Elser, Dr. Simon Flexner, Dr. Emanuel Libman, Dr. Hideyo Noguchi, Dr. Charles Norris, Dr. William H. Park, Dr. Francis Carter Wood, and Dr. Hans Zinsser.

Not by spectacular chance discoveries, but rather by painstaking investigations in which fact is added to fact, can it be hoped to secure control over poliomyelitis. With the foremost minds of this country at work and attacking the subject from many different angles the outlook for a successful outcome is encouraging.

Health Exhibit at Coney Island.—A health exhibit, for men only, designed to teach the important facts regarding venereal diseases, is now being successfully operated at Coney Island. Financed mainly by the New York Social Hygiene Society, the exhibit represents the cooperation of that society, the Brooklyn Hospital Dispensary, genitourinary department, and the department of health. A medical adviser is in attendance every evening; a demonstrator at all times. Judging by the number of visitors, their demeanor, the interest taken in the exhibit, and the questions asked, the enterprise is bound to exercise a wholesome educational effect. It is planned to show this exhibit in various parts of the city at the close of the Coney Island season.

Personal.—Dr. Walter Eugene Garrey, formerly connected with the department of physiology of Washington University, St. Louis, Mo., has been elected to the chair of physiology in the college of medicine of Tulane University, of Louisiana.

Dr. William S. O'Neill Sherman, of Pittsburgh, has started for Europe to make a special study of gangrene, tetanus, and amputation in war hospitals for the Rockefeller Institute.

Dr. Victor V. Anderson has been appointed to direct the medical department and psychological laboratory established by the city council of Boston on June 23d in collaboration with the municipal police courts.

Dr. S. D. Abrams, of Inwood, L. I., has been appointed deputy health officer of Hempstead, L. I., for Inwood and Lawrence outside of the incorporated districts.

Dr. Harry M. Lee has resigned as medical examiner of the city of New London, Conn.

Dr. Edwin P. Kolbe has been appointed superintendent of the new Suffolk County Tuberculosis Hospital, which will soon be ready for the admission of patients.

Dr. Edward Torrey, of Olean, N. Y., has been appointed medical superintendent of the Cattaraugus County Tuberculosis Hospital.

Reasonable Quarantine Regulations.—In a recent number of *Public Health Reports*, the text is given of the recent set of regulations drawn up by the Vermont State Board of Health, regarding the quarantining of children coming from the city of New York since the development of the present outbreak of poliomyelitis.

1. No child under the age of fifteen years shall reside in this State for a period of more than twenty-four hours without being reported by an attendant, parent or guardian, to the health officer or the town or city where such child is, provided such child has been in the city of greater New York since June 20, 1916.

2. It shall be the duty of every housekeeper, manager, or proprietor of every hotel or boarding house where such child is domiciled immediately to report such child, giving the name and age, to the health officer of his city or town.

3. Every such child shall be subjected to quarantine for a period of two weeks from the time such child was last in the city of greater New York.

4. The health officer of every town and city to whom such a child is reported shall immediately serve a written notice upon the head of the family in which such child is This written notice shall contain a copy of these regulations and an order signed by such health officer requiring such child to remain on the premises in which it is at that time for the specified time of two weeks after last leaving the city of greater New York.

5. Each health officer to whom such a child is reported shall require of the attendant, parent, or guardian of such child a certificate in writing, duly signed by a legal practitioner of medicine, certifying that the nose and throat of such child have been thoroughly washed with a solution of a teaspoonful of common salt in a pint of water once a day for a period of three consecutive days before the premises are released from quarantine.

6. No child under fifteen years of age shall enter any house so quarantined.

7. A placard containing the word "quarantine" shall be sufficient evidence to all persons that the premises are quarantined for the purpose of these regulations.

Nothing in these regulations shall be construed to prevent other members of a household in which there is a child as above described, who has left the city of New York since June 20, 1916, from attending to their usual occupations.

The owners, managers, or proprietors of hotels and boarding houses may place no restrictions on attendants or guests in their hotels or boarding houses further than the strict isolation of any children, as above described, from New York city, provided such children are isolated to the satisfaction of the local health officer and their noses and throats irrigated as specified.

Each health officer will see that a copy of these regulations with which he is furnished is conspicuously displayed in at least three public places in his town or city.

These rules and regulations will remain in force until further notice.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,

Department of Biology, Olivet College.

Thirty-first Communication.

LOBAR PNEUMONIA.

Aside from the uncertain use of antipneumococcic serum, the treatment of pneumonia is absolutely symptomatic. In such a self limited disease the physician's function is one of "watchful waiting," the nonuse of drugs often being the best therapy, although it takes a strong minded doctor to resist with reason the anxiety of his own heart, the importunities of the patient's relatives, and the obloquy and contumely of lookers on know-it-all; but the sooner physicians learn that, in the absence of specific remedies like quinine in malaria, drugs are to be used in well defined emergencies only, the better will be the status of medicine as a science. It might be well to add that an intimate knowledge of pharmacodynamics is prerequisite to the scientific treatment of disease.

Nature effects the cure; but sometimes a toxemia so handicaps nature that normal control is upset and artificial aid in the way of drug influence becomes imperative. In pneumonia the cardiac reflexes may be disturbed and require readjustment; in which case, as in typhoid, caffeine will restore force and volume, and digitalis will reestablish rhythm with increased volume at every contraction. If vagus control is deficient, small doses of aconite may be of assistance, but have to be carefully watched. A prominent textbook advises the use of strychnine, but, as stated before, there is no pharmacological evidence that strychnine has any direct effect on the heart; it is a marked stimulant of the spinal cord and might in this way bring about indirectly a greater call for blood in metabolism, but it cannot be called a true heart stimulant. Alcohol is also advised by some, and small doses might possibly be of benefit in conserving body tissue, but no dependence is to be placed on alcohol for any assumed cardiac influence, unless, indeed, depression of the heart is the end sought.

In pneumonia, a prominent writer says epinephrine may be used hypodermically to stimulate the vasomotor centre! So far as the pharmacologist is aware, epinephrine has no effect whatever on the vasomotor centre, but acts on the nerve terminations to the muscle coats of the bloodvessels or directly on the muscle itself. Moreover, if combating lowered blood pressure should be indicated, epinephrine would be an inferior agent here because of its fleeting action; caffeine would be much more efficient. But it must be borne in mind that the depressor condition is due to accumulating toxemia, and is to be combated by increasing the rapidity of elimination through saline injections and by speeding up diuresis and diaphoresis.

The use of oxygen seems logical whenever consolidation reaches the degree where alveoli and bronchioles are so compressed as to cause interference with diffusion. Pure oxygen, administered at this time, diffuses more rapidly to the furthermost air passages than does the more dilute oxygen of atmospheric air, and thereby advances gas equilibrium in the blood, restoring a normal proportion of oxyhemoglobin and preventing cyanosis.

In some robust patients, where the cardiac response to initial toxemia is so intense as to be dangerous, aconite in guarded doses usually relieves the temporary stress and saves the heart from permanent injury. Of course, the drug should be promptly discontinued as soon as physiological action becomes evident.

The sharp pleuritic pain usually introducing pneumonia is most readily dulled in consciousness by an opiate, supplemented by a sinapism over the affected area for its reflex stimulation.

The cough, unless unduly distressing, need not be treated, as it is nature's attempt to remove abnormal products from the respiratory passages. Various "stimulating" expectorants have been advocated, but there is no adequate evidence that any drugs excreted by the bronchial mucosa have any effect in increasing the fluidity of mucous secretions. Ammonium chloride is a drug that has been widely recommended, but without convincing proof that it is ever excreted through the lungs; if it does have a real effect on the mucosa it must be by direct contact, and should therefore be administered in the form of a vapor.

Some writers have advocated the administration of antiseptics, such as phenol, thymol (!), and mercuric chloride. They seem to have the idea that the drug, changed chemically in the alimentary tract, absorbed then into the blood stream, carried thence to the diseased tissue, still retains a selective toxicity for bacteria only; and possibly the history of arsenobenzol gives brilliancy to such an idea. But one of the great errors in the use of drugs has been the failure sufficiently to recognize that each drug is peculiar unto itself; and a second one is that of believing that the body is a great test tube wherein reactions will take place with the same definiteness and simplicity as in the little glass tube of the biochemist. If there be any truth in such ideas the first place to discover it may well be the laboratory; there at least errors in technical judgment bring consequences less serious, and being frequently checked are soon uncovered. Lack of adequate checking, whether at the bedside or in the hospital, has often been a fruitful source of precipitate deduction involving far reaching error.

Let the use of drugs in lobar pneumonia be sternly limited to undeniably definite indications; then let such only be used as will probably effect the desired end; see that the patient does not have to fight drugs as well as disease.

Critique of Present Methods in the Treatment of Infantile Paralysis.—H. Winnett Orr (*American Journal of Orthopedic Surgery,* June, 1916) suggests that braces in the treatment of infantile paralysis should never be employed until all the improvement possible from other measures is obtained.

Diagnosis and Treatment of Poliomyelitis.—Walter L. Barber (*Medical Record,* July 22, 1916) declares that prophylaxis is important, the patient should be isolated, all articles which may have become infected should be destroyed, antiseptic spraying of nose and throat should be practised, and hexamethylamine should be given as a preventive. Actual treatment of the disease comprises a preliminary dose of calomel, an ice bag along the spine, acetphenetidin to control headache, muscular pain and restlessness. Hexamethylamine with benzoic acid may be used in large doses with benefit in the active stage, while strychnine is to be given only after all inflammatory symptoms have subsided, and then in small continued doses. Galvanism and massage with muscle education are later used to restore atrophied muscles.

Clinical Importance of the Wassermann Reaction.—Eusebio de Oyarzabal (*Revista de Medicina y Cirugia Practicas,* June 28, 1916) states that this reaction appears usually five to six weeks after infection, rarely earlier. In the secondary stage it is positive in ninety-five per cent. of cases while of the tertiary cases only seventy per cent. give a positive test. Tabes gives eighty per cent. while general paralysis shows one hundred per cent. A positive Wassermann may return after it has been rendered negative, and this is due to a period of latency or to insufficiency in dose or duration of antisyphilitic treatment. To discover whether a negative reaction is permanent a small dose of salvarsan or neosalvarsan may be administered and this frequently will produce a positive test if any spirochetes are still present in the system because their destruction produces substances which render the test positive. In cerebrospinal cases it is advisable to do the test with the spinal fluid.

Treatment of Streptococcic Infection.—E. Dolphus Haysmer and W. L. Sucha (*Western Med. Review,* June, 1916) make a study of a large number of cases of so called grippe, finding the disease to be due to infection with a special strain of streptococcus. In the treatment of this infection, which included cases of grippe, rheumatism, neuritis, tonsillitis, adenitis, pneumonia, bronchitis, pleurisy, etc., the authors found no drug was of any curative value. Many, such as phenacetin, aspirin, etc., used to relieve symptoms, actually so depressed the patient as to hinder recovery and to prolong convalescence. Where it was absolutely necessary to relieve symptoms suitable drugs were used, but the cure of the condition rested entirely on the exhibition of autogenous or stock vaccines made from the particular strain of organism. Thorough elimination and the use of salol or hexamethylenatetramine were helpful adjuncts in the treatment of some of the cases.

Disinfection of the Nasopharynx in Meningococcus Carriers.—M. H. Gordon (*Brit. Med. Jour.,* July 1, 1916) reports that bacteriological tests showed that it was possible completely to disinfect nutrient plates by saturation of the atmosphere of the room in which they were exposed with a vapor of chloramine. Such a saturated atmosphere can be borne without damage and with little or no discomfort by persons entering the room for periods of five to twenty minutes. From these observations it was but a step to determine the possible disinfectant value of such a vapor in patients harboring the meningococcus in their nasopharyngeal tracts. Two patients were exposed to the vapor, and complete and apparently permanent disinfection took place.

Treatment of Scoliosis.—Edward S. Hatch (*Southern Medical Journal,* July, 1916) believes that the Abbott method gives far better results than any other, but the technic is so complicated that there are few men who put on the jacket as Doctor Abbott teaches, even though they use his frame. It takes from three to six corrective jackets to effect a cure, each jacket being worn about seven weeks, or so long as one can further correct the position by the application of felt pads. While we strive to overcorrect our cases it is not always possible to do so, but in practically every case we place the children in a nearly normal position. After the patients' attitudes are corrected, exercises are used daily for many months. These must be given at first by a competent instructor and later carried on at home. If the patients do not carry out the exercise treatment, they will gradually relapse.

Vaccine Therapy in Typhoid Fever.—Petrovitch (*Bulletin de l'Académie de médecine,* June 13, 1916) reports the results obtained in military practice in Serbia with vaccine treatment in typhoid fever. Whereas, among 1,020 cases treated by ordinary measures the mortality was 12.8 per cent., among 2,270 other cases subjected to vaccine treatment, without the administration of cold baths, it was only 2.7 per cent. Small doses—five to fifty millions of typhoid bacilli killed by heat—proved as efficacious as larger ones. Where results were slow in appearing, and in complicated cases, the dose was reduced rather than augmented, and such reduction proved essential for benefit in these patients. Very toxic cases, often in subjects greatly exhausted and already weakened by dysentery or cholera, proved in no way refractory to the treatment except when the eliminatory functions were impaired. A few of these patients, however, died in convalescence, rather from extreme cachexia and anorexia than from myocarditis. In cases with renal or myocardial complications, and in general when elimination is in abeyance, Petrovitch counsels great reduction in the dose, lest uncertain or even unfavorable results ensue. The dose in general should be based, first, on the rule that all pronounced local and general reactions are to be avoided, and second, on the general progress of the case, in particular the temperature, with due attention to the functions of the liver, kidneys, skin, respiratory apparatus, and intestine. Small doses are of advantage in avoiding excessive excitation of the tissues as well as an excessive production of antibodies, with resulting massive liberation of endotoxins and stress on the eliminatory organs. Sometimes the pulse became soft when the temperature dropped and the general condition improved. This peculiarity was noted at times after the first vaccine injection, but especially after the second or third, the patient, however, presenting no other manifestation of cardiovascular disturbance. The habit was accordingly formed of giving a little caffeine internally after the second injection. This always improved the pulse and counteracted the weakness previously noticed.

The Transplantation of Ductless Glands.—O. T. Manley and David Marine (*Jour. A. M. A.*, July 22, 1916) found as the result of many experiments in this field, carried out on rabbits and including most of the ductless glands, that homotransplants of ovarian or splenic tissue almost invariably underwent prompt absorption. In the case of the ovary the lipoid luteal cells, however, often persisted. The rate of absorption varied widely and seemed to depend largely upon essential variations in the hosts. While autotransplants of spleen also were always absorbed, those of ovary usually survived and grew. The reaction of the thyroid to transplantation was more extensively investigated than that of other tissues; it was found that autotransplants of this gland uniformly survived and grew. On the other hand, homotransplants almost always ultimately underwent absorption, though in a few cases such transplants survived and grew. Absorption took place as early as the tenth day and was delayed in other cases as long as a month or more. When the first homotransplant was absorbed, subsequent ones always suffered the same fate and in progressively shorter periods of time. The rate of absorption could be modified by altering the condition of the host or that of the thyroid tissue used. Thus, when iodized thyroid tissue was transplanted into an iodized host the rate of its absorption was greatly reduced. This suggests that it may be possible to alter the reaction of the host toward other tissues by the use of one or more or their specific chemical constituents. The therapeutic future of transplantation depends upon the solution of this problem of favorably influencing the viability of homotransplants.

Vaccine Treatment in Streptococcal Puerperal Fever.—Chalmers and O'Farrell (*Journal of Tropical Medicine and Hygiene*, April 1, 1916) report from the Sudan two cases of successful vaccine therapy in puerperal fever due to streptococci of the fæcalis group. Such cases, they find, are peculiarly suitable for vaccine treatment in that they represent local infections, without evidence of septicemia in blood cultures from a vein. In the first case antistreptococcal serum and cleansing of the uterus had caused improvement, but this was only temporary, and even after administration of a 5,000,000 dose of the autogenous vaccine the patient grew obviously worse. A 200,000,000 dose was then given, with resulting prompt drop in the temperature and complete recovery. In the second case, high fever had existed six days, with feeble and very rapid pulse, and on the third day after this douching of the uterus had to be stopped owing to refusal of the patient's friends to have it done. A 5,000,000 dose of the same vaccine as that made from the first case caused slight improvement and subsequent 50,000,000 and 200,000,000 doses, complete recovery. Vaccines evidently may be of great service in such cases in raising the resistance of the body against the germs which may be passing from the uterus into the blood stream in quantities so small that, while killed in the blood, they do not cause enough reaction to increase antibacterial powers. If necessary, a polyvalent antistreptococcic serum and saline injections may also be used to combat and remove the toxins. In a severe septicemia the vaccine method would, of course, be useless. In cases where it does promise benefit, doses sufficiently large should be used. 5,000,000 to 10,000,000 being merely an initial experimental dose given to ascertain the condition of the patient as regards the organism. The first therapeutic dose should be not less than 50,000,000, and should preferably be followed in a week or less, according to the symptoms, by a 200,000,000 dose and later, by additional doses as required.

Syphilitic Elephantiasis of the Genitals and Its Treatment.—A. Ravogli (*Lancet-Clinic*, June 17, 1916) found the specific spirochete one of the most effective organisms in causing elephantiasis of the genitals. The condition was always the result of an extended ulcerative process of tertiary syphilitic nature. The possibility was not excluded, however, of the superadded presence of tuberculosis which, either locally or in the general system, might have given the ulcers a more destructive character. The syphilitic process, as a whole, tends to induce lymphatic stasis, as illustrated in the indurative edema of the initial lesion, which often complicates also the constitutional lesions of syphilis. Its cause is found in a specific inflammation of the lymph vessels, causing occlusion of the lymphatics by coagulation of the lymph. In early syphilis this specific edema subsides under treatment, but in the late period, when affecting the genitals, grows persistently. Internal mercurial or arsenical medication gave no results in Ravogli's cases of genital elephantiasis. According to the general condition small doses of calomel or gray oil injections, potassium and sodium iodide, and tonic preparations were given. Externally, no local application was of benefit, though bathing with a mild solution of mercury bichloride or sodium bicarbonate proved useful in relieving tension, and pads of bichloride gauze in the irritation of friction. It was found that, to obtain good results, the extensive ulcers must be curetted until the normal substratum is reached. Dressed with iodoform gauze or one in 2,000 bichloride gauze, the ulcers then heal in a short time, leaving smooth, regular scars. For the elephantiasis, surgical removal of as much as possible of the hypertrophied tissues is best. In a case of enormous growth of the clitoris, the organ was removed. In involvement of the labia majora, the elephantiasic tissues in the centre of each were dissected out and the upper skin layers saved and sewed together. In the male as much as possible of the organs was saved. The wounds always healed readily. After two or three years no relapse had occurred.

Treatment of Paralysis agitans with Parathyroid Gland.—William N. Berkeley (*Medical Record*, July 15, 1916) states that he wrote on this subject in 1910, and that he is still convinced that the disease is due to a deficiency in the parathyroids. The parathyroid extract used in doses of one fiftieth grain for three to six months produces marked improvement.

Dose of Digitalis.—J. T. Halsey (*Southern Medical Journal*, July, 1916) advocates the administration of full doses in order to secure full therapeutic action in less than twenty-four hours, and the reduction of the dose as soon as the first signs of digitalis effects appear. After sufficient of the drug has been given, in most cases relatively small doses of fifteen to thirty minims a day are usually enough to maintain the desired effect. The administration of full doses is safe only if the patient is kept quiet in bed and under close and accurate observation by competent observers.

Hay Fever.—W. Scheppegrell (*Medical Record*, July 15, 1916).—Plants causing this disease are those the pollen of which is borne by the wind instead of by contact or by insects. Increased susceptibility after an initial attack is due to anaphylaxis by absorption of pollen proteins. It must be remembered that microorganisms play an important part from the lowered resistance of the nasal mucous membrane. Removal from an infected locality may not necessitate going more than a half mile from areas with pollinating weeds. In using pollen extract it is important to select the proper pollen by conjunctival or skin tests, and when this treatment is not successful autogenous vaccines may be tried made from the bacteria in the nasal secretions.

Mixed Vaccine against Typhoid and Cholera.—A. I. Bielousova (*Roussky Vratch*, April 20, 1916) investigated by experiments on animals the effect of mixed vaccines by determining the presence of agglutinins, deviation of complement, and bacteriolysins in the serum of the animals thus immunized. It was found that mixed immunization produces agglutinins against both antigens, that these agglutinins increase with the number of injections, and that the typhoid agglutinins, whether in mixed or separate immunization, are stronger than those of cholera. The accumulation of the agglutinins in the blood depended on the dose rather than the number of injections. A given dose produced a certain amount of agglutinins whether administered singly or by repeated injections. The complement-fixation was found to both the typhoid and the cholera antigens, and the degree of fixation was the same with mixed as with separate immunization. The same observation was made with regards to bacteriolysis, except that the bacteriolysis of the cholera bacilli appeared sooner and was more marked. The general conclusion reached by the author is that in view of the possibility of immunizing the organism against more than one infection, mixed vaccines should find a wider application.

Scarlet Red in Gastric and Duodenal Ulcer.—Julius Friedenwald and T. F. Leitz (*Medical Record*, July 22, 1916) give their results in the use of this drug in forty-five cases of peptic ulcer. These cases, together with thirty-seven already reported by the writers, justify the conclusion that scarlet red may be given in doses of fifteen to twenty grains, three or four times daily, with great benefit.

Panautogenous Vaccines in Lung Affections.—Alfonso F. de Alcalde (*Revista de Medicina y Cirugia Practicas*, June 8th, 1916) reviews his results in 186 cases. Of fifty-two cases treated by autoserotherapy eighteen were cured, twenty-eight were relieved, and six ended in death. Of ninety-eight cases treated by panautogenous vaccines fifty-eight ended in recovery, thirty-four were improved and six terminated fatally. Of the 186 cases treated, all but thirty-five were tuberculous.

Intestinal Paresis with Special Reference to Pituitrin in Its Treatment.—A. J. Colton (*Buffalo Medical Journal*, July, 1916) reports the case of a woman with double pneumonia whose abdomen was greatly distended and tympanitic, the diaphragm crowded upward, so that breathing was extremely embarrassed, and she was evidently dying. Her blood pressure had fallen forty points. One half c. c. of pituitrin was injected very slowly into the median cephalic vein. "Within thirty seconds there was the most remarkable effect I ever witnessed on a human being, the expulsion of large quantities of flatus with a large liquid stool that nearly filled the bedpan. The abdomen in less than three minutes was in normal condition." The patient recovered.

Epilepsy.—Francis X. Dercum (*Jour. A. M. A.*, July 22, 1916) finds many different causes which may produce the symptoms commonly denoted as epilepsy, and since, therefore, the condition is not a disease entity, there cannot be any specific treatment for it. Each case should be subjected to the most thorough investigation, including serological tests and the family history. Treatment will depend largely upon the result of such study, but the chief question is what to do in the treatment of the residual group of patients who present evidences of the deteriorating, defective, and autotoxic organism. The first requisite is the prescription of a life as nearly physiological as possible, without mental or physical strain and in the country on a farm or in a camp. This often greatly reduces the frequency of the seizures, which is probably mainly due to increased oxidation of waste and toxic substances. In addition, however, the diet should be modified by the exclusion of red meats and reduction in the carbohydrate intake so that as little strain as possible will be thrown upon the liver and the several endocrine glands. Elimination should be free through the alimentary tract, the kidneys, and skin, which can be secured by adjustment of the diet, the use of mild saline laxatives, drinking copiously of water, and indulgence in daily warm sponge baths. Drugs may be required for the control of the seizures, and the best seems to be one of the bromides for this purpose, but to secure the greatest effects from the bromides there should be a simultaneous withdrawal of the chlorides. Lastly, in some cases the administration of small doses of thyroid (one eighth to one quarter grain three times a day) for long periods often seems to raise the patient's physiological level with marked benefit.

Two Cases in Which the Lateral Ventricle Was Opened.—H. F. Wooffenden in the *Lancet* for May 20, 1916, states that of 200 cases seen two were treated by extraction of foreign bodies from the lateral ventricle with complete recovery.

Operative Treatment of Empyema.—Howard Lilienthal (*Medical Record,* July 15, 1916) advises x ray examination in all cases to aid in selecting the type of operation. The aspirating needle should not be used until within a few hours of operation. Ether anesthesia is to be avoided usually because of its irritant action; local, regional, or nerve blocking anesthesia or nitrous oxide and oxygen narcosis may be employed. The operations are minor and major thoracotomy, resection for encapsulated empyema, and the old resection method.

Rest and Exercise in Tuberculosis.—Thompson Frazer (*Southern Medical Journal,* July, 1916) summarizes his paper by saying: A thorough knowledge of the principles of rest and of exercise must underlie the treatment of tuberculosis. Neither exercise nor rest is to be prescribed offhand, but so long as there are symptoms pointing to an overworked body, rest is indicated, the character and amount to be carefully prescribed; with improvement, exercise slowly increased provides the safest means of regaining health and strength. Exercise must be increased gradually, as a single act of overexertion may delay recovery months or years, or even preclude it. The transitional period should be under careful medical supervision until the patient is able to withstand without harm more than he will be called upon to endure when he takes up active work.

Treatment of Constipation in Women.—Justin Herold (*Lancet-Clinic,* May 13, 1916) reiterates the fact that results obtained in this condition with nonmedicinal measures are far superior to those obtained with drugs. The diet for these patients should contain about six and a half times as much vegetable matter as meat, with a liberal proportion of starches, sugars, oleaginous foods, and water. The best laxative foods are porridge, cornmeal mush, cracked wheat, syrup, honey, molasses, milk, sugar, whey, buttermilk, coffee (for some patients), apples, peaches, pears, prunes, cherries, figs, dates, raisins, preserved or stewed fruits, butter, bacon, and salad oils. Regular indoor exercise should be encouraged, and may take the form of calisthenics, Swedish gymnastics, basket ball, fencing, or bowling. Irrigations should be used chiefly for healing local lesions, clearing out putrefying food, and to stimulate cardiac and renal action. In chronic atonic constipation retained enemas are useful to provoke evacuation without the help of an irrigation. The best results are obtained from daily injection of from one to three pints of water at 70° to 80° F. into the colon. In spastic constipation, on the other hand, warm or hot water enemas (105° to 110° F.) are preferable to cold. Water taken by mouth is effectual when drunk in one half glassful amounts every hour or two. One to one and a half glassful should be taken on rising. Massage is generally most beneficial when practised over the abdomen and lumbosacral spine; general manipulations may, however, be administered when a universal toning up is needed. Effleurage, pétrissage, friction, tapotement, and vibration may all be applied with advantage. In obstinate atonic constipation the séance should last from twenty minutes to an hour, and the massage given at least once daily for a prolonged period. In intestinal autointoxication vibratory treatment has given satisfactory results; it is contraindicated, however, in the presence of anal fissure, inflamed and ulcerated hemorrhoids, ulcers, carcinoma, stricture, or acute catarrh of the rectum or colon. Galvanism, a very broad electrode to the spine being used, is of value in atonic constipation, while general faradization is indicated where there is autointoxication and general debility. Among drugs, physostigmine is an especially useful remedy in atonic constipation. Constipated women at the change of life suffering from headache, vertigo, and flatulence can be afforded much relief with it, administered with or without nux vomica. Rhamnus purshiana is also a valuable drug. When very large doses of it are required, a necessity for combining with it such drugs as iron, strychnine, belladonna, hyoscyamus, or calomel is indicated. In pregnancy, enemata and vegetable pills containing podophyllin or rhubarb are chiefly relied on by Gant. Aloes and myrrh relieve dysmenorrhea in constipated women. During menstruation, there should be cessation of massage, vibration, and cold hydrotherapy; evacuations may be secured temporarily with pills or enemata.

Resection of the Ovaries for Microcystic Disease.—J. A. McGlinn (*American Journal of Obstetrics,* March, 1916) asserts his belief that the microcystic ovary should, in the majority of cases, not be treated by resection. This type of ovary is found in practically all cases of uterine retrodisplacement that has lasted a number of years. The thickening of the ovarian capsule due to chronic congestion results in a studding of the ovary with retention cysts, the increased weight of the organ then causing it to prolapse into the posterior cul-de-sac, where it is subject to pressure by the full rectum or displaced uterus, with resulting pelvic pain and tenderness. Partial excision of such ovaries does no good, as the thickened capsule over the parts remaining cannot be removed, while the handling of the organs at the operation causes further capsular thickening, and the scar tissue formed is likewise unfavorable in its effect. Most cases thus treated are, in fact, made worse, a secondary operation becoming necessary to remove the remaining ovarian tissues. The author, therefore, no longer resects such ovaries, but simply punctures the cysts which are upon the surface of the organs, handling the latter as little as possible. The uterus, if displaced, and the ovaries are then restored to their proper position by a suitable operation. Subsequent treatment is applied to relieve or prevent pelvic congestion. Where an ovary is found so diseased that it is not amenable to the foregoing treatment, it is removed. It is often possible, however, to save both ovaries, and usually at least one ovary is in a sufficiently good condition to be preserved in its entirety. Good results were obtained by this method, and no further operations have been necessary.

Miscellany from Home and Foreign Journals

Aminoacid Nitrogen in the Blood of Children.—C. J. V. Pettibone and F. W. Schlutz (*Jour. A. M. A.*, July 22, 1916) made determinations of this nitrogenous constituent of the blood of children under a variety of conditions of health and disease and showed that, while the average figure was somewhat below that for adults, there was no consistent or characteristic variation in any of the diseases studied. Further, fever did not cause any typical variation in its amount.

Prognosis in Volvulus.—In *American Journal of Surgery*, June, 1916, is published a clinical lecture by D'Arcy Power on volvulus. With regard to prognosis he says that it is at the present time extremely unfavorable; he hopes that the practitioner of the day will improve it, just as he and his contemporaries have improved the prognosis of intussusception. Improvement rests entirely with present day medical men, for it depends upon early recognition, and upon early recognition depends the success of operative treatment.

A Symptom in Extrauterine Gestation.—H. J. Lehnhoff (*Archives of Diagnosis*, April, 1916) considers a severe, cutting pain in the lower abdomen, ocurring while the patient is at stool and, as nearly as can be ascertained, at the time when the abdominal muscles contract in assisting to empty the bowel, a practically pathognomonic symptom of extrauterine gestation. Of eight cases, six presented this symptom. Ischiorectal, tubal, or large appendicular abscess fails to produce the symptom, and the pains of rectal, pelvic, or bladder growths, or those of ureteral calculi, kinked ureter, or twisted cyst pedicle, do not resemble it; nor does it occur in acute perforations of the stomach, intestine, gallbladder, or appendix.

Diabetic Coma in Alcoholics.—E. Schulmann (*Presse médicale*, June 5, 1916) reports two cases of diabetic coma in heavy drinkers and sets forth the symptomatic peculiarities. Both his patients, brought into the hospital semicomatose, manifested mental and physical agitation, necessitating forcible restraint, together with auditory and visual hallucinations, talkative delirium, tremor (especially in the upper extremities), and fever, the temperature reaching 39.2° C. in one case and 38° in the other. In analogous cases previously recorded by Dreschfeld, stress was laid on headache, vertigo, embarrassed speech, and motor incoordination, followed by complete coma and death in twelve to twenty-four hours. In Schulmann's cases, however, signs of delirium tremens accompanied those of diabetic coma until death. The respiratory disturbances typical in diabetic coma were also noted. The attack of acute alcoholism in these cases is secondary to the coma. Death took place on the fourth day in both instances. The prognosis in the combined condition is particularly grave. Simultaneous alkaline treatment of the diabetic acidosis and treatment with ammonium acetate and injections of camphorated oil are indicated.

Intestinal Toxins and the Circulation.—D. T. Barry (*Lancet*, July 1, 1916), in the course of an investigation of the actions of the excretory toxins on the neuromuscular mechanism of the heart, found certain toxic substances in both the small and large intestines which exerted a deleterious action on the heart when introduced into the circulation. Such substances, when present in abundance, may be absorbed and produce cardiac symptoms and damage. The cause of these toxic materials has not been determined, and the nature of the substances is unknown. That absorption of the materials does occur is indicated by the frequent occurrence of heart block and arrhythmias in persons with intestinal disorders.

Mixed Typhoid and Paratyphoid Infections.—A. Chantemesse and A. Grimberg (*Presse médicale*, June 15, 1916) assert, after a careful study of 160 cases by refined laboratory methods, that ordinary typhoid fever is not always due to invasion by the typhoid bacillus alone. Among thirteen fatal cases examined, the typhoid bacillus proved to have been the sole infective agent in only two cases; in seven instances, the paratyphoid A organism was also present, and in the remaining four, the paratyphoid B bacillus. The paratyphoid infection may be added either from the outset or later in the course of the disease. Blood cultures under these conditions reveal the various organisms, and serum tests show the several specific agglutinins arising from these organisms distinct from the group coagglutinins. Comparison of the temperature and specific agglutinin curves of patients reveals the influence on the former of invasion by fresh types of typhoid germs. To such secondary invasions are to be ascribed the temperature fluctuations often termed recrudescences, relapses, the amphibolic stage, abnormal prolongation, etc. Recovery from ordinary typhoid fever commonly confers an immunity which includes one or both paratyphoid infections. Vaccination against the typhoid bacillus alone, however, yields no general immunity of this kind. Vaccination with a heated vaccine consisting of a mixture in approximately equal parts of the three typhoid germs, as recommended by Castellani about ten years ago, is thus an entirely legitimate procedure. Since blood cultures practised in the course of typhoid fever yield positive results in only about one half the cases, the diagnostic procedure of choice in this disease is the continued observation of the agglutinins in the blood by a macroscopic, precise method involving study of emulsions of the typhoid and paratyphoid organisms (to be described in a later paper). The presence in a patient's blood of an agglutinin due to previous typhoid fever or antityphoid vaccination does not interfere with this procedure, the curve of such an agglutinin remaining unchanged, while that of the agglutinin of a disease running its course at the time shows the usual phases of ascent and descent. Where a multiple typhoid infection is diagnosticated, a corresponding mixed vaccine should be used in its treatment.

Changes in Muscle After Nerve Section.—J. N. Langley (*Lancet,* July 1, 1916) offers two theories to explain muscular wasting following the division of a nerve: 1. There are special nervous impulses presiding over its nutrition; 2, the wasting is due to lack of use. Neither of these theories is free from objections and the first has received but little support. The second is largely overthrown by the fact that vigorous induced contractions of the muscles do not prevent wasting. Recent studies have shown that the muscle from which the nerve supply has been severed promptly passes into continuous fibrillary contraction. These contractions occur many times a minute and are continuous, so that a simple explanation of the muscular wasting is exhaustion due to overactivity rather than to disuse atrophy.

Mixed or Hybrid Diseases.—P. Remlinger (*Paris médical,* June 10, 1916) groups under the term "mixed diseases" conditions characterized, not simply by coexistence of two affections, e. g., typhoid fever and erysipelas, which run a parallel course without modifying each other, but by a dovetailing of two affections which results in distinct changes in the symptomatology, course, and duration of each, rendering a complete diagnosis often exceedingly difficult. Mixed diseases are to be set apart from mere mixed infections, which, while frequent, cannot be diagnosticated clinically and are often simply laboratory surprises. Mixed diseases are most easily produced where two conditions involve the same organ or system and begin simultaneously. Yet Joltrain has called attention to cases of mixed typhoid fever and diphtheria without false membrane formation in which peculiarities of the temperature curve and constitutional reaction, vomiting, facial pallor, albuminuria, asthenia, small and rapid pulse, redness of the velum palati, and slight edema of the uvula led to a suspicion of associated diphtheria, which, in turn, was confirmed by bacteriological study and the effects of antitoxin therapy. Mixed diseases thus far studied have been far fewer than the multiplicity of theoretical combinations allow. The best known mixed condition is the so called typhomalarial fever, which Vincent has definitely shown to be due, in a few instances at least, to combined presence of the plasmodium and the typhoid bacillus. Cases of combined Malta fever and typhoid fever have been reported, and in northern Africa a hybrid of typhus and relapsing fever, probably due to simultaneous infection from body lice, is encountered. A hybrid of typhus and typhoid fevers in prisoners abundantly infested with lice, characterized by sudden onset, extreme prostration, a confluent eruption of maculæ which failed to disappear upon pressure, death on the third to the sixth day, and at autopsy a soft, enlarged spleen containing typhoid bacilli, has been encountered recently in France. A typical hybrid disease is that consisting of typhoid fever and dysentery; it is not uncommon among troops in active service, and at times appears in epidemics. In such instances the diagnostician remains for some time in doubt whether the case is one of typhoid fever accompanied by greenish stools, tenesmus, and pains in the large intestine, or of malignant dysentery with fever, dry tongue, headache, sleeplessness, and feeble heart action. Bacteriological studies plainly show a coexistence of the diseases. Such hybrid diseases show a marked predilection for individuals subjected simultaneously to multiple causes of infection and to causes of lessened general resistance, especially in emigrants, pilgrims, and in soldiers on war service. In ordinary practice, however, a frequent hybrid is that of combined tuberculosis and syphilis, manifested especially by involvement of the lymph glands (syphilostrumous adenopathy), cornea, skin (hybrids of syphilis and lupus) and even the lungs. Measles and scarlet fever are also at times so superimposed as mutually to destroy their identity, the initial nasal, ophthalmic, and bronchial catarrh of measles being soon followed by a diffuse raspberry color or roseate eruption upon which are engrafted flat or slightly raised macules of a darker shade. Where the throat is but slightly involved, such an eruption leads to much diagnostic difficulty. General desquamation follows the mixed eruption.

Fractures in Children. — Jacob Grossman (*Medical Record*, July 8, 1916) concludes from a study of 200 cases that the commonest cause of error in diagnosis in children is incompleteness of fracture when it is of the fissure or torsion variety. The most constant diagnostic sign is localized bone or "pencil" tenderness. These incomplete fractures require the same treatment as complete fractures, with a less prolonged period of immobilization. The tendency to heal is more intense than in adults and the immobilization period is shorter; refusal of a child to use a limb for any length of time should arouse suspicion of fracture; proper retention is as important as proper reduction. Early massage, active and passive movements are of importance.

On the Application of Tablets of Calcium Chloride to the Sterilization of Drinking Water in the Army.—Ch. D. Archipiantz (*Roussky Vratch,* April 30, 1916) discusses the utility of calcium chloride tablets, containing one mgm. of available chlorine in each tablet, for the sterilization of drinking water by the soldiers. He found in his experiments that the efficiency of these tablets depends not only on the kind of the germ, but also on its resistance to the action of germicides. The cholera spirilla will be destroyed very readily. On the other hand, some of the other microorganisms require a much longer contact. Also, in addition to the factors of contact, the amount of available chlorine, and the resistance of the microorganisms, the quality of the water must be taken into consideration. In the presence of a considerable amount of organic matter in the water, a larger quantity of chlorine is required. Also, the amount of chlorine will be influenced by the reaction of the water. In the author's experiments, two mgms. of chlorine to the liter of water killed the cholera spirilla in ten minutes; the typhoid bacilli were destroyed in two hours and forty minutes; the dysentery bacilli in two hours and fifty-five minutes; and the colon bacilli in three hours and five minutes. In view of the uncertainty of the action of chlorine when thus applied to the sterilization of drinking water, the author is of the opinion that these tablets should receive limited application, namely, when other means of sterilizing the water are not available.

Epidemic Poliomyelitis: Symptomatology and Diagnosis in the Acute Stages.—Francis R. Fraser (*Boston Medical and Surgical Journal*, July 20th) gives the following symptomatology of this disease:

1. *Preparalytic and general symptoms.* The parents as a rule state that there was a sudden onset of fever, with drowsiness, general weakness, loss of appetite or vomiting, and perhaps irritability and restlessness, which frequently is ascribed to a mild disturbance of the digestion. Fever is always present at first. The temperature usually is from 101 to 103° F., swinging slightly and gradually subsiding in a few days, but may be 104° or 105° F. at the onset as well as in a few cases before death, and readings of 100° F. for many weeks are not unusual. When the symptoms indicate lesions in the upper part of the central nervous system it may be 103 or 104° F. for three or four days and then end in crisis. The pulse rate follows the temperature. Gastrointestinal disturbances are usually present and may predominate during the first few days. A slight catarrh of the upper air passages, with somewhat reddened tonsils and pharynx is not uncommon, but an acute tonsillitis would suggest another diagnosis. Frequently the first symptom is heaviness and drowsiness, accompanied by irritability when roused which is in striking contrast to the heaviness seen when the patient is left alone. The child is cranky and restless, and frequently there are jerking movements of one, or of several parts, or of the whole body. A diffuse generalized sweating is common in very severe cases, and in the early period before definite paralyses are seen, there is apparently a general weakness of the entire musculature. There is much diffuse pain and tenderness, and pain in the back of the neck and in the back is an important symptom. The patient prefers to lie on one side so that the head may be tilted slightly back, or on his back with a pillow between his shoulders so that the head falls back. Kernig's sign is not present as a rule.

2. *Spinal fluid symptoms.* The changes in the spinal fluid are not characteristic of this disease alone, but are useful in differentiating the disease. The cells are increased in number and there is an increase of the globulin content. Cell counts of over 1,000 per c. mm. are rare, counts under 100 are more common. During the first few days polymorphonuclear cells and cells with irregular nuclei may be numerous, but after the first week the increase is due almost entirely to cells of the lymphocytic type. The globulin increase is found in one half of the fluids during the first week, and in an increasing proportion to the third week. In the first week nearly all the fluids show abnormalities in cell count, in globulin content, or in both; in the fourth week about one half are abnormal; then the proportion falls off rapidly. The fluid does not clot, is sterile, and no organisms can be found after it has been centrifugated.

3. *Blood.* The blood gives no help, as there is no change in the number of red cells, and the number of white cells is within the limits of normal variations.

4. *Disturbances of the motor system.* Paralysis may involve almost all of the musculature, or be limited to a single group, or a muscle. It may be severe, producing a permanent complete paralysis, or be mild, causing a partial paralysis or a temporary weakness, so that a most thorough examination is necessary, in which every muscle must be tested. Much information as to the condition of the muscles can be gained from an inspection of the attitude of the patients and of the limbs, and by testing the tone of the muscles on passive movements.

5. *Disturbances of reflexes.* As in the case of the paralysis it is the asymmetry of these disturbances that is characteristic. Reflexes may be exaggerated one day and absent the next, may be lost gradually, or they may be exaggerated in one part and absent in another at the same time.

6. *Disturbances of the sensory system.* Pain and hyperesthesia are present, but in little children an accurate examination of sensations is impracticable. If exact methods of estimating muscle power and sensation were available, it is possible that many abortive cases which show none but the preparalytic and general symptoms, would show changes, and that many cases of doubtful diagnosis could be cleared up.

7. *Diagnosis.* In the preparalytic period and in abortive cases this depends to a great extent on the presence of an epidemic and association with other cases. Under these circumstances a sudden onset of fever, gastrointestinal symptoms, and perhaps pain would demand a careful examination for signs of stiffness of the neck and back. If there is any suspicion of a meningitis, the condition of the spinal fluid will clear the diagnosis in most cases. The differentiation from a gastrointestinal upset is most difficult, but the spinal fluid is normal, diarrhea is more usual than constipation, and vomiting is more persistent. The other common infectious diseases begin similarly, but in them the pain and hyperesthesia is usually absent, the spinal fluid probably is normal, and a rash develops. Acute rickets is easily mistaken, but the spinal fluid is negative, and a pronounced enlargement of the liver is not found in poliomyelitis. The onset is different in tuberculosis of the hip. In acute rheumatic arthritis, the tenderness is confined to the joints, and in poliomyelitis there is no synovial effusion or swelling of the joints. Meningitis due to the meningococcus, pneumococcus, influenza bacillus, streptococcus, and staphylococcus, gives a spinal fluid with cell increase due to polymorphonuclears, and the organism can be found in smears and can be cultivated. In tuberculous meningitis, and in syphilitic meningomyelitis, the spinal fluid is similar to that of poliomyelitis and the clinical findings are not differentiated until the case has been watched for a few days. The finding of tubercle bacilli, evidence of tuberculosis elsewhere in the body, and the absence of paralysis of muscle groups in a very sick child help to differentiate in the one case; the signs of congenital syphilis, and the enlargement of the liver and the spleen help in the other. Acute poliomyelitis is probably mistaken for cerebrospinal meningitis more often than for any other disease, but the rash, the photophobia, and the characters of the spinal fluid should differentiate it.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16, 17, and 18, 1916.

The President, Dr. W. Stanton Gleason, of Newburgh, in the Chair.

SECTION IN GYNECOLOGY AND OBSTETRICS.

(*Continued from page 238.*)

Gynecological Surgery in Hysteroneurasthenic Patients.—Dr. H. S. Crossen, of St. Louis, said there were three questions to be asked: 1. Was operation indicated? 2. If indicated, what was the preferable time for operation, before or after the course of neurological treatment? 3. When operating, should more or less conservatism be practised than in an individual with a normal nervous system?

In regard to the first question, where the pelvic condition was seriously depressing the general health through blood loss or pain due to lesion, the lesion must be removed, irrespective of the coexisting nervous disease. Cases had to be carefully studied and there were two types to consider: First, those in which the chief symptom was pelvic pain, with a lesion which accounted for this, and, second, those in which the symptoms were extrapelvic, but were supposed to be due to intrapelvic lesions. In neurasthenic patients, where pain was of secondary importance, operation was contraindicated, but if prolonged treatment with all ordinary measures failed to relieve pain, then operation was indicated. In the second group operation would relieve only so far as nutrition was affected by the lesion, and general nervous irritation allayed.

As regards the second question, when operation should be performed, it had better be done before neurological treatment. Rest in the hospital might give a good start to recovery; but if the influence of the lesion was questionable, the neurological treatment should come first, as with treatment operation might be rendered unnecessary.

Dr. Leroy Broun, of New York, asked what treatment should be given to these neurotics? If there were no local findings, the cases were undoubtedly for the nerve specialist, but if there were distinct local findings from the point of view of the gynecologist, we must attend to them, but patients must be also treated neurologically. He believed that it was generally considered that there were merely steps between the hysterical patients and the neurasthenic patients, and the manic depressive types. It was simply a question of gradation. Whatever affected the general health of these patients affected also their nervous and mental status, and the gynecological surgeon must remove whatever lesion might have a bearing on this. Among 500 patients operated upon at the Manhattan State Hospital for the Insane, thirty-two were so much improved in general health that they were discharged as temporarily cured.

Dr. Gordon Gibson, of Brooklyn, stated that many a woman was operated upon for pelvic conditions without regard to the psychic lesion. The ordinary surgeon or gynecologist could not grasp all the features of neurasthenia. The question to be asked was, Was the patient neurasthenic? Often a doctor saw a patient who told a long story of symptoms, and upon examination there did not seem to be sufficient diseased tissue to account for the disease. There might be some, but not of great importance. The question arose, Was the mild lesion influencing an exhausted nervous system, or were the symptoms entirely due to morbid tissue? If a man had not sufficient experience with psychical disturbances, he must have his neurological colleague see the case with him. It was quite true that the pelvic disease might be keeping up the nervous symptoms. Those might be intensified by loss of sleep, by chronic pain, or other exhausting factors. The history of the neuropathic or psychopathic patient, often disclosed a slight pelvic lesion.

Dr. R. T. Frank, of New York, said in connection with the removal of the ovaries there was a method by which they could work without being too radical. The patient could have x ray treatment of the ovaries for some time and in this way the menstrual flow could be reduced to every third or fourth month, and the result of the treatment could be carefully noted. It was then time to consider the effect of operative interference.

Dr. Samuel W. Bandler, of New York, believed there were no cases of pelvic disease not associated with some ductless gland disturbance. Pain was often reflex; the pain had no effect, but the condition of the patient was affected through the medium of the ductless glands, of which the ovaries and the thyroid were the most important. The nervousness was produced by the metabolic change. For that reason, the nervous patient was often better after an operation if they did not promise too much. A nervous woman could be told that the operation would probably help her condition, and if she wanted to belong to that large and important class of women who liked to sit in the parlor and talk over her operation with her friends, she had better be allowed to do so. In cases of constitutional dysmenorrhea the woman should be operated upon.

Dr. Mary G. Potter, of Rochester, many years ago heard it stated by orthopedic surgeons that ninety-five per cent. of patients suffering from pelvic pain had flat feet. A teacher came to her with severe backache and abdominal pain, and was operated on for gallstones, but after the removal, she had the same symptoms. It was found that her feet were severely calloused and that the arches were flat. With the relief of this condition her symptoms disappeared. In another patient for whom an Alexander operation was done without improvement of symptoms, the feet were found severely calloused and the interior arch was flat. Treatment of the flat foot relieved all the nervous symptoms.

Dr. Richard R. Smith, of Grand Rapids, Michigan, said the first important point was the necessity of a thorough study of the physiology of the pelvis, and the second was the relation of the pelvic reflexes to the neuroses. This would give a tangible basis on which to work. The gynecologist should act in consultation with the neurologist rather than the reverse. The former could help the latter by bringing the patient into a better physical condition.

Practical Aspects of the Internal Ovarian Secretion.—Dr. William P. Graves, of Boston, in considering the general bearings of this subject from the standpoint of gynecology, presented the following conclusions: 1. That in genital atrophy there might occur abnormalities of great importance to the gynecologist. 2. Circulatory disturbance of the external genitals, such as kraurosis and furunculosis of the vulva, might be greatly relieved or cured by the administration of ovarian extract. 3. Ablation symptoms were in the great majority of cases markedly relieved by administration of ovarian extract. 4. After hysterectomy vasomotor symptoms followed the transplantation of ovarian tissue and also leaving the whole ovary *in situ*, similar in degree and frequency to those following total ablation of the ovaries. 5. Functional amenorrhea in the young was often relieved by ovarian extract. 6. Extracts of the whole ovary were more efficacious than extracts of corpus luteum.

Dr. Samuel W. Bandler, of New York, agreed that the extract of the whole ovarian tissue was more efficacious than that of corpus luteum alone. He did not use corpus luteum extract. In reference to operations done in the later years of a woman's life, such as hysterectomy for fibrosis uteri, he did a vaginal hysterectomy, and if the ovaries looked normal he left them behind. He did not think it was wise to leave an inflamed ovary, for that would necessitate a second operation. If, after the operation, the patient was put on ovarian extract, it would prevent the recurrence of hot flashes. If his surgical judgment so dictated he was never afraid to remove both ovaries, and ovarian extract was begun at once.

Dr. R. T. Frank, of New York, protested against the statement that in ordinary hysterectomy it was unimportant if the ovaries were removed. In his experience, if the ovaries were left behind, there was much less likelihood of those troubles. It would not do to say, he left the ovaries or he took away the ovaries. The question was, did the operator leave the ovaries with good circulation? It was often found that even removal of the uterine artery would have an atrophic effect on the ovary. Unless an ovary and tube were left in a healthy condition, it would do no good to leave them; but unless the woman was close to the menopause, it was certainly important to leave an ovary with good circulation.

Five Hundred Cases of Pelvic Infection with End Results.—Dr. John O. Polak, of Brooklyn, said that a study of results of conservation of ovaries with resection or suspension, had caused them to swing toward more radical treatment, because it was useless to conserve ovulation without menstruation, and a conserved ovary behaved badly in cases of pelvic infection. It tended toward cystic formation and pain, and the trauma and circulatory disturbance disturbed the functional activity. No operation should be undertaken during the acute stage of infection, or when exudate was present. Bacteriology of the infection was important, because different organisms had different histories. Gonococcus and streptococcus infections differed widely, the former causing suppurative salpingitis, oophoritis, and peritonitis; the latter lodged almost always in the parametrium. In nonoperative cases, patients suffered from postabortive infections, and were very ill on admission. They were put in a high Fowler position, a rectal tube was inserted, ice bags were applied to the lower abdomen, and absolute gastric abstinence was enforced. Later, whenever possible, the patients were kept in the fresh air. Some cases required drainage by posterior colpotomy. Of 104 patients, 101 recovered.

Another class of 168 women desired to be cured of sterility. They presented a similar history of poor health since marriage, and they had been pregnant; birth was followed by pain, leucorrhea, or some menstrual anomaly. Examination of the husband generally showed infective cocci in the prostatic urethra. In few of the women were gonococci found. Sterility, dyspareunia, and leucorrhea were the symptoms. Of the 168 cases, only twenty could be relieved of sterility. The next class consisted of 107 women with gross pelvic masses, in whom infected structures were removed, yet the menstrual function was conserved. Eighty of those women remained well. Others returned for reoperation for metrorrhagia, menorrhagia, or cystic ovary. The fourth group comprised eighty-nine cases, in some of whom a portion of the ovary was conserved. Those results were among the most disappointing and fifteen had been operated on again, as headaches, hot flashes, sweats, etc., and burning pain over the ovary had followed. The final class comprised thirty-two women in whom such pathological destruction had taken place that conservation was out of the question. Those women all recovered. Climacteric symptoms were prominent in four, while the others had good general health. One important conclusion was that total extirpation was better than conservation of vitally impaired structures.

Infection of the Uterine Appendages; Sequelæ; Nonsacrificial Treatment.—Dr. E. E. Montgomery, of Philadelphia, said infection of the appendages was favored by any condition that favored congestion of the pelvic structures. Those conditions lowered resistance of the tissues and promoted nurture of the infecting elements. The infection spread by the mucous surface and was accentuated by the disturbing influences of menstruation. The most usual organisms were gonococcus, staphylococcus, streptococcus, colon bacillus, tubercle bacillus, pneumococcus, and influenza bacillus. Gonococcus was most superficial in its effect, but prepared the ground for other organisms and was thus more baleful in its work. Nature endeavored to protect herself by closing up the tubal ends against the invader. Sometimes the infection was so virulent as to prevent this, sometimes so slight that it did not take place. The peritoneum was sometimes directly infected through the wall, causing an extensive abscess which involved the tube and ovary. Such effects necessitated the sacrifice of the organs. The causes of infection might be impure sexual relations, want of care in labor or abortion, severe pelvic inflammation from infection, in which sometimes relief might be obtained by drainage through the vagina. In acute infections the plugged up tube became a sac filled with serous, bloody, or purulent contents. All the adjacent structures might become involved, and the ovary became a mere abscess cavity filled with pus. Should such a case fall into the hands of a surgeon who advocated prompt surgical treatment for all pelvic inflammation, the sacrifice of the appendages must be made. That procedure broke down the barriers raised by Nature, and even more dangerous extension might take place. The limited number of gynecological beds in hospitals and the urgent desire of patients to go home, frequently hurried the resort to surgery, but the large number of women who had had pelvic peritonitis justified careful revision of the procedures.

Dr. F. F. Simpson, of Pittsburgh, said every one now recognized that Doctor Montgomery's cases would go on to recovery with a mortality of less than one per cent. from acute disease. Twenty years ago the mortality was due to the activity of the bacteria present at the time of operation. These organisms were just as virulent today as then. A great mistake was made in placing on the same plane disease of the appendix and other hollow viscera on the one hand, and of the the tubes on the other. He would emphasize the extreme wisdom of avoiding operation until all inflammatory exudate had been completely absorbed, as its presence was Nature's positive statement that there were virulent organisms present which she feared to admit into the circulation, and if Nature feared to admit them, the surgeon should be afraid to spread them on the peritoneal surface.

Dr. Thomas J. Watkins, of Chicago, believed that for years they had been making mistakes and calling more of these cases gonorrheal infection than was necessary. He believed that varieties of streptococcus infection that had been present in throats and mouths had given increase of infections in the peritoneum. He had had two cases of salpingitis secondary to throat infection. The knowledge that had been gained in the treatment of tuberculosis should be utilized in the acute pelvic infection. The outdoor treatment was as important as in tuberculosis.

Dr. Edwin McDonald Stanton, of Schenectady, said that cystic degeneration of the ovaries following operation had been mentioned. His own experience in an analysis of 100 cases, operated in for salpingitis, was that in sixty-seven one or both ovaries were left, in thirty-three both ovaries and tubes were removed. In the sixty-seven there were three cases of cystic degeneration, and one of the cysts had to be removed by secondary operation. The other conditions cleared up in a short time.

Dr. Hiram N. Vineberg, of New York, said when the uterus and tubes had to be removed the question was whether to leave a portion of the ovary or not. The patient was very much worse off if they left a portion of the ovary. It was liable to undergo cystic degeneration. If, when doing an operation for fibroid uterus, he could leave enough uterine tissue behind and enough ovary to enable the woman to go on menstruating, it would do no good, but if the uterus had to be entirely removed, it was a question whether what they could retain of the ovary would prevent menopause symptoms.

Resection of the Pars interstitialis in Disease of the Fallopian Tubes, with the View of Preserving the Uterus.—Dr. L. K. P. Farrar, of New York, said this was an attempt to deal with the problem of diseased Fallopian tubes, as frequently presented to the surgeon. Drainage, whenever possible, should be done, but often both tubes were too much involved, and leaving the stumps led to metritis and discharge, or possibly adhesions in the pelvis. The pouchlike form of the pars interstitialis lent itself particularly to the continuance of infection, which was frequently gonococcal. Occasionally with the removal of the infected part the uterus was found to recover, and so the resection of the entire tube was considered. The ovaries were to be removed only when absolutely necessary. Twelve cases were cited with good results following this procedure, and the patients returned to menstrual habit. The question of the use of the uterus after removal of the tubes was then considered. The series of changes taking place in the mucosa of the uterine wall during the menstrual cycle were discussed. Rightly considered, menstruation was found to be an ultimate excretory expression of internal secretory phenomena, of the whole organism, and not merely localized to the uterus and annexa. The difficulty of adjustment of a woman's life, after the removal of this periodical outlet, was touched upon, and Doctor Farrar ended by quoting the argument of Dr. William Polk, in 1893, in opposition to Lawson Tait and Robert Battey. He had said: "I can say that the woman has the right to have the operation tested. None of the patients I have operated on have died. . . . The operation is a simple one, and I can assert that it is efficacious. . . . My wish is simply to give the woman a chance to retain organs which she values if we do not."

Accidental Hemorrhage and Its Treatment.—Dr. James K. Quigley, of Rochester, N. Y., discussed the opinions on the frequency of this condition and its treatment. Many writers considered it very infrequent, but in a small service he had had experience of four cases, in which there had been a coincident albuminuria. Williams, in 1915, published a monograph reporting two cases in which he found microscopical infiltration of the uterine wall with blood, due to arterial changes with thrombosis. It seemed probable that toxemia caused both hemorrhage and a nephritis, the latter being the effect rather than the cause. The symptom was usually sharp, constant, abdominal pain, sometimes followed by collapse. When the hemorrhage was concealed, and not free, it seemed to occasion more shock to the patient. The uterus was extremely tender and the fetal heart difficult to locate. Rupture might occur into the amniotic sac. The danger of a post partum hemorrhage later was present, and the patient might die in shock. The operator should be ready to pack the uterus, as in the external hemorrhage cases the shock was proportional to the blood loss. In these cases the mortality was the highest for both mother and child, of any obstetrical complication, being variously estimated by different writers, but apparently averaging eighty per cent. for the mother and seventy-three per cent. for the infant. Cæsarean section often proved the best means of delivery, but in severe uterine bleeding hysterectomy had sometimes to be resorted to in order to save the patient's life.

Dr. G. G. Ward would like to say a word. He had had a case a few months before of external hemorrhage. The patient was a primipara, twenty-seven years of age, in poor general condition. She had evidence of Graves's disease, though it was apparently quiescent. She had slight exophthalmos and enlarged thyroid. She was waiting in the hospital until term, and at term she started in labor. The head was engaged in the pelvis when almost immediately she began with a profuse hemorrhage. She was attended by an assistant, who thought it was a case of placenta prævia, but there was no evidence of this; it was purely external hemorrhage. On careful consideration of the circumstances—the woman being a primipara, and having no dilatation of the small canal—Doctor Ward decided to do Cæsarean section. The case had a good result, the child and the mother both recovering. The cause was found to be an interesting one. It was shortening of the cord, not a short cord, for it was wrapped about the body three times. There was a typical battledore placenta and the hemorrhage was mechanical, the cord being so short that it caused a pull on the edge of the placenta where the hemorrhage came from. If operation had not been quickly done in this case, and if they had waited to deliver the child by the vaginal route, both child and mother would have been lost.

Dr. William Brown, of Rochester, would like to call attention to one point of diagnosis in a doubtful case. Most of the grave cases were definite, but Williams had called attention to the mild cases where bleeding was going on. That was one of the most valuable diagnostic aids. These cases after extreme hemorrhage might still have slow pulse, out of proportion to the amount of hemorrhage. Here, if a hemoglobin estimation was done quickly, it would be of great value. Moderate bleeding would bring down the hemoglobin to sixty or seventy very quickly.

Doctor Quigley was glad that Doctor Brown had spoken of hemoglobin estimation. Blood pressure was also important. He had not taken time to mention the mortality in ten cases of Cæsarean section. All the mothers recovered, and the fetal mortality was fifty per cent., which was better than the average.

Some Mistakes in the Diagnosis of Ectopic Gestation.—Dr. C. C. Lytle, of Geneva, New York, said that very divergent opinions had been expressed on this subject, some saying that forty per cent. of hospital cases were diagnosed incorrectly, and that fifty per cent. of private physicians failed to recognize the symptoms until after hemorrhage had occurred. Physicians were not sufficiently alert to discover the condition, which was frequently mistaken for acute appendicitis. There was abdominal pain, vomiting, rigidity and often overdue catamenia. Often other conditions, such as pyelosalpingitis, hydrosalpinx, gallstone disease, cholecystitis were mistaken for ectopic gestation. In some cases the symptoms were not so severe as in acute appendicitis. Considerable suspicion should be attached to a menstrual flow from five days to a month overdue, and the character and amount of the flow should be observed carefully. Pain was present in eighty per cent., and a great diversity of symptoms which made diagnosis a difficult matter.

Dr. A. B. Miller, of Syracuse, said physicians of the present day were better educated to recognize the symptoms than in the past, although the specialist saw more of those cases than other men because the cases were referred to him as soon as met with. It was a difficult matter to diagnose ectopic gestation before rupture, although there might be certain characteristic symptoms. If the patient was under observation, and then rupture occurred, the physician might well know that something definite had taken place, but clinical pictures differed so materially that the physician had to reach conclusions by the physical findings.

Dr. William M. Brown, of Rochester, could not agree that the diagnosis should be made in eighty or ninety per cent. before rupture in ectopic gestation. A dispensary patient came in with a typical subjective history of ectopic gestation. There was a somewhat overdue period, with irregular and diminished flow, and other evident signs. Sharp lancinating pains were beginning. There was a perfectly well defined mass on the left side of the uterus, closely associated with it. It seemed perfectly plain that it was an extrauterine sac. He made a diagnosis and tried to induce the patient to come into the hospital. Twenty-four hours later, the neighbors telephoned that the patient was worse, and later the husband telephoned that she was dying. An ambulance was sent and the patient was examined in the ward by the physician and by the intern, all agreeing with the diagnosis. The patient was put on the table and the abdomen opened, and the tube found empty. There was a great deal of confusion and a cry of unnecessary operation. Twenty-fours hours later, the woman passed a fetus from the uterus. It was an extrauterine gestation with tubal abortion, and the mass felt less than three hours before the operation; still the operation was not necessary.

The Treatment of Procidentia uteri.—Dr. George Chandler, of Kingston, New York, said the treatment for this condition was often of no avail unless aided by a suspension apparatus. The uterine ligaments were powerless to hold up the perineum. He had been doing the operation of Kocher as modified by Murphy, in the Trendelenberg position, with a low transverse incision in the crease above the pubis. The recti were separated down to the pubic bone; the uterus was pushed up from the outside through the vagina; if very small, it was pulled up and turned to the right. The peritoneum was sewed tightly round the vagina to shut off the peritoneal cavity. The skin and superficial tissues were pushed upward from the fascia, the fascia was stitched together with catgut, and skin and superficial tissues with silkworm gut. The uterus was let fall into this bed and sutured, and the incision was closed. The tubes and ovaries might be freed from the uterus and dropped back into the pelvic cavity. Following this operation the patient might have pain in the bladder for some weeks, but the technic was simple and the repair good. It was necessary to do the operation as near the pubic bone as possible in order to avoid hernia. This operation had given good results after two and a half years. It should not be done until after the menopause.

Dr. A. B. Miller, of Syracuse, said this operation would have a recognized place, but they must not lose sight of the etiology of prolapse. The physical findings in the pelvis were many and no one special operation would fit all cases. The position of the abdominal contents had to be considered, also that cases should be treated differently before and after the menopause. The tendency to various operations changed from time to time. Doctor Watkins did not now do his vaginal operation as often as formerly, and the Murphy button technic was not so much used, as surgeons found they could do better with sutures. The technic had to be varied according to the case and not vice versa; in other words, the pattern had to be cut according to the cloth.

Dr. George Gray Ward, of New York, would like to know what Doctor Chandler did in a case where the uterus had an interstitial fibrosis. Had he had any experience with the Mayo operation for prolapse? The operation that he had described was not always successful, as was shown in cases after a number of years where the cervix had been firmly fastened to the abdomen. There occurred elongation of the cervix with traction on the vaginal wall below. The increase in the size of the uterus was due to traction on the cervix.

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Letters to the Editors'

ADRENALINE PER OS.

St. Louis, *July 21, 1916.*

To the Editors:

Dr. Leland Boogher's letter (issue for July 8th), in which he mentions my advice to exhibit adrenaline, fifteen minims in water, for colicky pains, would impress the reader as if adrenaline was an analgesic; in your note you call attention to the fact that adrenaline per os has been believed to be inert. It is certainly true that per os it has no systemic effect, but it acts locally. Adrenaline stimulates the sympathetic nerve which, antagonistic to the vagus, induces relaxation of the smooth fibres of the intestinal canal (excepting the three sphincters), while it constricts bloodvessels. It had been observed lately in von Pirquet's clinic in Vienna that in bacillary dysentery adrenaline per os (given to control hemorrhages) would relieve pain promptly, but temporarily, its action lasting about one hour, when the dose had to be repeated. There was, however, no rise in blood pressure nor any other indication of stimulation of the sympathetic—it had not been absorbed. The local effect seems to induce a further (reflex?) action upon the entire length of the intestinal canal, to wit, relaxation (plus spasm of the pyloric, ileocolic, and anal sphincters). It is therefore indicated where such an effect is desired. The response seems to travel also along the bile ducts, relieving a gallstone colic, if not due to inflammation or ulceration. It seems to relieve also some cases of gastric crisis. The same result is attained by intravenous or hypodermic application, only that then a systemic effect would appear which might be contraindicated. A similar local action minus the systemic is observed in inhalation of vaporized adrenaline in bronchial asthma. So the old rule still stands, amended by observation of local manifestations. George Richter, M. D.

A WARNING TO WHOM IT MAY CONCERN; THE TREATMENT OF INFANTILE PARALYSIS.

New York, *July 26, 1916.*

To the Editors:

Since the publication of my Reflections on Predisposing Factors in Infantile Paralysis in the issue for July 29, I have had a talk with Doctor Edward Anthony Spitzka, who assured me that he fully endorsed all that I had to say in that article, including my criticism of the use of adrenaline. This conversation was brought about by the receipt of the following note from Doctor Spitzka:

Dear Doctor Talmey:

I cannot help dropping you a line of approval of your article in the New York Medical Journal today. To the bushel baskets full of ovaries, removed twenty-five years ago, some are attempting to add vats full of tonsils; and —if they could—would add all Peyer's patches.

Edw. Anthony Spitzka.

63 East Ninety-first Street, July 29, 1916.

On Friday evening, July 21st, a prominent daily newspaper published "ten treatment hints for paralysis cases." Among them were the following two: "antiseptics of throat and nose" and "intraspinal injections of adrenaline every six hours." I wish to warn parents and practitioners against these two remedies, which I consider a direct danger to the afflicted children. By applying antiseptics to the nose we should merely be driving infectious material into the ear and into the other accessory nasal cavities. The injuriousness of torturing a child every six hours has been exposed by me in an article which will soon appear in a prominent medical journal. One adrenaline injection may be tried, although the efficacy in children of this mode of treatment is still very doubtful. But to torture a child every six hours would create an injury, chiefly psychical, which could not but diminish the child's chance for recovery. I suggest that this mode of treatment be applied only in monkeys and in afflicted children of physicians who advocate it. When they see the pitiful strugggle of their helpless darlings against their periodical—period six hours—tortures, they will become converted.

In order to bring this warning before the public as soon as possible I applied, on Friday evening, to six great publishing offices, but failed everywhere. On Sunday morning I wrote to the newspaper in which I had read the "ten hints." but so far even this paper has not printed the warning, and I doubt if it will.

I wonder why a subject that concerns every family should fail to reach the public's eye when the most unimportant events and views find some publisher. I further wonder whether the prices of antiseptics and of other remedies have gone up, or are about to go up, soaring high. Max Talmey, M. D.

51 West 126th Street.

SODIUM VERSUS AMMONIUM SALICYLATE IN INFANTILE PARALYSIS.

New York, *July 29, 1916.*

To the Editors:

It was with great interest that I read the special article, Infantile Paralysis, by Dr. Beverley Robinson, in the New York Medical Journal for July 15, 1916, on the treatment of this disease, because since the appearance of the epidemic I have given attention to what should be done in such cases, as the present means are insufficient in the first stages, where destruction of the gray matter in the spine goes on rapidly.

The remedy I should choose is one similar to that proposed by the author, only in a different chemical combination and in greater strength. The dose for ammonium salicylate is 0.25 gram, whereas it is one gram for sodium salicylate, according to the pharmacopeia; and as I believe that the effect depends largely upon the quantity of salicylic acid circulating in the blood and entering all cells and tissues, I prefer the latter salt to the former. If anyone thinks it would be better to administer pure salicylic acid, he will find that this is injurious to the whole alimentary canal and that the acid is soon converted in the body into its sodium salt.

I remember the time when salicylic acid was introduced into the medical armamentarium. The renowned chemist, Kolbe, of Leipzig, through large production made its widespread use possible, and advocated it for internal use as a substitute for carbolic acid, which, at that time, was much employed in surgery, but could not be given internally on account of its poisonous properties. Another remedy belonging to the same group, thymol, cannot take its place either, as its dose is only 1.125 gram.

Experiments with the salicylates were done mostly in 1875 and 1876 by Dr. E. Bälz, at that time assistant in the clinic of Professor Wunderlich, at Leipzig, and later professor of medicine at Yeddo and physician to the Emperor of Japan for twenty-five years.[1] He tried to replace hydrotherapy in typhoid fever by large doses of sodium salicylate, four to six grams once or twice a day (the maximum being twelve grams daily) or eight to ten grams through the rectum, and reported drops in the temperature mostly of 5.4° F., but also of 11° F. and even 11.7° F., without dangerous symptoms, only exceptionally collapse, but no *exitus lethalis*. The duration of the fever and its course were about the same as in cases treated with baths, and the mortality also was four to six per cent.[2]

We now know that sodium salicylate is practically useless in the treatment of typhoid fever; however, we know also that it accomplishes a good deal in polyarthritis rheumatica, for which it was first recommended by Stricker and is nearly as specific as quinine in malaria. And as it is proved that the former disease is also an infectious one, it is obvious that the salicylic salts have an effect on infectious germs in our body, and it is worth while trying them in a disease of contagious character, the remedy for which we are still seeking. Small doses, therefore, do not seem to be right, but rather as strong a solution should be brought into the blood as can be given without danger. In order to determine whether the doses given by Doctor Bälz are not too large in our climate and different surroundings, I—my weight is a little over 150 pounds—took four grams of salicylate of sodium one morning, in doses of one gram every half hour, and the same quantity in the evening of the same day, amounting to eight grams within twelve hours without disagreeable symptoms, except a slight buzzing in the ears and slightly poorer hearing on the next day and with hardly any influence on temperature, pulse, or respiration.

TABLE OF DOSAGE.

If the weight of a 1 year old child is about 23 pounds, the dose for the day would be gram 1.250, or grains 20.

If the weight of a 2 year old child is about 26 pounds, the dose for the day would be gram 1.375, or grains 22.

If the weight of a 3 year old child is about 29 pounds, the dose for the day would be gram 1.500, or grains 24.

If the weight of a 4 year old child is about 32 pounds, the dose for the day would be gram 1.625, or grains 26.

If the weight of a 5 year old child is about 35 pounds, the dose for the day would be gram 1.750, or grains 28.

If the weight of a 6 year old child is about 38 pounds, the dose for the day would be grams 2.000, or grains 32.

If the weight of a 7 year old child is about 42 pounds, the dose for the day would be grams 2.250, or grains 36.

If the weight of an 8 year old child is about 46 pounds, the dose for the day would be grams 2.500, or grains 40.

If the weight of a 9 year old child is about 51 pounds, the dose for the day would be grams 2.750, or grains 44.

If the weight of a 10 year old child is about 56 pounds, the dose for the day would be grams 3.000, or grains 48.50.

It should be given in four doses, two in the morning, half an hour apart, and two in the evening the same way. In case of threatening collapse hypodermic injections of camphor dissolved in oil ought to be given freely.

As regards other procedures in combating infantile paralysis, I am unable to offer any suggestion, for instance about hexamethylenamine. Injections of adrenaline into the spinal canal, proposed by Doctor Meltzer at the meeting of the New York Academy of Medicine, July 13th, may prove to be the best of all the means yet proposed.

OSWALD JOERG, M. D.

Book Reviews

Cerebellar Abscess: Its Etiology, Pathology, Diagnosis, and Treatment. Including Anatomy and Physiology of the Cerebellum. By ISIDORE FRIESNER, M. D., Adjunct Professor of Otology and Assistant Aural Surgeon, Manhattan Eye, Ear, and Throat Hospital and Post-Graduate Medical School, New York, and ALFRED BRAUN, M. D., F. A. C. S., Assistant Aural Surgeon, Manhattan Eye, Ear, and Throat Hospital, Adjunct Otologist, Mt. Sinai Hospital. With ten full page plates and sixteen illustrations in the Text. New York: Paul B. Hoeber, 1916. Pp. 179. (Price, $2.50.)

As the authors announce in their preface to this book, they have attempted to outline briefly the anatomy and physiology of the cerebellum as a basis for that neurological knowledge with which the surgeon must be equipped in order to cope with the problem of cerebellar diagnosis. It may be said that they have been successful in their attempt, and the result is a useful book of reference to surgeons who are engaged in work of this nature and indeed to the general practitioner. The majority of the cases of cerebellar abscesses are of otitic origin and come within the province of the specialist with regard to diagnosis and treatment; consequently, a work dealing with cerebellar abscess is timely. The authors present the subject clearly, the illustrations sufficiently illuminate the text, and the work should prove useful and instructive.

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Interclinical Notes

Dr. I. M. Rubinow discusses Health Insurance in the *Survey* for July 15th; he talks about the "enthusiastic reception" with which plans have been greeted. Workmen may have shown this kind of excitement, but it has been conspicuously absent among physicians in general practice. The doctors who have taken up the question seriously are those on salary from industrial plants, whose problems are quite different from those of the regular practitioner. The fees now in vogue have been established, as prices used to be elsewhere, by the law of supply and demand, minus any chance of control by a "trust."

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To manufacture smokeless powder, the only kind used in warfare, alcohol is required. P. Lincoln Mitchell discusses in *Leslie's* for July 13th the mental attitude of congressmen who are ardent for preparedness, but equally enthusiastic for prohibition. The only places where we could get large quantities of alcohol in a hurry are the distilleries. They could furnish enough for the daily manufacture of about eight million pounds of smokeless powder. Captain Mitchell states that this quantity is far below what is being exploded in the present war, and reminds us that alcohol would also be needed for industrial purposes and in medicine, and, furthermore, that it is extremely volatile. The question demands, as he says, the deepest study and most careful consideration.

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Paul J. Banker writes an amusing article on Comma Hounds in *Commerce and Finance* for July 12th; it discusses people who are severe critics of slips in English, especially of misplaced or missing commas. The trouble with such people is that they fall foul of idiomatic English. They object to such phrases as "than whom," which do not bear analysis, but cannot be replaced.

* * *

Commerce and Finance for July 5th has something to say concerning disease. Paul J. Banker writes on the cure of cancer and on a new use for radium, viz., its offer as security for a loan. Reposing in three tubes, 105 mgm. of radium are now in the vault of a Chicago bank, hypothecated for $250,000. The article on The Problem of Price Maintenance has nothing to do with the editor's income from the periodical. We presume that Mr. Price is aware of the venerable age of the polysyllabic contribution he prints under the caption, A Cruel Criticism, which we have often seen before, including the slip in French, *double entendre* for *double entente*.

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[1] *Archiv der Heilkunde*, 1877, pp. 60 and 344.

[2] When I was in charge of the same ward at the Leipzig Hospital, previous to Dr. E. Bälz, there were no deaths in 120 consecutive cases, all treated with hydrotherapy, but more energetically.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 26, 1916:

Boggess, John S., Surgeon. Relieved at San Francisco, Cal., and take temporary charge of the Service at Seattle, Wash., effective August 1, 1916.

Collins, G. L., Surgeon. Directed to proceed to Milwaukee and other points in the State of Wisconsin for studies of the visual condition of female workers.

Cox, O. H., Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Cumming, H. S., Surgeon. Directed to proceed to Philadelphia, Pa., relative to repairs to steamer *Murray*.

Foster, M. H., Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Fricks, L. D., Surgeon. Granted one week's leave of absence en route to Washington, D. C.

Glover, M. W., Surgeon. Granted one month's leave of absence from July 20, 1916, on account of sickness.

Heaton, W. D., Assistant Surgeon. Directed to report to the commanding officer of the Coast Guard cutter *Seminole*.

Herring, R. A., Passed Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Hetterick, R. H., Passed Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Ivey, R. R., Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Kalloch, P. C., Senior Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Lavinder, C. H., Surgeon. Directed to report to Washington for conference relative to the outbreak of poliomyelitis.

Lloyd, B. J., Surgeon. Granted five days' leave of absence from July 21, 1916.

Murray, Vance B., Assistant Surgeon. Continued on duty at the Marine Hospital, San Francisco, Cal.

Oakley, J. H., Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Parcher, George, Passed Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Pettus, W. J., Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Robinson, D. E., Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Safford, M. V., Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Schereschewsky, J. W., Surgeon. Directed to proceed to Madison and other points in the State of Wisconsin, to supervise studies of female workers now being conducted in that State.

Schwartz, Louis, Passed Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Smith, H. F., Assistant Surgeon. Directed to proceed to New York for duty in the investigation and suppression of poliomyelitis.

Smith, L. H., Assistant Surgeon. Directed to report to the commanding officer of the Coast Guard cutter *Onondaga*.

Stewart, P. M., Assistant Surgeon. Directed to proceed to New York for duty in the investigation and suppression of poliomyelitis.

Stoner, J. B., Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Thompson, L. R., Passed Assistant Surgeon. Directed to proceed to New York for duty in the investigation and suppression of poliomyelitis.

Weldon, L. O., Assistant Surgeon. Granted three weeks' leave of absence from August 1, 1916.

Appointments.

Dr. Vance Butler Murray, Dr. Lendon Howard Smith, Dr. William Daniel Heaton, and Dr. Robert Robbins Ivey appointed and commissioned as Assistant Surgeons from date of oath, July 14, 1916.

Boards Convened.

Boards of medical officers convened for the physical examination of members of the Coast Guard for promotion as follows:

Bureau, 3 "B" Street, S. E., Washington, D. C., July 31, 1916. Detail for the board: Assistant Surgeon-General W. G. Stimpson, chairman; Passed Assistant Surgeon W. F. Draper, recorder.

Marine Hospital, Detroit, Mich., July 24, 1916. Detail for the board: Senior Surgeon H. W. Austin, chairman; Surgeon H. W. Wickes, recorder.

Marine Hospital, Stapleton, N. Y., July 24, 1916. Detail for the board: Senior Surgeon George W. Stoner, chairman; Surgeon A. D. Foster, recorder.

Marine Hospital, Baltimore, Md., July 24, 1916. Detail for the board: Surgeon J. A. Nydegger, chairman; surgeon C. W. Vogel, recorder.

610 American National Insurance Building, Galveston, Tex., July 24, 1916. Detail for the board: Surgeon L. P. H. Bahrenburg, chairman; Surgeon R. L. Wilson, recorder.

Marine Hospital, Mobile, Ala., July 24, 1916. Detail for the board: Surgeon John T. Burkhalter, chairman; Acting Assistant Surgeon W. T. Deaver, recorder.

Marine Hospital, Port Townsend, Wash., July 24, 1916. Detail for the board: Passed Assistant Surgeon B. H. Earle, chairman; Acting Assistant Surgeon P. I. Carter, recorder.

Marine Hospital, Chelsea, Mass., July 24, 1916. Detail for the board: Passed Assistant Surgeon W. M. Bryan, chairman; Passed Asistant Surgeon R. A. Kearny, recorder.

Births, Marriages, and Deaths

Married.

Bancroft-Crouse.—In Philadelphia, Pa., on Thursday, May 18th, Dr. J. W. Bancroft and Miss Mary Catherine Crouse.

Moleen-Conway.—In Denver, Col., on Thursday, July 20th, Dr. George Arnold Moleen and Mrs. Mary L. Conway.

Died.

Ashford.—In Portland, Ore., on Wednesday, July 12th, Dr. J. W. Ashford.

Hall.—In Conshohocken, Pa., on Tuesday, July 25th, Dr. William M. Hall, aged fifty-six years.

Heady.—In Glendale, Ohio, on Monday, July 24th, Dr. James F. Heady, aged sixty-four years.

Jennings.—In Hot Springs, S. D., on Tuesday, July 11th, Dr. Rudolphus D. Jennings, aged sixty-three years.

King.—In New London, Conn., on Friday, July 14th, Dr. John A. King, aged forty-four years.

Langley.—In Angelica, N. Y., on Saturday, July 22nd, Dr. William Langley, aged forty years.

Leger.—In Bayland, Texas, on Wednesday, July 12th, Dr. A. E. Leger, aged seventy-four years.

Longino.—In Fairburn, Ga., on Thursday, July 20th, Dr. John T. Longino, aged forty-seven years.

Lovett.—In Norman Park, Ga., on Friday, July 21st, Dr. William Lovett, aged thirty-four years.

McKelvy.—In Denver, Col., on Thursday, July 13th, Dr. William McKelvy, aged sixty-two years.

McKelveen.—In Chariton, Iowa, on Sunday, July 16th, Dr. John A. McKelveen, aged eighty years.

Marsteller.—In Washington, D. C., on Sunday, July 23rd, Dr. Emlyn H. Marsteller, aged sixty-five years.

Murray.—In Atlanta, Ga., on Thursday, July 20th, Dr. Price E. Murray, aged sixty-three years.

Oberg.—In New Bedford, Mass,. on Monday, July 17th, Dr. Charles H. Oberg, of Hot Springs, Ark., aged thirty-seven years.

Paxson.—In Christiana, Pa., on Sunday, July 23rd, Dr. Oliver H. Paxson, aged sixty-two years.

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Original Communications

THE STORY OF DEMENTIA PRÆCOX.*

By Francis X. Dercum, M. D.
Philadelphia.

The story of dementia præcox begins before the foundation of the organism is laid. The building material is imperfect, poor in quality, vitiated, so that the resulting structure crumbles and gives way under its own strains. All observers are agreed as to the large proportion of hereditary factors in dementia præcox. These are variously estimated at from fifty-two per cent. (Schott) to ninety per cent. (Zablocka). The wide variation in the percentages of different observers is probably due to differences of view as to what should be included, first, in the general term of hereditary factors, and, secondly, as to what affections should be included in the general conception of dementia præcox. Kraepelin at one time found hereditary predisposition to mental diseases in seventy per cent. of his cases, though he thinks that this may possibly have been too high. He states that when the inquiry was limited to the direct heredity, i. e., to the occurrence of mental disease, suicide, or severe brain affections in the parents, it yielded 33.7 per cent., which he again regards as too low. No matter how we approach the subject, however, the facts justify the general conclusion as to the relative frequency of neuropathic family histories in dementia præcox. In such family histories should be noted not only crass instances of mental disease, but also the occurrence of eccentric or unusual personalities, criminals, prostitutes, tramps, vagabonds, misfits, and failures generally. We cannot but be impressed by the wide variations in the hereditary findings in dementia præcox when compared with the relatively limited and definite character of such findings in manic depressive insanity.

It is undoubtedly significant that every now and then dementia præcox occurs in a number of individuals in the same family. Kraepelin states that he knows a large number of such instances. Personally I have knowledge of one family in which no fewer than five individuals acquired this disease. Dementia præcox is only infrequently transmitted from parent to child, as the great mass of cases develop before parenthood is established. This statement must, of course, be modified in so far as we include the paranoid—that is, the older cases—under the general caption of dementia præcox. It is true, however, of the great mass of hebephrenics and catatonics. Further, not only are instances of dementia præcox met with in the same family, but other affections as well, such as epilepsy and hysteria, and at times also, though infrequently, manic depressive insanity.

What is it that is transmitted to an organism from a diseased parent stock? In what way is the germ plasm affected? While we are as yet unable to give a definite answer to these questions, the fact of the transmission of impairment or defect cannot itself be questioned. The French have a very happy expression to convey this idea, they speak of *tares héréditaires,* the hereditary blemishes; while the Germans employ the very expressive term, *hereditäre Belastungen,* the hereditary burdens. Rüdin, from studies made of Kraepelin's material, comes to the conclusion that dementia præcox is probably transmitted in accordance with the Mendelian law and appears as a recessive quality. In favor of this view he regards the marked predominance of the collateral and discontinuous inheritance over the direct inheritance, the increase of dementia præcox resulting from inbreeding, and the numerical relation of those attacked to those remaining normal. He found in the families which he studied also other affections, namely, manic depressive insanity and eccentric personalities, and further that it was not at all infrequent for manic depressive parents to produce children with dementia præcox, while the reverse—namely, manic depressive children from dementia præcox parents—belonged to the rare exception. Granting the possible transmission of dementia præcox in accordance with the Mendelian law, it is also evident that other factors which directly and grossly affect the vitality and development of the organism variously play a role. For instance, Rüdin noted that late born or last born children suffered more frequently from dementia præcox than others; again, that immediately preceding or following the birth of a præcox patient there was frequently a history of miscarriage, premature birth, or stillbirth. Of equal significance are the physical and psychic stigmata of deviation and arrest that are found in individuals who acquire dementia præcox. Saiz states that the frequency of the occurrence of the physical stigmata is seventy-five per cent. Among the latter are physical feebleness, retardation of growth, a too prolonged juve-

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*Read before the Philadelphia Psychiatric Society, May 12, 1916.

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nile appearance, malformations of the skull, deep and narrow palate, persistence of the intermaxillary bone, abnormalities of the ears, fingers, or toes, imperfections and anomalies of the teeth, and allied peculiarities.

Facts such as the foregoing would suggest that in addition to the special *tare* or blemish, the *Belastung* or burden—which the germ plasm transmits in accordance with Mendel's law—the germ plasm may also suffer from impairments that affect its general morphological and biological character and profoundly alter and lower its possibilities of growth and development. Among causes which may thus grossly impair the germ plasm, we have reason to believe, are infections and intoxications affecting the parent. Pilcz, Klutscheff, and others have published suggestive statistics as to the frequency of syphilis in the parents. That syphilis may play a role is extremely probable on other grounds. The fact that the Wassermann reaction is found in a not inconsiderable proportion of dementia præcox cases, e. g., by Bahr in 32.1 per cent., is of extreme significance. Such findings do not mean that the patients are suffering from a disease of the nervous system due to inherited syphilis, but that the organism as a whole has been hampered, made deviate and degenerate in its development by the presence of the spirochete and its toxins; i. e., that the evolution of the organism as a whole—and included in this the development of its glands of internal secretion—has been so inhibited and altered that at a given point in its life the organism breaks down by reason of an abnormal and toxic metabolism.

The clinical evidences of inherited syphilis are absent in the great mass of dementia præcox cases, and it is not necessary that the Wassermann or other tests should yield a positive result; it is sufficient that the infection has damaged the germ plasm of the parent. Again, that alcohol likewise damages the germ plasm hardly admits of doubt. Diem, Fuhrmann, Rüdin, Wolfsohn, and others have published studies, alike suggestive and significant, on the alcoholism of parents in dementia præcox. Whether other poisons and intoxications play a role in bringing about damage to the germ plasm, we are obviously unable to say, but such action is neither impossible nor improbable. In any event, however, it must be vastly less important than the action of syphilis or of alcohol.

To recapitulate: It seems justifiable to assume, first, that the germ plasm in dementia præcox may be laden with a direct tendency to the development of dementia præcox, a tendency which may possibly, as Rüdin believes, be transmitted as a recessive quality in conformity with Mendelian principles: secondly, the germ plasm may suffer from a gross impairment the result of syphilis, alcohol, or more rarely of other infections or intoxications.

The first cause could be operative without the second; both causes could be operative—and probably frequently are operative—together. Whether the second cause could be operative alone, is a question at first sight difficult to answer. To me the answer seems to depend upon whether we are to regard dementia præcox as a specific clinical entity —such as manic depressive insanity—or whether we are to regard it as a group of mental affections all of which present the one common factor of endogenous deterioration. If we take the latter view, we may unhesitatingly answer the question in the affirmative.

I shall not pause to discuss the possible role in etiology of infections—i. e., the exanthemata—and traumata, affecting the individual. Certain it is that our clinical histories do not justify the assignment to them of a causal value, or at most only remotely or in rare instances, perhaps, the role of exciting causes. Whether infections in early life may so affect the glands of internal secretion as to lead later to the development of dementia præcox, is a possibility, but has little evidence upon which to rest.

The conception of dementia præcox which I have thus far endeavored to outline, is that of an organism which has its beginnings in a germ plasm defective and abnormal, and whose subsequent development is necessarily imperfect and deviate. It means that the organism as a whole is involved. This also must be inferred from the presence of such evidences of morphological deviation as are visible to clinical observation; these merely imply that other and fundamental deviations are present in the organism throughout. Such an organism must present not only abnormalities of its structure, but also abnormalities of function and especially of its metabolism. Various facts point to anomalies of the internal secretions. For instance, it is not infrequently noted that the thyroid gland varies in size from the normal; frequently it is unusually small, though occasionally enlarged. Autopsies have shown (Dercum and Ellis) that it is frequently only half the normal weight, while the adrenals are frequently double the normal weight. The role that other glands such as the thymus may play in dementia præcox, has been pointed out by Sajous. Indeed it is extremely probable that the entire chain of ductless glands may participate. Clinically our attention is strongly attracted to the sex glands. There are the anomalies of menstruation, the delayed and imperfect establishment of puberty on the one hand, or of sexual precocity on the other. Again, there is the history of sexual excesses, sexual vagaries, and perversions. A relation to the sex glands is further indicated by the accentuation of symptoms often observed during a menstrual epoch and by the fact that dementia præcox now and then has its incidence in a pregnancy or in repeated pregnancies, or in a miscarriage, as though sex gland exhaustion played a role. Tsisch, Lomer, and Kraepelin have all assigned importance to the sex glands. Lomer, particularly, indicated a disturbance of the internal secretion of the latter, but it remained for Fauser to throw an especially illuminating light upon the subject. It would appear from Fauser's investigations that in dementia præcox unchanged sex gland protein—an abnormal internal secretion of the sex gland—enters the blood and that in the subsequent breaking up of this protein, substances—defensive ferments—are formed which are poisonous to cortical tissue and which bring about the destruction, the lysis of the latter. Fauser's results, as I have pointed out in a previous paper, have been confirmed by a large number of other investigators. Whatever the future may reveal, there is no escape from the conclusion that in dementia præcox there is a deranged metabolism, an autotoxic state, in which abnormalities of the internal secretions play a dominant role; that the internal secretions of the sex glands are especially involved is extremely probable.

When we turn our attention to the mental symptoms presented in dementia præcox cases, we are impressed by the fact that in the beginning the symptoms are not those of dementia, but those of confusion, just such symptoms as we should expect in a toxic state. The onset of symptoms is gradual, usually bearing the character of a confusion, sometimes with elements of systematization and accompanied by exhaustion. The elements of confusion, dissociation, hallucinations, illusions, unsystematized or feebly systematized and fragmentary delusions, are all present in a more or less dominant degree. Years ago, Régis, Christian, Anglade, Macpherson, Sérieux, Trepsat, Dide, and others frankly treated this mental state as a confusion, and this is an interpretation which I have myself emphasized. A word that Kraepelin frequently employs in describing it is *Zerfahrenheit,* which can only be rendered as confusion or dissociation. Admitting freely the fact of confusion, however, it soon becomes evident that other elements are present which demand consideration. First among these is the element of exhaustion. A recognition of this factor is of the utmost importance. In it I believe lies in a large measure the explanation of some of the symptoms which seem special or peculiar to dementia præcox. There is in dementia præcox, as in psychasthenia and in hysteria, a diminution in the activity of the field of consciousness. Janet has expressed this idea by the words, *abaissement du niveau mental* (lowering of the mental level). I have myself in various papers used the expression "reduction of the field of consciousness" to convey the same idea. Weygandt, in discussing the psychology of the mental feebleness in dementia præcox, terms the end process of the disease an "apperceptive dementia." I do not think that much is gained by the use of this term. According to Wundt, apperception is the special process by which any psychic content is brought to clear apprehension. Into such a process many factors must enter—an act of will, the multiple qualities of the object or idea, the sensations, emotions, and, as a corollary, the impulses to which these necessarily give rise. Evidently an apperception embraces many if not all of the factors of psychic activity, and to speak of an apperceptive dementia conveys little more than to speak of dementia as a whole. Further, Weygandt, it is to be noted, applies the term only to the end process of dementia præcox. Dementia præcox, as we all know and as has already been emphasized in this paper, is not a dementia in the beginning, but only in the more advanced stages of the disease. The term, apperceptive dementia, is not, therefore, as Jung would have us believe, the equivalent of Janet's term, "depression of the mental level," and if we strive to modify it by changing it into "apperceptive weakness" little is gained for the reasons already indicated. Janet's term, which forms the keystone of his conception of psychasthenia, is applied to the dynamic state of the mind. Psychasthenia is essentially a state of psychic adynamia. This is exactly the idea that is conveyed by the term "depression of the mental level." It is a condition of the mind in which the force, the intensity of its processes is lowered. The mind in such a state is like a fire which, instead of burning brightly, is reduced to embers it may be, barely glowing. It is not a state, however, which necessarily implies disintegration, deterioration, or dementia.

The existence of such a diminished activity of the field of consciousness can, I think, be admitted without hesitation. It is essentially a state in which the intensity, the vigor of the metabolic processes of the cortex are lessened, just such a state as we have reason to believe exists in psychasthenia. When we fully appreciate this fact, it illuminates much in the symptomatology of dementia præcox that seems obscure. Let us briefly consider some of the symptoms. The slowness of speech and poverty of thought, which eventuate in mutism, in catatonia, in stupor, find their measure of explanation in an adynamic state. This is also true of fixation of position, stereotypy, automatism, perseveration, verbigeration. Here the psychic current, which in the normal mind is like a river broad and deep and easily flowing, has been reduced to a shallow, a narrow, and a monotonously trickling stream. Continuous or interrupted, it is the only thing that remains in the field of consciousness. Jung and others have thought that its monotony, its sameness, is due to the fact that the entrance of other associations into the stream is inhibited or blocked; but surely dams, obstructions, are not necessary when the beds of the tributary streams are dry, for we must remember that the cortex is adynamic as a whole. Again, it would appear that the adynamic state of the cortex does not involve the latter equally or uniformly and, here and there, now and anon, tributary currents join what is left of the main stream, but they do so irregularly, at unusual points, and at variance with the orderly sequence of normal psychic processes. We find that instead of normal associations, mere sound associations, associations of coarse resemblances, and of mere contiguity are produced.

Again, it may happen that the field of consciousness is more greatly reduced dynamically than the cortex as a whole or than other portions of the latter. Now, it is probable that under normal conditions, the activity of the psychic field is so great that it diffuses to and beyond the boundaries of consciousness, but if the activity of the psychic field is relatively diminished, it results dynamically that the direction of the diffusion is reversed, and that other activities now flow into this less resistant field. These activities probably consist of complexes—of groups of associated ideas—of greater relative dynamic power. Negativism probably finds its explanation in the fact that every impulse or feeling is represented in the psychic makeup, not only by a positive complex, but also by its exact opposite; indeed, it is probable that the positive complex owes its existence to its differentiation from the general psychic material, which thus becomes its negative. Now it would seem that in the lowered, adynamic state of the field of consciousness the positive complex cannot find expression; of necessity, its opposite, being dynamically stronger, flows into the field and finds expression. The symptom to which Bleuler has given the name, ambivalence, and which consists in the tendency of the patient to give expression equally to opposing impulses, has, it would seem, a similar explanation and need not detain us. It may be pointed out, however, that ambivalence is first cousin to the symptom of indecision of the typical psychasthenic. Again, the aboulia of catatonia also finds a ready explanation in the adynamic mental state. Further, the lack of inhibition, impulsivity, clownism, mannerisms, special gestures are also rooted in the same condition. The particular picture presented by a given case at a given time is obviously linked with the nature and character of the thought or psychic process that is persisting in the narrowed field of consciousness. It is not surprising, for instance, that a tailor should make recurring movements of sewing or a woman of washing or wiping. Our Freudian friends, however, see in such phenomena the persistence of repressed complexes.

The hallucinations present in dementia præcox are due apparently to the toxic irritation of sensory areas of the cortex. The excitation resulting breaks in an unrelated manner into the field of consciousness, and the impression produced on the mind of the patient is that of a sensation of extraneous origin. No wonder that the patient refers the noises and the voices to the external world. In such a case a separate portion of the personality addresses itself to the main body of consciousness. Very frequently, indeed, almost always, visceral hallucinations and often sexual hallucinations are also present. The delusions—and I am speaking now mainly of the hebephrenic and catatonic forms—are often feebly held, commonly disconnected and disordered, and at most but poorly systematized. What a fertile field, what a wealth of repressed sexual complexes, they have yielded to the psychanalyst I need not say. That the portion of the cortex irritated by the toxin may be other than a sensory area need hardly be pointed out. In this way long buried associations—associations which have no relation to the subject matter of the field of consciousness—may break in just as do hallucinations. That such associations are regarded as strangers by the psyche of the patient can also be readily understood. At other times, owing to the low dynamic tension of the field of consciousness, associations long dormant may diffuse into the field, may become incorporated with the stream of thought, and may greatly modify the clinical picture presented; and that this enters into the explanation of such symptoms as impulsivity, clownism, special gestures, and the like is extremely probable.

Bleuler, in his article on dementia præcox in Aschaffenburg's *Handbuch der Psychiatrie,* makes a most elaborate subdivision of the mental symptoms, a subdivision which I believe, instead of illuminating the subject tends to add to its obscurity. I shall not, for instance, take up the subject of autism and autistic thinking. To me it seems quite natural that a patient in a condition of psychic adynamia and suffering with numerous visceral or, better, cenesthetic hallucinations, should be taken up with his own world of self, with its persecutions or its expansions; which last our Freudians translate into wish fulfilments. I cannot understand, however, why this autism should be given a sexual character as is done by the psychanalyists; Freud, for instance, employs in its stead the term autoerotism; but it is difficult for that matter to understand the psychanalyst's attitude at all, especially when as Bleuler says the only treatment for dementia præcox is the psychic treatment. Inasmuch, he tells us, as the symptomatology of the disease is dominated by the complexes, and as these enable us to penetrate into the psyche of the patient, we should expect to be able in this manner to influence them. To talk of psychanalysis as a treatment for a patient with the earmarks of defective development, a positive Wassermann, a toxic metabolism, defensive ferments, and what not, is to my mind very much like attempting to treat a broken leg or a typhoid fever by the same method.

Thus far we have considered the toxemia and the psychasthenic or psychadynamic background of the disease. A word is still necessary to complete the picture—outline picture only though it is—of the symptoms. The disease is essentially one of adolescence, one of the developing period of life, and is usually gradual in its course. Both factors permit for a longer or shorter period, the preservation in many cases of a relatively high degree of lucidity. This lucidity becomes impaired in proportion as disturbed and hallucinatory or stuporous states are established. During this relative lucidity perception is good, illusions are infrequent and often altogether absent. That orientation under these circumstances should be well preserved is exactly what we should expect. For a like reason, memory is good, not only for the period preceding the onset, but for a long time thereafter. Like the lucidity and orientation it may show impairment or loss only during and for the periods of disturbed and stuporous states. In the terminal stage the memory suffers along with the other faculties.

The story of dementia præcox begins, as we have seen, with an impaired germ plasm. It deals with an organism defective and deviate in its development, a quality which involves the nervous system as well as the other structures. In the course of its development the organism becomes toxic through a metabolic breakdown and as a result of the mere strain of living. The cortex, already feeble and with diminished resistance, becomes a prey alike to exhaustion and intoxication, and the subsequent course is one of deterioration, and the final chapter one of dementia.

That under circumstances like these the clinical picture should vary greatly is not surprising. How much individual cases differ from each other we all know, and the tendency to separate out from the great mass of cases special forms is well illustrated in the last, the eighth edition of Kraepelin's *Psychiatrie,* in which no less than eight forms are differentiated. Careful clinical studies will greatly increase our knowledge of the details of the course and the final outcome of the different symptom groups, but I venture the prediction that the original classification into the hebephrenic, catatonic, and paranoid forms as presented in Kraepelin's original generalizations, modified it may be by subdivisions, is the one which will survive.

To my mind also, Kraepelin has gone too far in embracing under the generalization of dementia præcox the hallucinatory paranoid states of the adult. Purposes of study and of clinical distinction are best served by limiting the conception of dementia præcox to the endogenous deteriorations of adolescence. Besides—a fact which Kraepelin himself well recognized—the paranoid dementias of youth and beginning of adult life present striking differences both in the less definite, less fixed character of the delusions and by a much more rapid evolution and course. Indeed Kraepelin early differentiated them as a separate form, speaking of them as paranoid dementia of the *first* form. Other writers, among them Mendel, Schüle, and Siemerling, have done the same thing, employing the expression paranoia acuta. The French likewise have given it a special name. Magnan calls it the *délire d'emblée des dégénérés* because of its rapid evolution, while other French writers have called it *délires systématisés aigus.* It is an insanity of the adolescent period and seems to form a natural group with hebephrenia and catatonia.

The paranoid dementia of the adult is vastly slower of evolution, is of lifelong duration, and presents a degree of fixation, systematization, and lucidity which is in crass contrast with the juvenile form. For the adult form I much prefer the more distinctive term, hallucinatory paranoia. In his seventh edition Kraepelin describes it as the *second* form of paranoid dementia; in his eighth edition he has abandoned the term paranoid altogether as applied to this group of cases and has substituted the word paraphrenia. To my mind this does not improve matters, for the words paraphrenia and paranoia mean essentially the same thing. Finally Kraepelin does violence—and I say this with all due deference—in separating so widely the lucid paranoia of the adults, i. e., the paranoia simplex of Ziehen, the paranoia chronica of Siemerling, the *Verrückiheit* of Westphal and Sander, the *délires systématisés des dégénérés* of Magnan, from the other paranoid forms.[1]

In conclusion, I wish to speak of but one other point. Bleuler has devised and proposed as a substitute for the name, dementia præcox, the word schizophrenia, an expression which means cleft or divided mind. That the mind in dementia præcox reveals dissociations, fissurations, cleavages, no one will attempt to deny, but this is a quality which it shares with many other forms of mental disease and especially with those far removed states, hysteria and hypnosis. The term, schizophrenia, is not distinctive and I trust it will not survive. Perhaps in the future some term will be invented which will convey the idea of endogenous deterioration in adolescence, but until then we had best adhere to the name, dementia præcox.

1719 Walnut Street.

[1] The space assigned to me forbids an extended discussion of this question here on my part.

CONGENITAL SYPHILIS.[*]

The Prognosis and Modern Treatment,

By Fred Wise, M. D.,

New York.

Instructor, Dermatology and Syphilology, Columbia University; Chief of Clinic, Dermatological Dispensaries, Mt. Sinai and Beth Israel Hospitals.

At the very beginning I must ask my readers to resign themselves to the perusal of a paper, the substance of which is based chiefly upon and derived mainly from the investigations of those whose opportunities have enabled them to care for many cases of congenital syphilis. These investigators have gained their knowledge and have formulated their data in their capacity of medical officers in large institutions, in this country and abroad. They were enabled not only to administer antiluetic treatment to their congenitally syphilitic charges, but also to follow up their cases and to observe the effect which the treatment had upon the clinical and serological manifestations of their patients. As to my own knowledge of the subject, what little I know has been gained, in great part, by reading the current literature. Though it is true that syphilitic patients form a large proportion of the clinical material which I encounter in my daily work, it is equally true that the congenital type of the disease represents only a very small fraction thereof.

It is the prevalent opinion that in congenital syphilis, the effects obtained by modern methods of treatment are not as productive of good results as is the case in acquired syphilis. This view has been fortified, in recent years, by data based upon microscopic and serological investigations in congenitally luetic individuals. According to E. Welde (1), however, recent workers in this field have shown a strong tendency toward a more optimistic attitude. In former years, for example, the prognosis was considered good only in breast fed infants. Nowadays, it is admitted that artificially fed infants may thrive and get well, other factors being favorable (Finkelstein).

Congenital syphilis has shared with acquired syphilis the benefits derived from the recent discoveries in the bacteriology, serology, and treatment of the disease. The good results obtained today in the treatment of congenital syphilis, are due partly to these discoveries, but also to the more accurate knowledge of the principles of infant feeding and the general care of the luetic infant.

TREATMENT.

The signs and symptoms by means of which congenital syphilis may be recognized have frequently been described. Having arrived at the diagnosis, the next step is immediately to combat the spirochetal septicemia, with the same energy and expedition as we now know is essential in cases of recently acquired syphilis in older patients.

Beside the specific treatment, however, we must also bear in mind the necessity of directing our efforts toward alleviating the nutritive and other functional disturbances which the infant may present, and, in the majority of cases, does present. When-

[*] Read before the Regular Meeting of the Bronx Medical Society, Wednesday, March 15, 1916.

ever possible, the mother should nurse her child. Should this be not feasible, for one reason or another, the next step (according to most European authors) is to employ a wetnurse who is known to suffer from syphilis. This nurse is to be apprised of the fact that she is to suckle a syphilitic child. In cases where the mother is obviously and actively syphilitic, but has given birth to a child who is apparently in good health, breast feeding by the mother is, of course, not to be thought of. But if the mother has received adequate and thorough antisyphilitic treatment before and during the period of gestation, and therefore is the subject of so called latent syphilis, she may be permitted to suckle her newborn child. Should this again be impracticable, a wetnurse in an analogous stage of syphilis may be substituted (F. Hell).

With reference to the familiar phenomenon manifested by an actively syphilitic woman giving birth to an apparently healthy child, attention should be directed to the well established fact that a negative Wassermann reaction in a newborn child does not exclude the presence of syphilis, and that weeks, or even months may elapse before it presents symptoms of the disease, or before the Wassermann test becomes positive. In all cases, therefore, where the mother is known to suffer or to have suffered from syphilis, we must keep a watchful eye on her apparently healthy offspring, we must make frequent and systematic examinations of the patient's skin and mucous membranes, and blood tests must be performed at certain intervals over a period of several months.

Lues hereditaria tarda is considered by most authors to be a manifestation of a recurrence or récidive of the disease which had existed in infancy and in which the clinical symptoms disappeared rapidly, with or without adequate treatment. True cases of lues hereditaria tarda can be proved to be such only if the child had been under constant clinical and serological surveillance during its entire lifetime, had had no clinical or serological manifestations of syphilis in infancy, but did present syphilitic lesions and a positive Wassermann test in later life (Welde). Kaposi, Neumann, Fournier, Heubner, and others denied the existence of a true syphilis tarda, but permitted the designation when referring to cases which manifested the first symptoms of congenital syphilis in later childhood years. Sprinz believes that the majority of cases designated as syphilis tarda by most authors, present the first symptoms of congenital disease between the twelfth year and puberty; and that cases of syphilis tarda do not occur after the third decade.

In former years it was attempted to treat infants indirectly through the milk of mothers, wetnurses, cows, goats, etc., which had been subjected to courses of mercurial medication. The same method has also been tried with salvarsan. Taege, Duhot, Neisser, Scholtz, Freund, and others administered salvarsan to the child, indirectly, through the mother's breast milk. Jesionek obtained fair results by giving the child milk from a goat, to which salvarsan had been administered intravenously. These results were, however, rather variable and inconstant. It was then attempted to administer salvarsan intramuscularly, but this was abandoned on account of local necroses. The technic was improved later, so that satisfactory results were obtained by Galewsky, Herxheimer, Schoenfeld, Ritter, Schreiber, and others. In spite of improvements in the technic, however, necroses still occurred. It was only with the advent of neosalvarsan that these objections were overcome. Neosalvarsan may be administered intravenously if there are prominent veins; if not, it may be given intramuscularly.

According to F. Hell, treatment is begun as soon as the diagnosis is certain. Due importance is placed upon general hygienic measures, especially breast feeding. Sublimate baths and calomel internally have been discarded, the former on the ground of inefficacy, the latter on account of gastrointestinal disturbances. Mercury is administered by inunction or by intragluteal injections. Inunctions are given daily, for six days, on the seventh day a bath, and in this way are continued from four to six weeks. Unguentum cinereum (0.3 to 0.5 gram daily) is gently rubbed on the arms, legs, chest, and back, on successive days; each rubbing takes from five to ten minutes. If sublimate injections are employed, they are given twice weekly, in doses of 0.003 to 0.005 gram (sublimate 1.0, sodium chloride 10.0, distilled water 100). They are well borne, even when the gluteal musculature is poorly developed (M. Scheer, 2). Salvarsan is never used, on account of danger of necrosis. After preliminary mercurial treatment, neosalvarsan is administered weekly, for four to six injections, in doses of 0.005 to 0.15 gram, dissolved in a little distilled water. It is given intravenously, in the temporal veins or intragluteally. (M. Scheer, 2.)

The treatment is controlled by the Wassermann test. It is much harder to make this negative and to keep it negative in congenital, than in acquired syphilis. After a few months, every case receives a second course, most receive a third, and a few a fourth. If this method of treatment is conscientiously carried out, the outlook for the syphilitic infant will be more hopeful than with previous methods of treatment.

In recent years Erich Mueller (3), of Berlin, has prolonged the period which he formerly thought sufficient for a course of treatment in children with congenital syphilis. Mueller now gives eight neosalvarsan injections, alternating them with intramuscular calomel injections. In children of two years or more, he administers a preliminary course of blue ointment inunctions, alternating with the calomel injections. He prolonged the length of time of each course of treatment, when he found it difficult to obtain a permanently negative Wassermann reaction from the older methods, in which, in many cases, a negative Wassermann was soon followed by a positive. The object was to destroy all spirochetes in the first one or two courses. The methods which he employed until recent years did not produce such an ideal result. It has often been emphasized how difficult it is to obtain a lasting negative reaction in infants. In Mueller's opinion, the significance of the Wassermann reaction in luetic infants has the same bearing on their malady as it has in acquired syphilis in adults. Congenital syphilis simply was not treated adequately to produce the desired clinical and serological results. In nursing infants he employs a suspension of calomel in olive oil, intramuscularly. He did not find the bichloride efficacious, although the clinical signs disappeared. Oral administrations had been abandoned on account of gastrointestinal disturbances.

According to Mueller's plan, a single course of treatment (*Kur*) consists of either twelve calomel injections, combined with eight neosalvarsan injections, or of a six weeks' inunction course, also combined with eight neosalvarsan injections. Both courses extend over a period of about three months. After such a three months' course there is a rest of three months, then a second, similar course is given, followed by a third course after another rest of three months.

After the second year calomel injections and inunctions of mercury are alternated. In nursing infants, it is best to avoid inunctions, on account of delicacy of the skin and the small areas of skin available for the rubbings. He employs doses of 0.001 grams of calomel and 0.015 grains of neosalvarsan per kgm. of body weight. A child of 4.3 kgm. receives 0.004 gram of calomel and 0.07 gram of neosalvarsan. The injections are given in the outer and upper quardrant of the nates. Neosalvarsan, in suckling infants, is given intravenously into the veins of the scalp, those of the leg, or, best of all, into the longitudinal sinus of the scalp. Only in exceptional cases do nursing infants receive neosalvarsan intramuscularly. In older children it is usually given into the muscles, as the veins are more difficult to reach. Calomel is used in from three to five per cent. emulsion in olive oil. The dose of blue ointment is as follows: For ten kgm. body weight he gives one gram. A child of twenty kgm. weight gets six rubbings a week, with a total of two grams of mercury. The ointment is rubbed in for twenty minutes.

Each course begins with mercurial medication, not with neosalvarsan, to avoid the possible toxic symptoms due to too rapid destruction of the spirochetes. Each course is ended with four successive calomel injections, or two weeks of mercury inunctions. No ill effects upon the kidneys have been noted, but Mueller advises that the urine be frequently examined. The calomel injections are well borne, by breast fed infants especially. They are not more painful than bichloride injections. In older children, infiltrations and small abscesses are more frequent; the treatment is then changed to inunctions. One week of inunctions takes the place of two calomel injections.

The number of separate courses is determined by the results of the serological blood tests. The Wassermann test is made just before each course, and eight to ten days after each course. The result obtained before the course determines the amount of subsequent treatment. After the first negative Wassermann reaction, every child receives two more courses, even if there is no reversion to the positive reaction. If the reaction becomes positive, then the number of courses is proportionately increased. In the average case, the child receives from three to five courses. If the reaction is still positive, Mueller persists in the treatment until it becomes negative.

The entire period of treatment requires one and a quarter to one and a half year, consisting of three courses, each about three months in length. After the final three months' course he administers a provocative neosalvarsan injection. The Wassermann test is taken on the second and ninth day after. Upon this test depends the question of further treatment. In cases showing mental deficiency the spinal fluid is examined. Mueller never obtained a positive spinal Wassermann in children whose blood Wassermann was negative.

Among breast fed infants, sudden death sometimes took place. This occurred usually in infants who obviously were very ill and who appeared to go into sudden collapse. Such deaths were reported as often in the first week of treatment, when mercury alone was used, as in the subsequent weeks when neosalvarsan was used. Hence it is assumed that the medication itself is not the cause of death, but rather that it is due to the toxins from the spirochetes. Once the initial course has been successfully completed, the children usually thrive without trouble. Intercurrent affections, such as grippe, are dangerous to the younger infants. It was noticed that children displaying mental defects during the early period of treatment did not improve in those symptoms after subsequent courses; in fact, some of them become worse. Mental defects, therefore, are difficult to treat. Mueller encountered children who exhibited only slight mental defects and no other symptoms of the disease, in whom the diagnosis was made on the evidence of a positive Wassermann reaction alone.

In his concluding remarks, Mueller states that in his experience, congenital syphilis is curable, provided that the treatment is intensive and sufficiently prolonged.

Soldin and Lesser (4) made a study of a number of infants admitted to one of the Berlin hospitals for disturbances other than syphilis. None of these children had recognizable symptoms of early syphilis. Snuffles were not pronounced, very few skin rashes were seen, epitrochlear glands were hardly palpable, swellings of the spleen and liver were negligible. Many patients showed no syphilitic manifestations whatever. The Wassermann reactions, in most of these cases, were negative, although those of the mothers were invariably positive. An explanation of the negative Wassermann and the absence of the clinical symptoms in the infants is given as follows: During the intrauterine life of the child, immunizing substances from the syphilitic mother were transferred to the children, and these immunizing substances hindered the further transplantation of the spirochetes to the child. Even in the cases where the Wassermann reaction was positive in the infants, no clinical symptoms were observable. In conclusion, the authors state that the practical application of this study lies in the fact that, when there is the slightest suspicion of congenital syphilis, the physician ought not to be satisfied with an examination of the infant's blood alone, but should always order a serological examination of the mother (5).

Strathy and Campbell (6) report On the Results of Treatment with Salvarsan in Late Congenital Syphilis. The writers treated with salvarsan eighteen cases, most of which exhibited bone lesions. Ordinarily, the injection was made into the median basilic or median cephalic vein, occasionally into the external jugular. At first the treatment was given once a month, but later it was repeated every one or two weeks. The blood serum was tested within forty-eight to seventy-two hours after the injection. No result was considered finally negative unless given by the blood taken within this period. The authors agree with McDonagh as to the provocative power of salvarsan. For each pound of body weight, they gave a dose of one c. c. of salvarsan solution of 0.6 gram in 300 c. c. and two c. c. of neosalvarsan solution of 0.9 gram in 150 c. c. of solution.

The effect upon the Wassermann reaction was not satisfactory, although comparable with that obtained with mercury. Gummata, periostitis, and ulcers disappeared rapidly. Interstitial keratitis healed more quickly than under the mixed treatment, and, therefore, with less scarring. The results were better than with mercury, about one half the cases being mercury resistant. Hereafter, they will use larger doses of salvarsan, even to the limit of tolerance, and repeat the dose at intervals of less than seven days. The Wassermann reaction became negative in only two cases, although all improved clinically. In their experience, they found that the younger the child, the more rapid the effect upon the Wassermann reaction (7).

In a recent publication, La Fetra (8) submits some interesting findings in congenital syphilis as it occurs in New York. He says, in part:

> To give some idea of the clinical types of hereditary specific disease met with in children, I have gone through the records of the Bellevue Hospital Children's service for the past two and one half years. During all this time careful Wassermann tests have been made on all cases with suspicious physical signs or symptoms. In the period investigated there were 148 cases of syphilis admitted to the wards. Of these, three were cases of acquired syphilis, eighty-five were hereditary but under one year of age, and the remaining sixty were of the hereditary type and over one year. Of these sixty patients, there were ten that showed no symptoms nor physical signs at all characteristic of hereditary syphilis. One child of six years had no symptoms nor any abnormality whatever; she was sent into the hospital for treatment because she belonged to a syphilitic family and because on this account a Wassermann reaction had been taken and found strongly positive. . . . Of the sixty cases there were suspicions or equivocal signs in twenty-one. . . . In none of these cases were the signs, though suggestive, sufficiently characteristic, at the time of admission, to warrant a positive diagnosis. Twenty-nine of these sixty cases had signs that were characteristic of hereditary syphilis. . . . The most important lesson one derives from a consideration of the symptoms and signs found in cases of hereditary syphilis is the well worn conclusion that an early diagnosis, with its corollary of vigorous treatment, is of the highest possible value to the patient. As an aid to this early diagnosis, in doubtful cases, the Wassermann test, carefully made by a competent man, may be relied upon almost absolutely. It is exceedingly rare that the test fails to comport with the physical signs, and in such cases there is usually either delay in having the blood reach the laboratory, the serum becoming anticomplementary, or there is something wrong with antigens used in the test. The more frequently the Wassermann test is employed—especially in mental and nervous cases—the greater the number of correct diagnoses we shall make, and the greater our success in treating these distressing conditions.

Doctor La Fetra's closing remarks are significant and to the point.

PROGNOSIS.

As to prognosis, few men can speak with more authority than Finkelstein, the German pediatrist, who states that the unfavorable opinion generally held with regard to the fate of congenitally syphilitic infants and children, is in no way confirmed by exact statistical observations and studies. These children may not only become healthy, but may grow up to become robust individuals and useful members of the community. The number of weaklings and anemics is no greater than among those free of syphilis. A similarly optimistic view is held by Baginsky, Heubner, and others.

The mortality in congenital syphilis is highest during the first year and decreases from month to month, in the first twelvemonth. Kassowitz found that thirty-four per cent. of all children with congenital syphilis died during the first few months of life. Werner found, among sixty-seven children born at term, that forty-eight, or seventy-two per cent., died in the first year. In a foundling asylum in Budapest, of 178 children, eighty died of congenital syphilis—forty-six per cent. The unfavorable environment of these children is in part to blame for the high mortality. On the other side, Hochsinger, of 263 children with congenital syphilis, reported a death rate of thirty per cent.; 14.5 per cent. of them died in the first year of life. Pott, in his private practice, had a death rate of twenty-one per cent.; in dispensary practice, the death rate was only eight per cent.; but a great many of the latter were seen but once. He believes that, roughly speaking, two thirds of congenitally luetic children remain alive.

Concerning the influence of congenital syphilis on the mortality of breast fed infants, the statistics of Waldvogel and Suessenguth show that the disease is not productive of a greater mortality in suckling infants, than are other diseases. Nineteen and a half per cent. of their cases of congenital syphilis ended fatally in the first year of life, whereas 18.8 per cent. of breast fed infants died during the first year, of diseases other than syphilis. The difference is so small as to be negligible. Peiser attributes the mortality in syphilitic breast fed infants as much to nutritional disturbances as to the syphilis itself.

Death may result directly from the luetic infection, or it may be due to intercurrent diseases which gain ascendancy in the weakened body of the infant. "The children die," says Heubner, "not of syphilis itself, but as a result of general asthenia, without anatomical lesions; an attack of dyspepsia or bronchial catarrh may eventuate into a fatal illness." The most frequent cause of death, according to Monti, is bronchitis and pneumonia. Of seventy-nine cases, Hochsinger found the cause of death to be syphilis in thirteen, pneumonia in seventeen, meningitis in seven, and intestinal catarrh in eight.

J. Neumann found that if the infection of the mother took place before conception, the mortality was sixty-five per cent. and the morbidity seventy per cent. If infection and conception were simultaneous, the mortality was seventy-five per cent., the morbidity ninety-one per cent. In postconceptional syphilis, the mortality was 38.8 per cent. and the morbidity, seventy-two per cent. Finger found that if the mother was infected before the fifth month of gestation, there was a fetal mortality of seventy-eight per cent. and a morbidity of 100 per cent. According to Etienne, the mortality of infants born to untreated syphilitic mothers may reach ninety-five per cent. If the prospective mothers receive adequate treatment, however, the death rate may fall as low as ten per cent.

According to Kassowitz, the prognosis becomes more favorable, the older the child is at the time of the first appearance of luetic symptoms. Among 172 cases, Diday and Roger found that the first symptoms appeared ninety-two times in the first month, sixty-seven times in the third, seven times in the fourth, once in the fifth and six months (respectively), and four times after the sixth month of life. Roger bases his prognosis on the clinical findings in the child at its birth. If it is born with signs of active syphilis, the outcome, in his experience, is usually fatal; if the child is born apparently in good health, but exhibits the signs of active syphilis within a few weeks after birth, adequate treatment will usually restore it to health. Syphilitic disease of the central nervous system and of the viscera in the newborn, spells early death.

In older children, the effects of congenital syphilis have been studied by a number of investigators. Peiser reported his findings in a series of 101 children, whose histories he was enabled to follow for several successive years. His conclusions are, that the prognosis for older children is by no means as gloomy as is commonly thought to be the case. Of fifty-nine children who had been kept under surveillance after they had reached the second year, he found twenty-three in excellent general health, twenty-two in poorer, but still fair health, and fourteen in poor condition. Six of the children were imbeciles. (The serological findings are not given.)

The relative innocuousness of late congenital syphilis is well illustrated in two patients under my care in Doctor Fordyce's service. One was a girl, about twenty-one years old, who applied for the treatment of a severe acne of the face, but who was otherwise in apparently perfect health. She was unmarried. When she smiled, it was seen that her two upper incisors were deeply notched. Her teeth were so typically Hutchinsonian in type, that a photograph of them was added to Doctor MacKee's collection. A blood test revealed a 4 plus reaction. There were no other stigmata of syphilis. She refused to submit to treatment, and the last time I saw her, the notched teeth had disappeared and were replaced by two beautiful porcelain substitutes. The other case was a married woman, who brought her two boys to the clinic for the treatment of ringworm of the scalp. By accident, it was noticed that she also presented a pair of typical Hutchinson teeth. She said she was in perfect health and looked the part. She had had no miscarriages. Her Wassermann test was 4 plus. The children's blood tests were negative and they were healthy. Strange to relate, this woman also had one of her incisors replaced by a gold tooth, and she recently informed me that she was laying aside enough money to pay for its mate.

A very instructive résumé of the subject of syphilitic heredity and congenital syphilis was recently contributed by Boardman (9), of Boston, and I borrow freely from this article in the following quotations:

> Engel and Reimer state that children showing symptoms in the first four weeks of life, nearly all die; of those showing them in the second month, two thirds die, and in the third month, about a half die. Only about twenty-eight per cent. of children born syphilitic survive the first year. As to the Wassermann reaction in the newborn—Müller gives a large series, showing that in those infants with active symptoms nearly all are positive, almost the only exceptions being those who are immediately overwhelmed with the disease and die almost at once, or in a day or two. Those children born apparently healthy, but of syphilitic mothers with active signs or a positive reaction, show a positive reaction in about forty per cent. of cases, but many more develop a positive reaction in a few weeks or months, often accompanied by the onset of syphilitic symptoms. It is more frequent in the children born of mothers showing active symptoms during pregnancy than in the children of latent syphilitic mothers, but the difference is not startling. Children of mothers who have had syphilis, but at the time of pregnancy show a negative reaction, show a positive in only 12.5 per cent. of cases, increasing somewhat as the child grows older or as active syphilitic symptoms develop.
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> The number of negative reactions persisting with no signs of syphilis in the child suggest that these are exceptions to Profeta's law, that the apparently healthy child of the syphilitic mother cannot contract syphilis, though this may not hold throughout the child's life. In other words, the child of a syphilitic mother is always syphilitic. Bertha Sabin has gone into this subject very carefully in the past year (1913). She concludes that where the mother has syphilis at the time of conception, or acquires it in the first five months of fetal life, the child is almost invariably syphilitic; in the sixth month it is only probable; after the sixth month it is rare, but there are exceptional cases of infection of the child when the mother contracts the disease even later. These late postconceptional cases are therefore the only exception to Profeta's law, and the other children are really cases of latent congenital syphilis, though there are no signs of the disease, and the Wassermann reaction is consistently negative for months. Clinically, practically the only exceptions are these postconceptional cases. We should, therefore, in such cases try the Wassermann reaction in the infant, and examine the placenta and cord, if the child shows no signs of the disease clinically (Poppi). This will show the presence of syphilis in a large percentage of cases, and if it does not, and the case is one of late postconceptional syphilis, the child should not be allowed to nurse, as infection from the nipple is not too rare in such cases. In regard to the Wassermann reaction made later in life, in these syphilitic children, Churchill, Kellner, and others have noticed that it begins to disappear after four or five years, in spite of the persistence of perfectly definite stigmata, though it nearly always reappears with the appearance of active symptoms of the disease.
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> Many authors lay great stress on the value of examining the placenta and cord histologically and bacteriologically. Wersilova found spirochetes in the placenta or cord in 62.5 per cent. of cases, and Grafenburg in fifty per cent.

Ernst Welde (10) says that from 1902 to 1910, inclusive, 100 cases of congenital syphilis were treated in the wards of the Berlin Charité Hospital, and 296 cases in the polyclinic. As the task of tracing the entire 396 cases was impossible, Welde arbitrarily limited his studies of end results to the 100 cases observed during 1902, 1904, and 1908. Even by securing the assistance of the police, Welde could succeed in discovering the addresses of but sixty-eight per cent. of the total cases. Of this number, forty-one per cent. were reported dead, twenty-seven per cent. presented themselves for reexamination, and thirty-two per cent. made no answer to inquiries.

The second series of investigations included 200 cases, 100 from the hospital and 100 from the polyclinic. The mortality was found to be seventy-four per cent. among the hospital patients and thirty per cent. among the cases treated in the polyclinic. These statistics are valid only for the hospital, not for congenital syphilis at large. If it was possible to add the cases in private practice (as Welde argues ought to be possible), mortality percentage would be considerably reduced. The low death rate in the polyclinic, compared to the very high percentage in the hospital cases, is explained on the ground that only severe cases are admitted to the wards. Poverty with its associated ills, poor physical condition and severe infections, contributed to produce the high rate of seventy-four per cent. mortality. The thirty per cent. mortality among the polyclinic cases was needlessly high, many cases having been brought to the polyclinic but once. If the parents, instead of resting satisfied at learning the diagnosis, had brought their children for continued treatment, many would undoubtedly have been saved from death.

Welde made an interesting study of the relation to prognosis of the time of the first manifestations of syphilis. He reports that thirty-five per cent. died, of those who presented symptoms at birth, forty-two per cent. of those first showing signs during the earlier weeks of life, while, of those who were six months of age or older, before showing evidence of syphilis, only one per cent. had died.

A fourth table shows the value of breast milk very graphically. Only twenty per cent. of the breast fed infants died. The mortality of the artificially fed infants was forty-two per cent. The beneficial influence of human milk feedings is especially well illustrated by the lower mortality of thirty-one per cent. among infants who had received breast milk for even a short time.

Welde presents a table to illustrate the effect of treatment, from which he draws several conclusions. These figures seem to show that the mortality depends less upon the drug or the method, than upon the energy with which the treatment is pursued. It was found that the highest death rate was in the cases which had received the least treatment. In seeking for greater understanding of this fact, Welde discovered that, while in the hospital it was the severest cases which had received the least treatment, the contrary was true of the polyclinic. In the hospital the severity of the infection and the low vitality caused death before it was possible to give adequate treatment, regardless of methods. In the polyclinic, the very mildness of the cases induced neglect. It is a matter of record, Welde reports, that of the 296 polyclinic patients, 114 never made a second visit. He ventures the assertion that one half of these patients, if living, are still syphilitic.

Thirty-six patients were examined for cure, and for the persistence of the disease. As evidence of cure, Welde insisted that the patient should neither exhibit physical signs, nor react positively to the Wassermann test. He found twenty-seven still syphilitic; nine he accepted as cured. In answer to the objection that the Wassermann reaction does not furnish indisputable proof of cure, and furthermore, that it is notoriously slow in disappearing in congenital syphilis, even after abundant treatment, Welde admits the facts, but argues that so long as we cannot explain the reaction, it is best to accept a positive result as an indication of the presence of syphilis. Although but nine cases of cure were found, nevertheless, even this small number is sufficient to demonstrate that cure is not impossible.

Welde's (1) final conclusion is, that everything proves the need of official supervision of every case of congenital syphilis, both in public and private practice.

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OUR AMERICAN VOICE AND ARTICULATION.*

By Charles Prevost Grayson, M. D.,
Philadelphia.

In one respect at least I resemble Marc Antony at the bier of Cæsar—I come not to praise. There are, no doubt, certain critical moments in the history of our country when a feeling of reverent loyalty will so tune our ears that even the piercing scream of our national bird will fall upon them as so much celestial music, but surely no amount or depth of patriotism can so anesthetize our ears that they will find anything musical in the voice of the average American, male or female, particularly, if you will pardon my want of gallantry, female. The fact that we are the youngest of the great nations does not excuse this defect. We are certainly old enough to show at least that we are conscious of it and to make some concerted effort to correct it, and it seems to me that the very first step in such a reform movement should be taken by us, the members of this association. It is we who are the self appointed custodians of the larynx and its vocal function and of every nerve and muscle that plays a part in articulation. It would be but a beggarly conception of our responsibility were we to limit it to the treatment of diseased conditions. Wide as that field is, our field of endeavor should be wider, and, to my mind, it should include to a reasonable extent the education of this complex mechanism. As a brief preliminary to this main purpose of my paper, will you permit me to summarize certain activities of rhinolaryngology during a number of years past? I would refer particularly and only to those surgical achievements that are closely related to my subject.

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*Read at the annual meeting of the American Laryngological, Rhinological, and Otological Association, White Sulphur Springs, W. Va., May 6, 1916.

Probably more than to anything else our surgical skill has been applied to the removal of obstructive conditions of the upper air passages. The nose having been recognized as an essential and most important part of both the respiratory and phonatory mechanisms, every abnormality, mechanical or pathological, the effect of which was to cripple nasal breathing or to impair tone quality, has met with and yielded to its appropriate operative procedure. The conquest of adenoid growths is an old story, and we are now at the very crest of so vigorous a crusade against the tonsil that, were Nature easily discouraged, it would be threatened with extinction. All that has been accomplished in this way has been not only of distinct advantage to the voice by providing it with the full amount of resonating space that Nature intended it to have, but it has also directly contributed to the prophylaxis of ear disease. And, apropos of the ear, it is also closely relevant to my subject to recall the remarkable progress in the instruction of the deaf. This has occurred largely through the instrumentality of otologists. Without engaging in any actual warfare upon the empiricism of the many lay teachers of the deaf, they have quietly effected a remarkable evolution in methods through the gradual establishment and introduction of scientific principles and their application by an almost standardized system. We need no better evidence than the results that have been accomplished, that the individual who is seriously or totally deaf has aroused a compassion that is practical as well as sentimental.

It may have already occurred to my readers that my hurried review of these features of our work has had for its purpose the drawing of a contrast. I have wished to make it as strikingly evident as possible, that while we have been doing so much for the education of the deaf and for the relief of those suffering from respiratory and phonatory embarrassment, we have done practically nothing as yet of an educational nature for the cultivation of the voice or the refinement of articulation. Shall I be met with the reply that this is not our work, that when we have brought the vocal apparatus to a state of health and efficiency, our interest and our professional responsibility cease? Will it be said that we have no concern with the correct use of the voice, with distinct articulation, with careful modulation? Will it be contended that these matters belong exclusively to the realms of art and esthetics, that the field of medicine is purely materialistic and has no place for them? I have no apprehension that any such opinions will be advanced. Nothing is more clearly recognized than the absolute interdependence of a sound larynx and a sound voice, but I realize that opinions may vary within wide limits as to what constitutes a sound voice. I confess that I am not one of those who seem content with the almost simple, uncolored fundamental tone as it comes naked from the vocal cords. Is it too much to hope that some day we may have an American voice that will be clothed with its full complement of overtones, with all the resonance that Nature intended it to have, and with a delicacy of modulation that will adapt it to every occasion? I deny in advance of the assertion that such a hope is Utopian. It may and no doubt will be difficult and slow of realization, but that is true of almost everything that is worth hoping for and having.

That which may seem impracticable at first thought is really little, if any, more so than any other branch of a common school education, and in that nutshell of a sentence lies the whole kernel of this paper. I say, and I think that we all should unite in saying, that vocal instruction should be introduced and made an essential part of the curriculum of every school, public or private; that every child should not only be taught to use his voice correctly, but that he should be as rigidly marked for his proficiency or his lack of it as he is for any other of his studies. Nor should this teaching be limited to the elementary schools. It should be continued with equal insistence in the high school, the college, and the university. By vocal instruction I hope no one will suppose that I mean singing or elocution. Those are highly developed specialties that would properly fall within the domain of postgraduate and individual instruction. I only mean that the child should be taught the art of ordinary speech, an art that should not be regarded as an accomplishment for the few, but as an essential feature of the education of all. That the earlier in life it is taught the more easily it is acquired needs no saying, and with the gradual growth of the child's vocabulary it is no less important and no more difficult to teach him distinct enunciation than correct pronunciation. Why do we insist upon the one and utterly neglect the other? Why be content with the half loaf when we can as easily procure the whole? Is it of any advantage or consolation to a listener to know that a speaker gives emphasis to the proper syllable of a certain word if all the other syllables are lost in inarticulate confusion? Much of the criticism that is levelled at our manners and customs by our British cousins we can afford to take good humoredly and without resentment, if not, indeed, with a certain amount of disdain, but there is one criticism that irritates me, at least, beyond measure, and that is that our speech is often referred to as American English. It is a hyphenated language that we are accused of speaking. Why? Not, let us hope, because our command of English is any less complete than theirs, nor that, as to the meaning of words, we use them any less accurately than they, but largely because, through indifference and lack of proper training in childhood and youth, we slur and clip and muddle our syllables to such an extent that the words of which they are parts become more or less unrecognizable. I have no intention of discussing the justice or injustice of this accusation. I only mention it as one of the smaller and less important stones in the foundation of the argument that I am building. With the teaching of grammar and diction and literary style, we have no professional concern whatever, but with the safeguarding of the larynx through the normal development and proper use of the voice, who has more than, or even as much concern as we? It needs no exhaustive analysis of the relative importance of the several fundamental branches of education to establish the value, as a practical and dividend bearing asset to any young man or woman, of a properly pitched voice and a distinct utterance of words. I am not considering it from an artistic but from a strictly utilitarian point of view.

The typewriter has been a Godsend in protecting us from the time waste and temper torment of illegible handwriting, but no mechanical device can ever protect us from the offense of slovenly and unintelligible speech. Our only hope for relief from that evil comes from careful and competent instruction of the young. There, we shall probably all agree, is the rub. Where are we to find competent instructors? Unfortunately, they are not easily found, but, fortunately, they can, unlike poets, be made. It is no more true that necessity is the mother of invention than that competition is the parent of competency, but if the hundreds of young men and thousands of young women in our high and normal schools, who are looking forward to the profession of teaching as their life work, are told by our county and municipal boards of education that their appointment as teachers will largely depend upon the clearness of their voices and the distinctness of their enunciation, we may be confident, I think, that within a brief period there will be a very marked improvement in these respects. Naturally, no one will expect these young people to give any technical instruction concerning voice building, or voice production, but they can teach, both by precept and example, correct articulation. The child labor laws that are now being rapidly enacted in the various States of the Union make it possible, compulsory, in fact, that for at least six or eight years of his life every child shall attend school. It seems to me that there can scarcely be a reasonable doubt that if throughout this long period the child lives in an atmosphere of distinct speech, if he constantly hears and is himself compelled to practise it, the habit will be formed and become so firmly established that it will remain a permanent one. No one realizes more fully than I do the many and serious difficulties that may impede the addition of what seems at first thought so unimportant a detail of education to the course of instruction covered by our public schools, but we have learned so often during the past half century that the impossibility of yesterday is the reality of today, that I am encouraged to hope that this valuable and easily acquired grace of speech may be one of the bright realities of tomorrow. I am not disposed to be oversanguine, and by tomorrow I mean only within the next two or three generations. We may not, in all probability we shall not, live to see more than the bud that will denote the future fruit of our labor, but in taking leave of it we may at least have the satisfaction of knowing that we have started a phonetic reformation that, perhaps, physicians yet unborn may carry to successful completion. As to methods, I have no thought either of asking for the appointment of a committee or of suggesting that we should enter upon any carefully planned campaign. On the contrary, I think it likely that we should accomplish much more individually than collectively, that each of us, in his own city and State, would exert greater influence in promoting such a cause than could any documentary appeal issuing from us as a body and addressed to the country at large. In spite of the powerful and distinctly special appeal that this subject should make to the laryngologist, it will be, I am afraid, a long time before it arouses, even in him, anything more than an abstract and languid interest. It is but a commonplace to say that nothing so promotes the health and functional vigor of the larynx as cultivation of either the singing or speaking voice. In all probability there is scarcely a day that each of us does not warn one or more of our patients of the injury they are inflicting upon their throats by some more or less glaring misuse of the voice. How much better would it be to render such warning entirely unnecessary by beginning the prophylaxis of the laryngeal trouble and the conservation of the voice before any material harm was ensued, before bad vocal habits have been formed, and while it is still easy to form good ones! It is a matter, a mission indeed, the furtherance of which should enlist not only our professional but our national pride.

262 SOUTH FIFTEENTH STREET.

VINCENT'S BACILLUS IN THE CERVIX.

By GUTHRIE McCONNELL, M. D.,
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(From the Clinical Laboratory of the Waterloo (Ia.) Medical Society.)

Although there is some dispute as to the pathogenic properties of the fusiform bacillus, it is so constantly present in cases of Vincent's angina that there can be little doubt of its being an active agent in inflammation. It has been found so commonly in inflammatory conditions of the mouth that the general idea is that it does not occur anywhere else, yet such is a mistaken opinion. It was first noted in cases of hospital gangrene, but in addition to tonsillar conditions it has been reported in ulcerations of the penis, appendicitis, gangrene of the lungs, putrid bronchitis, and Heurlin reports finding it in the vaginal secretions of a normal woman.

The following case, for which permission to report is due to Dr. J. E. Brinkman, is interesting mainly on account of the site of the lesion. Attention was called to it by a smear that was sent to the laboratory for examination. The report returned was to the effect that practically no other forms of organism were found than the fusiform bacillus and the spirillum. The diagnosis of Vincent's angina was offered, the laboratory not knowing where the smear was made. A brief history of the case is as follows:

CASE. Mrs. L. C., aged twenty-seven years, white, five years ago, had a child. Delivery was normal, but patient said that at that time she was infected. Since then she had been troubled by a vaginal discharge which varied in amount and in color, sometimes whitish, other times greenish, occasionally irritating.

In September, 1915, she had a very sudden and severe attack of sore throat. She had been more or less subject to them, but this was the worst. Was painful, so much so that swallowing was difficult. Following this there was an increase in the amount of vaginal discharge, which by the first of February had become profuse and irritating.

In March, 1916, she came for examination and treatment. At this time the cervix was found to be free from tears, but it was reddened and edematous. Surrounding the canal there was an area of superficial erosion about one inch in diameter.

The treatment consisted of painting with iodine and the application of boroglyceride tampons containing ichthyol, iodine, and phenol. In the course of a little over two weeks five treatments were given with much benefit. The patient then left the city.

There is, of course, no way of proving that the cervical infection was in any way due to the throat conditions, particularly as no microscopical examination was made at the time although the symptoms as given were typical of Vincent's angina. It might well be that there was more or less erosion of the cervix following childbirth and that the tissues were then more susceptible to the fusiform bacillus. Whatever the method of infection, the fact remains that microscopical examination of the smear showed an almost pure growth of the fusiform bacillus and its accompanying spirillum.

HEALTH INSURANCE FROM THE VIEWPOINT OF A PHYSICIAN.

By A. C. Burnham, M. D.,
New York.

The rapid spread of workmen's compensation insurance throughout the United States during recent years has clearly demonstrated the important economic role which the physician is called upon to assume in the management of accident cases of industrial origin. From a financial standpoint this has been of great importance to the medical profession, which, until the various acts became laws, was decidedly apathetic toward the whole subject, apparently knowing and caring very little what arrangement the State might make to care for the sick and injured among its vast industrial population.

It is impossible to say what the changes taking place in our modern life may portend. Such laws might conceivably be the beginning of what in the end will result in a system of treatment of everybody by physicians in the employ of the State and the consequent complete disappearance of the private practitioner. While such a result seems hardly conceivable, yet it takes only a superficial examination of the activities of the various boards of health and State health departments to bring about the conviction that the activities of the private physician and private medical enterprises are being gradually curtailed in favor of the physician in employ of the community. That this in the main makes for increased healthfulness of the community and consequently increased efficiency of the individual is not to be denied. In New York city the board of health supplies diphtheria antitoxin to the public, thereby preventing the spread and lowering the mortality of the disease. In some cases the diagnosis is made and the antitoxin is administered by a physician of the department. If this is right and proper, why may not the State supply the physician with a diagnosis of malaria and rheumatism, and give quinine and the salicylates when indicated?

Following the introduction of workmen's compensation insurance, with the accompanying State control of the medical care of industrial accidents, the next step would logically be State control of the health of industrial employees, and, possibly later, the care of the health of the workman and his entire family. Still later, this same system might be extended to include the entire community. Fortunately at present we are not called upon to decide the advantages and disadvantages of such a system along its broadest lines, but have to do merely with the care of the health of the workman, in some cases including his dependents.

In order to accomplish this end a tentative plan[1] of an act has been formulated by the American Association of Labor Legislation and introduced into the State legislatures during the present year, which contemplates the care of the industrial employee and his family during illness and which is entitled Health Insurance.

If the experience of Germany, England, and other European countries is of any value to us, it is safe to assume that such an act will soon be found among the laws of many States, and, again reasoning from the experiences of other countries, it is important that the medical profession, as one of the parties chiefly concerned in the administration of the law, should make its influence felt for a satisfactory, practicable law, allowing maximum benefits to the patient, suitable remuneration to the physician, and a minimum expenditure by the State.

Such a law will mean that much less of the physician's work will be done for charity; the State saying, in effect, that workmen are not paupers and that medical treatment is their right and due, thereby creating a large class of private practice, which, previously, has for the most part received no care at all, or, at the best, only a desultory and ineffectual treatment. The care contemplated will represent the expenditure of a large sum of money and it is to the interest of the medical profession to see that this money is wisely spent, the patient and the State receiving the maximum benefit.

It must be stated at the outset that the physician and medical societies (although they derive great benefits from such an act) are not considered as beneficiaries under the act. The physician should realize that it is merely an accident that he plays such an important part in the administration of the various plans of health insurance. Compensation is not a method of taxing a rich employer for the benefit of the physician and the patient; nor is it a means of equalizing the monetary differences between the employer and the employee. It is an attempt to place the burden of the result of accident and ill health upon the community as a whole.

Bearing in mind this broad conception of health insurance, a brief résumé of the tentative act as drawn up by the Committee on Social Insurance will be of interest. The draft of the act is divided into fifty-three sections, the first fifteen of which are of greatest interest to the medical profession. Sections

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[1] Copies of *Health Insurance Standards and Tentative Draft of an Act* may be secured from the Secretary of the American Association of Labor Legislation, 131 East 23rd Street, New York.

1 to 5 outline the name of the act and designate the persons insurable under the act. Among the provisions is included the compulsory insurance of every person in the State at manual labor under any form of wage contract, whose remuneration does not exceed $100 a month, together with voluntary insurance of certain persons not included under the foregoing. Federal employees, for obvious reasons, are excepted.

Sections 6, 7, and 8 outline the benefits of the insurance, which, as a rule, begin the first day of employment, and are provided in all cases of sickness, accident, or death not covered by the present Workmen's Compensation Act. The following are prescribed as the minimum benefits: Medical, surgical, and nursing attendance; medicines and surgical supplies; cash benefits; maternity benefits; funeral benefits; medical and surgical attendance; and medicines for dependent members of their families.

Section 9 provides for medical, surgical, and nursing attendance for a period of twenty-six weeks, and section 10 provides for medical and surgical supplies, not to exceed $50 in cost in any one year. Hospital treatment, when indicated, is provided for (Section 11) instead of other benefits. A cash benefit equal to two thirds the weekly salary is provided for (Section 12), payable (Section 13) from the fourth day of disability.

Insured women and the wives of insured men are entitled to maternity benefits (Section 15), which consist of medical care and supplies, and a weekly cash benefit for a period of eight weeks. Funeral benefits (Section 16) and in some cases other benefits are provided by the insurance carriers.

The expenses are to be divided between the employer, the employee, and the State (Section 18), and insurance is to be carried by either, 1, the State, 2, approved societies as in England, or, 3, mutual associations as in Germany. The remainder concerns itself chiefly with the administration and execution of the act and consequently its provisions are of importance from a legal rather than a medical point of view.

Only a brief perusal of the foregoing suffices to point out the socialistic tendencies of such a law. This is granted, but the possibility of the passage of some modification of this act is undisputed, and if the experience of foreign countries is of any value, we may expect such a law in some of the States in a comparatively short time.

From a theoretical viewpoint, in such a law the medical care of the insured may be provided for under one of three different plans of procedure:

1. The method of free choice, by which the employee is allowed to choose his own physician, the fees being paid by the insurance carrier.

2. The contract method, by which physicians are allowed to contract for their services at a certain annual or semiannual per capita fee.

3. The method of State control, under which the State may appoint a panel of physicians, either as full time officers of the State, or under a fee system to be decided upon.

Before discussing these methods it would be well to outline the ideal requirements of such a medical service.

A. To the patient:

1. As rapid a recovery as is compatible with the nature of the disease.

2. The maximum cooperation and sympathy between physician and patient.

3. Accessibility of medical advice and treatment.

B. To the physician:

1. Adequate remuneration for services rendered.

2. Complete control of both the treatment and the environment.

3. Sufficient medical supplies and hospital facilities.

4. Consultation with and treatment by specialists when indicated.

5. Satisfactory clinical records.

6. A minimum of clerical and administrative duties.

C. To the State:

1. The minimum period of disability.

2. The minimum expense for medical care and administration.

3. Complete statistics upon which to base the annual premium as an indication of necessary improvements in the law and as a preventive of abuses which may arise.

Bearing these requirements in mind, we may now consider the various methods for the medical care of the insured.

The first method, the so called method of free choice, has for its chief advantage the sympathy and cooperation existing between physician and patient. The employee, being permitted to choose his own physician, is more ready to cooperate with him in his treatment; the consequence is often a better therapeutic result and a more rapid convalescence. There are many disadvantages, however, which far outweigh the benefits derived from this method. In the first place, the choice is apt to be made because of social quâlifications or individual preferences rather than professional capability. The ordinary industrial worker has little opportunity to inquire into the professional qualifications of his physician, and is apt to make his choice because of the recommendation of a friend or as a result of the rosy promises of the advertising quack.

The remuneration of the physician is usually ample in these cases, but the unscrupulous practitioner takes advantage of the fact that he is working for the State and makes unnecessary visits and prescribes expensive medicines because, in the common parlance, he can get away with it.

Clinical records are rarely kept in these cases, and statistics are of little value because there is no standardization of reports. Moreover, the clerical duties are irksome to most physicians and are partly or wholly neglected.

The final result of this system is that the State pays considerably more than is necessary for medical attention, which is unsatisfactory; little or nothing is added to the sum of medical knowledge, while many truths, which would tend to bring about the betterment of humanity as a whole, are hidden among a mass of facts which cannot be correlated.

The system of unlimited choice was adopted by France, in 1905, and, as a result, abuses have arisen which are almost inconceivable. The following extract from an article by H. C. Villard[2] is of sufficient interest to be worthy of quotation in full. In reference to the formation of private clinics, which were formed in great numbers after the law was passed, he says in part:

> Usually these (clinics) were started by young and unscrupulous doctors with little standing and practice and indifferent to the established rules of medical ethics. As the accident insurance made the employers responsible for all medical costs and fees, these practitioners foresaw that, once assured of a clientage, their path to fortune was secure. Accordingly, while self advertising is deemed highly unprofessional in the best French medical circles, the owners of these private clinics have not hesitated to use the most flamboyant and often dishonest methods to attract to their establishments workmen who have been injured in the course of their employment. Drummers and agents are posted and employed near important workshops, whose duty it is to steer injured workmen to, and to extol the merits of these clinics. The clinics themselves are painted in gaudy colors, flaring advertisements are posted in conspicuous places, circulars are sent out, and handbills distributed among the working classes. Dressing of wounds, massage, electricity, radium, and mechanicotherapeutical treatments are offered. Attention is also called to the fact that attached to the clinic is a legal bureau which will procure the maximum indemnity allowed by law and attend to all formalities prescribed for the procuring of the same. Certain of the clinics have even gone a step further and now bestow a five franc piece on an injured employee when he first presents himself and allow him a daily stipend ranging from one half to two francs a day so long as he is under treatment. With such inducements, it is not surprising that the workmen, when injured, flock to these private accident clinics. In Paris, more than half of all accident cases are treated in them.
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> The bad results, of the provision in the French accident insurance law granting to the injured workman the right to select his own physician, are thus apparent. The individual practitioner does not benefit, for he finds no accident cases coming to him for treatment. The workmen are demoralized, for they have been taught not to regard an injury or disability as a misfortune, but as a means of making something out of their employers. Hence their readiness to travel even a distance of fifty miles from their places of injury to the clinic that holds out the most inducements. The employers and insurance companies are fleeced at every possible turn, and a heavy burden is imposed on French industry in the shape of increased premium rates.

As a corollary to the method of unlimited choice by the employee is that of unlimited choice by the employer and it is this method under which the present New York Workmen's Compensation Law is administered. This has already led to many abuses, chiefly because the small employer transfers the responsibility to the employee, and in most cases the final result is the same as though the employee were given free choice in the first place. In the case of larger employers the situation is under better control, and the excessive abuses occurring in France will probably not be duplicated here.

The second method is known as "the contract system" and in this the medical care is undertaken at an annual per capita rate. The contracts may be made by the insurance carrier, the employer, or by the local fraternal associations. In this the physician undertakes to give unlimited attendance for a fixed fee, which is naturally a physical impossibility. Unscrupulous physicians underbid each other until the result is a remuneration barely sufficient for rent and living expenses, and the physicians, in order to increase their income, must search outside of their legitimate practice. They charge large fees for special treatment not included under the law; special unnecessary consultations and operations add further to their incomes. It is to the physician's interest under this plan to make as few visits as possible; to send patients to the hospital upon the slightest provocation; to keep few records and, in general, to give as little attention to his contract patients as the law will allow, devoting the major portion of his time to his private practice. This system is unsatisfactory to the patient, to the honest physician, and in its final result, to the State. The chief advantage is that it is cheap and easily administered.

An attempt is often made to correct these errors by limiting the number of cases treated by any one physician and fixing the per capita fee at a sufficient amount to compensate the physician for the time spent. It is this method which is the cause of considerable dissatisfaction in England at the present time. The physicians are generally fairly well paid under an agreement between the Government and the British Medical Association, but the system lacks elasticity and there is a great deal of complaint because of the clerical work which it entails. Patients complain that they are rarely examined, and that their treatment is unsatisfactory. Moreover, under the law, their treatment is limited to ordinary medical care which the physicians interpret as excluding special treatments and even the smallest surgical procedures. As a whole, the contract system is a failure, except in the hands of specially conscientious physicians, and even under State supervision its control is difficult.

The method of State control seems to overcome many of the difficulties seen in other methods. Its chief disadvantage is that it may come under the influence of politics, and as is the case in most political enterprises, is apt to be open both to inefficiency and graft. Under civil service, however, and the appointments made for long periods, this disadvantage becomes less obvious. The State may successfully assume the medical care of the insured under such an act only when it has full choice of physicians employed who are directly answerable for their conduct to the State authorities. One method of securing these results is by the appointment of a panel of physicians who may or may not receive a nominal amount, but who are compensated in the main by the payment of a stipulated fee for each visit or office consultation. In this plan the insured may or may not have a choice of physicians among those on the panel, each physician acting independently. There is a certain amount of elasticity, and in general the conditions make for satisfactory treatment of the insured. The administration and medical expenses of such a plan are apt to be high, but it attracts a better type of physician than the other plans and the relation between the patient and physician is well preserved. Records and statistics, however, are kept only with difficulty, and there is a waste of energy and, in consequence, an increase in expense which might be prevented. This system of limited choice is undoubtedly the best in rural districts, and fairly satisfactory for the administration of an act such as the present Workmen's Compensation Act, which includes the medical care of only a comparatively small part of the entire population; but if we are to care for every member of the family of each and every person earning less than $1,200 a year, we have a much larger problem before us, and it is important at the outset that the work be undertaken systematically and with definite ends in view, rather than in a hit or miss manner, leading later to abuses which can only be eradicated after a long period of inefficiency.

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[2] New York *Evening Post*, April 12, 1913.

The systematic care of the industrial population on a large scale can be accomplished only by means of State control through a department modelled somewhat along the lines of the medical department of the United States Army, having hospitals, full time medical officers, nurses, and other necessary medical employees.

Such a plan might be briefly outlined as follows: The State would be divided into districts, and a medical unit having full care of the insured, would be assigned to each district, the insured being directed for treatment to the headquarters of the unit having charge of the territory in which he lives. Specialists would be in attendance at certain hours and on call when required. Regular attendance upon the patients by the visiting physicians would be assured, the physician being sent from the medical centre upon request. The clerical work would be done at the various centres by the lay employees, all records and statistics being compiled easily and comparatively inexpensively.

If, in such a system, the salaries were made large enough, permanency of position was assured, and opportunity of advancement permitted, many physicians would be eager to choose just such a career. This system would, as a rule, assure quicker convalesence and more scientific treatment of the insured, pleasanter and more satisfactory work for the physician, and, I firmly believe, cheaper and better results for the State.

It is necessary to emphasize the fact that, in this paper, the writer has attempted to discuss only the more salient abuses occurring in the administration of the benefits of health insurance, as well as to indicate the solutions of only a few of the problems which may arise. If we are to have health insurance, it is desirable that the physicians make as few mistakes as possible, the ideal time to rectify a mistake being, paradoxically, before it is made. Numerous details still remain unsettled even in those countries where health insurance has been under trial for many years. The efficient methods of Germany have been unable to eradicate the errors of omission and commission incident to the management of a national health insurance act, already on trial for over thirty years, mainly because of abuses which crept in after the establishment of the law. If we are to hope to benefit by the mistakes of others, a full discussion of the entire subject is desirable, and it is earnestly urged that this discussion take place before the Health Insurance Act is passed—not afterward.

140 WEST SEVENTY-NINTH STREET.

Treatment of Bee Stings.—(*American Medicine*, June, 1916). To relieve the pain of a bee sting reduce ammonia one half and apply to the wound.

MODERN METHODS OF TRANSFUSION.

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That the modern methods of transfusion have had many and similar predecessors is attested by the immortal Pepys, who on November 14, 1666, wrote in his diary that "at a meeting at Gresham College . . . there was an experiment of the blood of one dog, let out, till he died, into the body of another on one side, while all his own ran out on the other side. The first died upon the place and the other very well and likely to do well." On November 21, 1667, Pepys wrote of a "poor and debauched man that the college had hired for 20s. to have some of the blood of a sheep let into his body . . . their purpose to let in about twelve ounces which they compute is what will be let in in a minute's time by the watch." This transfusion, the first ever done in England, was accomplished by means of a cannula at a meeting of the Royal Society at Gresham College on November 23, 1667. It was successful, for on November 30th, Pepys recorded that "he was pleased to see the person that had his blood taken out and that he finds himself much better since and as a new man." It will be observed that this early attempt at transfusion was based on careful animal experiments, was done by cannula, and that a method of computing the amount of blood given was based upon the quantity that a sheep's artery would bleed in one minute. This lacked, therefore, only the laboratory report on the hemolysis and agglutination tests between the donor, in this case a sheep, and the recipient.

A further study of the history reveals the reasons why transfusion was not feasible until within the last few years. The blood clotted in nearly all the attempts, or when partly successful mechanically fatalities often followed the transfusion, owing probably to blood incompatibility. Transfusion became an accomplished fact only when certain conditions were fully satisfied. These conditions are of two kinds, physical and biochemical. It was necessary, when direct transfusion was done, to keep the blood circulating, direct transfusion being any method in which the blood flows directly from the vessels of the donor into those of the recipient. Direct transfusion could be accomplished, therefore, only if means were found to prevent clotting. One important step was taken in this direction when Alexis Carrel (1) perfected his method of bloodvessel anastomosis. By means of paraffined sutures and with the discovery that suture of intima to intima was the correct procedure, transfusion as a mechanical fact was accomplished. Then followed the invention of the Crile cannula, a device which overcame many of the technical difficulties of bloodvessel suture. The Crile (2) cannula is a small metal tube so arranged that by passing a section of the recipient's vein through the tube and reflecting a cuff, the artery of the donor may be drawn over the cuff of the vein, thus bringing intima to intima. Brewer (3) devised a glass tube coated with paraffin which was introduced into the vein of the recipient and the artery of the donor. The paraffin in the tube permitted the blood to flow for a considerable time without clotting. Both methods were improved upon, the best instrument for bringing the vessels into apposition being the Elsberg (4) cannula, which overcame many of the defects of the Crile instrument. Briefly it consists of two halves of a small tube, each half being attached to an upright piece. These upright pieces slide on each other by means of a thumb screw, thus enabling one to make the cannula any size. Upon each half of the cannula are small hooks; the artery is exposed and the instrument opened wide and slipped under and around it: A cuff is turned back and caught on the small hooks, and when the recipient's vein is exposed and opened, the cannula with the artery in place is slipped into it and tied. The Brewer paraffined glass tube was improved by Bernheim, of Baltimore, who constructed a silver tube in two sections, one half to be inserted into the artery of the donor, and the other into the vein of the recipient. When both were ready the two halves were joined and the blood was allowed to flow. This method worked as nicely as any such method can. Tuffier and Carrel devised a small metal tube of comparatively large calibre intended to accomplish the same result.

All these methods are open to the following objections. First, the procedures are difficult and require a high degree of special skill; second, there is inability to measure the amount of blood transfused; and, third, simpler and more efficient methods have been devised.

Many difficulties of direct transfusion were instantly overcome by the introduction of the syringe-cannula method of Lindeman (5), indirect transfusion. This consists of the introduction of cannulæ into the veins of both recipient and the donor. This can be done in most instances merely by skin puncture, then by means of a number of syringes and with the aid of several assistants, the blood is rapidly withdrawn from the donor and injected into the recipient. It is necessary, in the intervals between withdrawals from the vein, to inject saline solution to prevent clotting, but if a sufficient number of syringes are available and the team work is perfect, 500 to 1,000 c. c. can be transfused in a few minutes. Great care is taken in cleaning the syringe after an injection and before using it the second time. This method and its modification, the Unger method, have the great advantages of certainty of success with very little practice and absolute knowledge of the quantity of blood injected.

The Unger (6) modification of the syringe-cannula method consists of a simple device, a two way stop cock, by means of which the blood withdrawn into the syringe is switched into the vein of the recipient, and as the blood is being injected, a small stream of saline is thrown into the vein of the donor. When the reverse process takes place the saline is kept going into the vein of the recipient. The use of only one syringe for the blood was made feasible by a suggestion of Elsberg, that a constant spray of ether upon the syringe would prevent the expansion of the plunger and thus clogging the syringe. This method is simple, certain, and within the reach technically of any one possessing a knowledge of surgical cleanliness. Another device for accomplishing transfusion is the Kimpton (9) tube, which consists of a paraffined container in which the blood is collected from the donor and transferred to the recipient. The preparation of the tube is troublesome, the tubes are fragile, yet while the method seems cumbersome, it has a considerable following. Compared with the syringe method, it lacks ease of preparation, a large quantity of blood is drawn at one time, and if failure does occur much more is lost. The syringe method of transfusion with its present modifications has so simplified the matter that it is safe to say that it will supersede all other methods, except possibly those in which some chemical is added to the blood to prevent clotting during the transfusion.

The transfusion of blood being based upon the essential condition of its fluidity, efforts have been made to prevent clotting by the addition of chemical anticoagulants. Hirudin (leech extract) was tried, but was uncertain in action and often toxic when used in sufficient quantities to permit transfusion. Then followed the introduction of the citrate method of Lewissohn and Weil. With the addition of sodium citrate in proportion as low as 0.2 per cent. to the blood as it is withdrawn from the donor, it remains in a fluid state so that it may be given to the recipient at some later time, and this may be accomplished with a gravity syringe such as a salvarsan outfit. Lewissohn (7) showed by experiment that 0.2 per cent. of citrate was sufficient to accomplish this, and that as much as 1,000 c. c. of blood could be transfused by his method without producing toxic by effects. This innovation is of considerable import, and if certain objections are overcome it will, owing to its simplicity and availability, become generally adopted.

"Whatever the mode of action of citrated blood in transfusion, it is evident," say Satterlee and Hooker (8), "that when the citrate ion-concentration is sufficient to induce permanent incoagulability *in vitro*, the physicochemical effect in the circulation of the recipient must be considerable, and this effect probably varies in direct ratio with the amount of citrated blood introduced." They have devised a complicated (compared to similar devices) pipette and cannula in which a minimal amount of citrate solution is used.

Before taking up the question of the best method now available for general use, it is necessary to go back to the biochemical conditions under which transfusion is advisable or indeed safely possible.

The present technical development of transfusion would certainly not have taken place had not the laboratory given us a fairly safe criterion of the compatibility of the blood of two individuals when mixed in the circulation of one of them. These tests are used to exclude the possibility of hemolysis and agglutination when the bloods are mixed. In the tests it is sought to establish that the blood cells of the patient are neither hemolysed nor agglutinated by the serum of the donor and vice versa. These tests are now available in all well equipped hospitals. Ottenberg and Kaliski, after extensive experience, state that the relation between the test tube hemolysis and intravascular hemolysis is close, and it seems likely that in all cases in which there is test tube hemolysis, some intravascular hemolysis occurs, and that febrile reaction and urticaria or other skin eruptions occur after about ten per cent. of transfusions, irrespective of hemolysis and agglutination, and are not due to fibrin ferment or to blood platelet destruction. This indicates that intravascular changes take place that are not appreciable and cannot be forestalled by our present laboratory methods. It seems reasonable to assume that these changes are less likely to occur when chemically unaltered blood is transfused by the most rapid method.

Of the purely physical methods, the Unger modification of the syringe-cannula fulfills the conditions and combines ease of operation and certainty of performance. In a personal communication, Doctor Unger says:

> After carefully looking over my statistics I find that in the seventy-five transfusions I have performed, none of the patients had a chill due to the tranfusion *per se.* In one case a chill occurred. This transfusion was performed at an outside hospital and no test for agglutination and hemolysis had been performed. The patient had definite symptoms and a chill resulted. This chill would undoubtedly have been avoided had the tests been done. I think this absence of chills is due to the fact that the blood is outside of the body a minimum period of time (five to ten seconds) and that no chemical alterations have occurred. In the seventy-five cases, six had a rise in temperature. The temperature ranged between 100° and 102° F.
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> The simplicity of the technic I need not dwell upon. In its final analysis it amounts to putting a needle into the vein of the recipient, another into the vein of the donor, turning a stop cock, and working a piston of the syringe back and forth. Mine is the method of choice for the following reasons: 1. The technic is extremely simple; 2, the patient receives whole unaltered blood; 3, chills, vomiting, and collapse are absolutely foreign to this method; 4, the amount to be transfused can be determined during the transfusion. One is neither compelled to waste blood nor to give less than the patient can stand; 5, a larger transfusion can be performed than with blood to which anticoagulants have been added; 6, patients transfused with whole blood are affected favorably for a longer period of time than those transfused with blood to which anticoagulants have been added.

If it can be shown definitely that the addition of the citrate and the stirring of the blood as required in this method, no detrimental change takes place, and if also it can be proved that the rise in hemoglobin, which takes place immediately after a citrate transfusion, is held as well as when the transfusion is done by the other methods, it will have a wide range of usefulness. Lewissohn admits that at present the syringe transfusion has been made technically as easy as the citrate method, but holds that the two main advantages resting with the citrate method are "that the patient and donor are not in the same room and that it is impossible to infect the donor's blood by the recipient's."

Perhaps the greatest advantage of the simplified technic of transfusion, beside its ease of performance, is that it can be repeated without trouble, and it has been shown that repeated injections have a high therapeutic value in certain blood conditions.

The question of the quantity of the blood to be transfused can best be answered by considering the individual case, the weight and condition of the patient, and the pathological state for which the transfusion is being done: it will also depend on the weight of the donor and his condition as the transfusion progresses. These conditions limit the quantity to be transfused, so that as small quantities as from sixty c. c. in infants up to 1,500 c. c. in adults may be used.

The present methods, while admirable and adequate, are probably capable of further simplification, and as the field of usefulness is immense they are probably not final.[1]

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HEREDITARY CHOREA.

Early History and Remarks Upon a Barely Mentioned Psychic Peculiarity Which May Accompany It.

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Hereditary chorea, as its name implies, is a peculiar form of chorea which resists all efforts at treatment and which, it must be admitted, is little understood. Its recognition dates back nearly three quarters of a century, before which time, as well as during its early history, it was doubtless confounded with other diseases. Thirty years ago, I wrote an essay upon it, which was published in the New York Medical Journal, in 1885, giving the complete history of a family for four generations in which it was known to exist in seven persons. At that time, as I afterward learned, there were but five or six papers descriptive of the disease in all medical literature, only one of which I had ever seen.

The first mention of the disease we find in a letter written by Dr. H. O. Waters to Professor Dunglison, of Philadelphia, which was quoted in full by him in the first edition of his *Practice of Medicine*, 1842; while in his third edition, 1848, he mentioned still another paper on the disease—an inaugural thesis, like mine, by Dr. Charles R. Gorman. This paper, however, was never published, and the only knowledge we have of it is the one short quotation given by Dunglison suggesting "imitation." The next observer to describe the disease was Doctor Lyon, in the *American Medical Times*, 1863; while still later Doctor Huntington, of Pomeroy, Ohio, gave a lucid description of it as a part of a general paper on chorea in the *Medical and Surgical Reporter* of Philadelphia, 1872. The last named writer has, however, been referred to by many as the discoverer of the disease, and his name is often given to it. But by just what process of reasoning he or his champions can figure out his claims of priority when there were at least three writers ahead of him, two of whom admittedly had given excellent descriptions of the disease, it is hard to see. If full credit is denied Waters, it evidently belongs to, or at least must be shared with that gifted man and keen and observant writer, Doctor Dunglison, who snatched from oblivion the two first papers and gave them to the world. The attempt to throw discredit upon Doctor Waters because he was also a minister of the gospel and consequently of a somewhat "roving" type, as was the custom of the ministry of his time, is hardly a fair interpretation of justice. But clearly, Doctor Lyon, who preceded Huntington by about nine years, should be given credit for the first case reports and for firmly establishing the disease as a distinct clinical entity, as he gave histories to confirm abstract descriptions.

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[1] An excellent paper on the whole subject of Blood Transfusion is one by Ottenberg and Libman, *American Journal of Medical Sciences*, July, 1915, cl, 1, p. 936.

During the years from 1885 to 1900 there were numerous papers published in all parts of the world, but for the last ten or fifteen years little has been written. I published a second paper in 1886 (1) giving a second family, and still another paper in 1889 (2), adding some minor observations to the clinical picture as already known. But it must be acknowledged that no one has been able to enlarge much upon the description of the disease as given in the original communication of Doctor Waters.

Hereditary chorea presents some features which are decidedly unique in the domain of medicine, and consequently very interesting. All authors to the present time, so far as I know, agree that heredity is its greatest, if not its only cause, and that this heredity must be direct and immediate. With one or two exceptional cases, which by the way are open to some question, it seems to be a law of the disease that a single break in the line of heredity is sufficient forever to render immune all future posterity. The course of the disease, after it has once begun, is slow, progressive, and relentless—not a single case so far reported has been known to end in recovery. Mental deterioration is an almost constant accompaniment in the later stages, and suicidal tendencies are common. Other very interesting characteristics are the age at which it develops—almost uniformly between twenty-five and forty years—the inordinate appetite, and the tendency to assume exceptional poses, each patient being more or less peculiar to himself. So far the clinical history is surprisingly uniform and any marked variation in the above mentioned symptoms must at once throw doubt upon the accuracy of the observation or the correctness of the diagnosis. But as to the pathology of the disease, it is different, as in the few cases that have come to autopsy the greatest variety of lesions has been found. The only constant finding so far reported has been a low grade inflammatory process of limited area involving different portions of the brain or its membranes. But even this in some cases has been insignificant in amount and apparently inadequate to account for the symptoms during life.

In a more recent review of the literature of the disease and summary of its symptoms (3) I have called attention to an observation made by Waters which very strangely seems to have escaped the notice of all other writers. He stated that in one of his patients the movements ceased temporarily under the influence of all kinds of instrumental music, except that from a common jewsharp. I have also mentioned having seen a man with obvious, if not advanced chorea, or at least apparent choreic movements, upon whom the soft tones of a church organ had a remarkably quieting effect which lasted about an hour. I now wish to report another case for what it is worth, for unfortunately I have to give this second hand, as it dates back before my time, to near the period, in fact, of Waters' observations.

A few months ago I met a former friend who for upward of thirty-five years was the keeper and superintendent of the county almshouse and hospital, situated in my old home town. During most of this time either my father or I was the attending physician, my service under his administration being about six years. My acquaintance with him was therefore intimate, and I have the greatest confidence in his veracity and reliability. Speaking of old time patients he mentioned a man with St. Vitus's dance who was in the hospital when he was there as superintendent and who afterward died there. This patient, according to the testimony both of my friend and of his wife[1] who was a remarkably clear minded and intelligent woman, and who recalled the case even more distinctly than he did, was unable to walk, except with the greatest difficulty and with the help of assistants, on account of the choreic movements. But the music of a violin, strange as it may seem, would quiet those movements wonderfully, so much so and so promptly that it became a regular practice for a fellow patient to play a few strains of music before he attempted to eat his meals. At night, of course, after tossing for some time, the movements would quiet down as he went to sleep, but it was not uncommon for him to throw himself from bed, or nearly so, unless soothed by music.

To some it may appear almost inconceivable that these movements, wholly involuntary and uncontrollable except for a short time, should be influenced even to the slightest degree by such means as music. But who will deny the influence of the emotions upon certain functional or even mild structural diseases under favorable conditions and in specially impressionable persons? The soothing strains of music have been known to appease the wrath of demons and to quiet the fury of beasts. The mother's lullaby, as she gently rocks her infant child, helps to dispel its fear of goblins and wafts the tiny one back to dreamland; while the stirring strains of martial music animate the soldier who is rushing to his certain doom, to the performance of deeds of valor and acts of heroism. Why, then, should we be skeptical as to the influence of music upon the brain centres in other directions? May there not be an idiosyncrasy with some of these patients, by which pathological stimulation of nerve tracts leading to involuntary twitching of muscle fibres is interrupted or held back by psychic means for a time, or the inhibitory action of the sympathetic stimulated in the same way that intense fear or anger deadens pain? Cases such as these seem to prove the possibility and at least call for further study. I have no doubt that other observers can adduce many instances, if not of hereditary chorea, then of some other taxic or spasmodic disease in which music has shown a favorable influence. Possibly it may be made a more valuable therapeutic measure than has been generally supposed, if we will but try it, ranking with or even higher than suggestion or hypnotism.

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[1] These people are both alive and will verify all I have said in quoting them. The question of this patient having true "hereditary" chorea is immaterial, as the psychic influence would doubtless be the same in other forms of the adult disease.

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9 PINE STREET.

GONORRHEA AND ITS COMPLICATIONS.

Treatment with the Atoxic Antigonococcus Vaccine of Nicolle and Blaizot.

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At a meeting of the French Urological Association, in 1913, Nicolle and Blaizot, of the Pasteur Institute in Tunis, reported a series of 200 cases of gonorrhea and its complications treated with a new vaccine. By growing gonococci on special media, they were able to produce a sensitized vaccine, which was both toxic and stable. The exact method of preparation of the vaccine has not been described.

The results reported by these two authors were remarkable, the more so because they were most striking in the severe complications of gonorrhea. To summarize their conclusions: 1. Gonorrheal ophthalmia was cured after several inoculations, sometimes after one. 2. Orchitis—several hours, or at most a day after the injection, the pain ceases, fever disappears, and resolution commences; sterility was avoided in practically all of the cases. 3. Rheumatism—the symptoms and physical signs rapidly improved. In three cases cure followed two to eight injections given every two to three days. 4. Acute and chronic urethritis—a number of cases were cured after three to six injections.

This remarkable report was soon followed by the publications of many other French observers. In the main most of these reports substantiated the results of Nicolle and Blaizot. A few observers, however, reported negative results, and others asserted the vaccine to be untrustworthy. Murphy and Kreuschler (8), in an article upon vaccine therapy, cite the results obtained by Nicolle.

In 1914, I obtained a sufficient supply for the treatment of twenty-five cases. In view of the remarkable qualities attributed to this vaccine, I consider it of value to report the results that were obtained; first, a few words as to dose, method of injection, and reactions. For each injection 0.5 c. c. of vaccine, containing three billion bacteria, diluted with 1.5 c. c. of physiological salt solution, is given. The dose is not increased with subsequent injections. Injections are administered either intramuscularly or intravenously. The former were generally followed by severe pain at the site of inoculation of several hours' duration. There was usually no febrile reaction. Acute cases were inoculated every day or every other day; chronic cases every two to four days. Six to eight injections constitute the prescribed course of treatment. Untoward effects were never observed.

Nicolle and Blaizot employed urethral irrigations of potassium permanganate in most of their cases. In order to determine the efficacy of their vaccine the usual local treatment was withheld in most of the cases here reported. The only treatment for the acute complications was rest in bed. Some of the ambulatory cases were treated with potassium permanganate irrigations. Following is a summary of the series of cases treated with this vaccine.

CASE I. F. C., male, twenty-five years old, March, 1914. Acute anterior posterior gonorrhea, four weeks' duration. Complications: Acute prostatitis, acute epididymitis. Local treatment: None during stage of complications. Vaccine treatment: Eight intramuscular injections. Relief of pain in epididymis after second injection; gonococci still present at end of treatment. Prostate and epididymis somewhat improved. Result unsatisfactory.

CASE II. A. C., twenty-four years old, February, 1914. Acute anterior gonorrheal urethritis, one weeks' duration. Local treatment: Irrigations of potassium permanganate daily. Vaccine treatment: Nine intramuscular injections, one every other day. Discharge ceased after fifth injection. Three days after cessation of treatment, recurrence of discharge with gonococci. Result unsatisfactory.

CASE III. A. M., twenty-five years old, March, 1914. Chronic prostatis, three months' duration. Gonococci present in prostatic secretion. Local treatment: Intravesical irigations of potassium permanganate. Vaccine treatment: Eight injections, one every third day. Discharge very scant, gonococci still present. Urine clearer, contained fewer shreds. Results unsatisfactory.

CASE IV. G. N., twenty-nine years old, May, 1914. Chronic prostatitis, two and a half months' duration. Gonococci present in discharge. Complained of rheumatic pains in knees and elbow joints. Local treatment, none. Vaccine treatment: Six intramuscular injections, one every third day. After fifth injection, gonococci disappeared. No recurrence when seen two months later. Cultures negative. Result excellent.

CASE V. L. M., twenty-eight years old, July, 1915. Chronic anterior and posterior urethritis; chronic prostatitis; gonococci present in culture. Gonococcus complement fixation test positive. Local treatment, none. Vaccine treatment: Eight injections, one every third day. After eight injections cultures were negative for gonococci; prostatic condition considerably improved. Complement fixation, one month later, positive. Result good.

CASE VI. E. S., twenty-six years old, June, 1914. Chronic anterior posterior gonorrheal urethritis; chronic prostatis recurrent, few years' duration, gonococci present. Local treatment: Potassium permanganate, intravesical irrigations. Vaccine treatment: Eight injections, one every third day. Disappearance of gonococci during course of treatment, recurrence of discharge with gonococci few days after last injection. Result unsatisfactory.

CASE VII. J. M., thirty-five years old, June, 1914. Chronic prostatitis, stricture of urethra, acute exacerbations with acute epididymitis. Gonococci present in discharge. Local treatment: Anterior irrigations with potassium permanganate. Vaccine treatment: Eight intramuscular injections, one every other day. Discharge still present, with gonococcus. Complement fixation test. Result unsatisfactory.

CASE VIII. E. S., twenty-one years old, April, 1914. Acute anterior posterior gonorrhea, acute prostatis, acute bilateral epididymitis, one week's duration. Local treatment, in bed, cold applications to testes. Vaccine treatment: Eight intramuscular injections, one every other day. After seventh injection discharge diminished considerably. Epididymides smaller and painless after third injection. Prostate much smaller. No gonococci found; no recurrence two months later. Result good.

CASE IX. H. K., twenty-one years old, January, 1914. Chronic anterior posterior urethritis, chronic prostatitis, one year's duration. Recurrence of discharge with gonococci when treatment was discontinued for few days. Local treatment, none. Vaccine treatment: Eight intramuscular injections, one every third day. Discharge ceased after fourth injection; no gonococci present. No recurrence when seen one month later. Cultures negative. Result excellent.

CASE X. A. R., twenty-four years old, June, 1914. Acute anterior posterior gonorrhea, acute prostatitis, three months' duration. Discharge with gonococci. Local treatment, none. Vaccine treatment: Eight intramuscular injections, one every other day. After fifth injection discharge ceased; cultures of prostatic secretion after eighth injection showed gonococci. Result unsatisfactory.

CASE XI. H. K., twenty-four years old, September, 1914. Acute anterior posterior gonorrhea, acute prostatitis, acute epididymitis, two weeks' duration. Local treatment, none. Rest in bed. Vaccine treatment: Eight intramuscular injections, one every other day. Gonococci still present; discharge diminished somewhat. Prostate enlarged and contained much pus. Epididymis smaller, not painful. Result unsatisfactory.

CASE XII. D. K., thirty years old, October, 1914. Acute anterior posterior gonorrhea, acute prostatitis, three weeks' duration. Local treatment, none, while vaccines were being given. Vaccine treatment: Eight injections, one every other day. Discharge diminished somewhat, prostate slightly smaller; gonococci still present. Result unsatisfactory.

CASE XIII. S. H., twenty-two years old, August, 1915. Acute anterior posterior gonorrhea, acute epididymitis, three weeks' duration. Local treatment: Rest in bed, cold applications. Vaccine treatment: Eight intramuscular injections. Discharge still present, gonococci present, epididymus still large and painful. Prostate enlarged and contained much pus. Result unsatisfactory.

CASE XIV. J. B., twenty-nine years old, March, 1915. Chronic anterior posterior gonorrhea, chronic prostatitis, three years' duration, with a few acute exacerbations. Present attack of three months' duration, gonococci present. Local treatment: Anterior irrigations of potassium permanganate. Vaccine treatment: Intramuscular injections every third day. After sixth injection, cessation of discharge. Prostatic secretion contained less pus. Free from discharge for three months, then recurrence after coitus. In this case it was impossible to decide definitely whether the recurrence was due to a new infection or to the lighting up of an old process. Result satisfactory.

CASE XV. I. K., July, 1914. Infection of prostate; prostatectomy three months previously; marked swelling of left ankle (gonorrheal arthritis?), temperature 103° to 104° F., painful joints for several weeks; two sinuses in perineum through which pus exuded. Left epididymus enlarged and hard. Local treatment, none. Vaccine treatment: Seven injections. Rapid disappearance of symptoms in the ankle. Diminution of pus from the sinus in the perineum, gradual improvement, so that patient was able to walk again within three or four weeks. Result satisfactory.

CASE XVI. I. W. Chronic prostatitis. Local treatment, none. Vaccine treatment: Six injections. Some improvement, but not striking. Result unsatisfactory.

CASES XVII, XVIII, XIX. Gonorrheal infection. Local treatment, none. Vaccine treatment: Six injections each. These cases showed some improvement, but not more than was regularly noticed in other types of treatment. Result unsatisfactory.

CASE XX. D. I., eighteen years old. Acute pyosalpinx, acute urethritis, gonorrheal rheumatism involving ankle and wrist joints. Gonococci in smears. Local treatment, none. Vaccine treatment: Eight injections, one every other day. After fourth injection diminution of swelling and pain in joints—this was quite marked—but a few days after injection recurrence of pain, swelling, and fever. Urethritis and pyosalpinx uninfluenced. Result unsatisfactory.

CASE XXI. Chronic prostatitis and seminal vesiculitis, ten years' duration, with numerous recurrences. Time of injection severe anterior posterior infection—no gonococci found. Urine cloudy with shreds. Complement fixation test positive. Vaccine treatment: Six injections. Condition about same. Result unsatisfactory.

CASE XXII. A. W., thirty years old, July, 1914. Acute anterior gonorrheal urethritis, three weeks' duration. Local treatment: Potassium permanganate anterior irrigations. Vaccine treatment: Six injections. Gonococci still present after last injection. Result unsatisfactory.

CASE XXIII. E. S., twenty-six years old, August, 1914. Acute anterior gonorrheal urethritis, one weeks' duration. Local treatment: Potassium permanganate anterior irrigations. Vaccine treatment: Seven injections. Gonococci present after last injection. Result unsatisfactory.

CASE XXIV. A. S., twenty years old, August, 1914. Acute anterior posterior gonorrheal urethritis, acute prostatitis. Local treatment, none. Rest in bed. Vaccine treatment: Eight intramuscular injections. Gonococci present in prostatic secretion after last injection. Result unsatisfactory.

CASE XXV. A. K., aged twenty-six years, June, 1914. Chronic gonorrheal prostatitis of many years' duration. Gonorrheal arthritis of knee joint with numerous acute exacerbations. Fluid in joint. Local treatment: Knee in splints. Vaccine treatment: Six injections. Marked improvement, pain and swelling disappeared, recurrence one year after. Result satisfactory.

SUMMARY.

A series of twenty-five cases of gonorrhea and its complications was treated with the vaccine of Nicolle and Blaizot. During the period of vaccine treatment local therapy was withheld. Most of the cases had one or more complications at the time the treatment was administered. Seven (twenty-eight per cent.) were definitely cured by the vaccine; of these, two were brilliant results (Cases VIII-IX). Cases of uncomplicated acute and chronic urethritis were not influenced by the treatment. Cases of epididymitis were only slightly improved. Cases of chronic prostatitis showed the highest percentage of cures. Rather marked improvement followed the treatment in a few cases of gonorrheal rheumatism. Temporary improvement was often noticed during the course of treatment, to be followed by recurrences when the treatment was discontinued. The gonococcus complement fixation test was not influenced in any of the cases. The vaccine was found to be innocuous; toxic symptoms never developed.

As a result of these experiences, it must be concluded that the atoxic gonococcus vaccine, although occasionally followed by a brilliant result, is most inconstant in its effects. It cannot be relied upon for a satisfactory result in any given case. It is conceivable that this vaccine may be modified so that more constant effects may be expected. The results in some of the cases justify further experimentation with the vaccine of Nicolle and Blaizot.

The percentage of cures in my series of cases was no higher than that obtained with the usual methods of treatment at our disposal.

I wish to express my indebtedness to Dr. M. Kakels, of New York, through whose kindness the vaccines were obtained, and to Dr. Edwin Beer, who kindly turned over to me vaccines that had been placed in his hands. Of the reported cases several were treated by Doctor Buerger, Doctor Kakels, and Doctor Kaliski, of this city, and one by Doctor Simons, of Nashville, Tennessee. I wish to thank these gentlemen for their case reports.

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40 EAST FORTY-FIRST STREET.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXII.—What are your methods of resuscitation and aftercare of persons apparently drowned? (Closed.)

CLXXIII.—How do you perform circumcision? (Answers due not later than August 15th.)

CLXXIV.—How do you treat ivy poisoning? (Answers due not later than September 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXI was awarded to Dr. Lionel C. Charbonneau, of Brooklyn, New York, whose paper appeared on page 265.

PRIZE QUESTION NO. CLXXI.

THE TREATMENT OF SPRAINED ANKLE.

(Continued from page 268.)

Dr. Charles C. Henin, of Springfield, Mass., holds that:

The treatment of a sprained ankle may be divided as follows: 1. Sprain of a slight degree, where there is little pain and tenderness and little swelling, especially below the external malleolus. For the first and second day following the injury the limb should be kept in a horizontal position and treated by hot fomentations, light massage, and passive motions two or three times a day. On the third day and thereafter it should have a hot douche for about thirty minutes, followed by a cold douche for one minute, and followed by massage. Another plan is to apply adhesive strapping at once.

2. A sprain of medium severity, where the pain and tenderness are more marked, the swelling is greater and involves the whole circumference of the ankle, there is difficulty in walking, and some of the ligaments are ruptured: After the preliminary treatment with hot water, or hot fomentations and massage, adhesive straps should be applied to the foot, ankle, and leg. They serve a threefold purpose, keeping the foot in a correct position, preventing extreme motion in any direction, and exerting automatic massage by varying the pressure in different parts every time the foot is moved. The leg should be shaved, washed with soap and hot water, alcohol, and ether. Strips of adhesive plaster should be applied in such a manner as to fit accurately, and each will overlap the next by a third of an inch. A good plan is to apply a broad strip like a stirrup, extending from below the knee on the inner side of the leg, covering the inner malleolus, the plantar surface of the heel, the outer malleolus, and finishing on the outer surface of the leg near the head of the fibula. A light gauze bandage completes the dressing. On the third day the patient can walk about with a cane, but the massage and passive motion should be continued. After about two weeks it may be removed; but douches and massage should then be resumed and continued as long as the joint is weak.

3. In sprains of extreme severity, there is great pain and swelling, and much abnormal motion amounting to a partial dislocation. We often suspect a fracture of the malleolus, but it is impossible to prove without a radiographic examination. The plan of treatment is as follows: We should elevate the limb and apply hot fomentations to relieve the pain, and keep them hot with hot water bags. The limb should be fixed by sandbags. Two or three times a day, the dressing should be removed and gentle massage given. On the third or fourth day, when the swelling has somewhat subsided, the leg should be shaved, covered with sheet wadding, and encased in a plaster of Paris bandage from the toes to the knee, the foot being held at a right angle. After two weeks the cast should be removed, a hot douche and massage should be given twice a day, and passive and active motion begun.

Dr. Solomon Weingrad, of Mountaindale, N. Y., directs:

Order the patient to immerse the foot in a basin of warm water and adding gradually hot water until the patient can stand the heat without discomfort on his part, keep foot in the water for fifteen minutes. Afterward dry the foot thoroughly and cover with flannel or other material at hand. Repeat same maneuvre four times at three hours' interval.

Order patient not to step on foot for twelve hours after the last foot bath.

If the case is seen late, a day after injury, where there is swelling and painful motion, reduce swelling with cold applications and bathing with liquor Burowi. After swelling has been reduced, apply a light cast from above the ankle to the toes; keep this on for a week, remove same, and order massage from below upward, and passive motion for about a week before the patient is allowed to walk.

Dr. William J. Ryan, of Philadelphia, suggests:

First ascertain whether the injury is external or internal—sprains of the external lateral ligament are most common. After diagnosing a sprain, apply a gauze dressing soaked in magnesium sulphate in a saturated solution, or some other evaporating lotion. Then, if such a thing is handy, place the injured member in a fracture box, which should be padded with a small pillow. An oiled silk or wax paper cover over the dressing prevents rapid evaporation. If not, place the foot and leg on a small thin pillow and strap the pillow on with buckled straps of canvas, or with a wide bandage. Straight internal and external lateral splints outside the pillow are most important in preventing motion. If a pillow cannot be had, a folded sheet or a couple of towels make an excellent padding for the splints.

Usually in about forty-eight hours the swelling has subsided sufficiently under this treatment to permit of more careful examination. If at all doubtful as to the presence or absence of fracture, by all means resort to the x ray. At this time the extent of lateral mobility can be easily determined. If there is none and only a point of tenderness and some pain on bearing the weight of the body are found, an adhesive boot may be applied and is as simple and efficacious as any other dressing. This may remain on a week, after which it can be removed, and a few hot baths for the foot followed by an alcohol rub will suffice.

If there is excessive lateral motion, it means a complete or nearly complete ligamentous tear, or a sprain fracture. In either case a plaster of Paris or a sodium silicate cast may be applied, with the foot in slight inversion or reversion, depending directly on which side the tear has occurred, always having the long axis of the foot at right angles with the long axis of the leg. The cast may be made to cover only the posterior half of the leg and ankle and the bottom half of the foot; this permits of inspection without removing the cast.

This cast should remain on for three weeks. When it is removed, massage and passive motion are in order, and between treatments a firm bandage should be worn. Walking should be at first with two crutches, then a crutch and cane, and so on until the full weight can be borne.

I have never had to resort to narcotics for pain in any case, although in nervous individuals and alcoholics sedatives are indicated.

Dr. Gustavus Eliot, of New Haven, Conn., points out that:

The two most important factors in the treatment of a sprained ankle are rest and pressure. The necessity for thorough use of these therapeutic agents depends upon the severity of the injury to the structures; the extent of this injury it is impossible to determine exactly; it is probable that it varies from a slight stretching of one or more of the ligaments and tendons about the joint, to extensive laceration and bruising of the tissues.

These injuries are accompanied by pain, swelling, and impairment of function. If the sprain is slight, consisting of a moderate sudden stretching of a ligament, acompanied by transient pain, a brief rest with careful resumption of the use of the joint may be sufficient.

If the injury is a little more severe, so that pain persists, and there is slight impairment of function when the joint is used, accompanied by slight swelling, the application, with gentle friction upward, of an evaporating lotion will assist in restoring the joint to a normal condition. An old but useful mixture is:

℞ Ammonii chloridi, ...ʒiv;
Alcoholis, ...℥iv;
Aquæ, ...q. s. ad ℥viij.
M. Sig. Shake. Apply externally every two hours.

If the injury is severe, so that there is much pain, considerable swelling, and great impairment of ability to use the affected limb, the patient should be placed in bed; the foot, ankle, and leg should be massaged gently but firmly from the toes toward the knees, so as to diminish the swelling, if possible. An anodyne and stimulating application may advantageously be used with the massage. Another ancient but useful formula is one recommended by Fahnestock before the middle of the last century:

℞ Olei origani, ...
Tincturæ opii, ...
Spiritus ammoniæ, } ....āā ℥i.
Olei olivæ, ...
M. Sig. Warm a small amount and apply with gentle friction.

This should be thoroughly rubbed into the skin; do not apply cloths soaked with it. The joint should then be enveloped with absorbent cotton which has been warmed, the foot and ankle should be evenly and firmly covered with a flannel or cotton bandage, and the limb placed in an elevated position. The dressing should be reapplied every day, the joint thoroughly rubbed with the liniment, the cotton heated, and the bandage reapplied. The patient should not be allowed to use the affected part so long as effort causes pain.

In cases which have not been properly treated at the beginning, and in acute cases in which the pain and swelling have subsided, the method of treatment popularized in this country by Dr. Virgil P. Gibney, of New York, is exceedingly useful. The limb is elevated, and massaged firmly from the toes toward the knee. The ankle and foot are then enveloped with strips of adhesive plaster: the first resting on the bottom of the heel, the two ends passing upward back of and above the malleoli; the next resting on the back of the heel, the two ends passing forward under the malleoli to the bases of the great and small toes. These are succeeded by other strips, alternately vertical and horizontal, until the entire foot, ankle, and three inches of the lower end of the leg are firmly encased with strips of adhesive plaster. A layer of absorbent cotton may with advantage be placed over this, and the whole covered with a cotton bandage. As the joint improves, the cotton may be dispensed with, and later the bandage, leaving the adhesive plaster until the joint is restored or a new dressing is needed.

Dr. Frank C. Makepeace, of New York, points out that:

The treatment is divided into three stages, viz., immediate treatment, secondary treatment, and aftertreatment.

Immediate treatment: The patient is placed in bed, with the injured leg in a horizontal position and supported by a soft pillow, and an ice bag applied constantly for a few days until the pain becomes less severe and the swelling is somewhat reduced. During this period he must not use the injured member.

Secondary treatment: When the swelling has been somewhat reduced and the pain lessened in severity, the injured ankle is strapped with adhesive plaster about one and one half inch wide; these strips overlap each other like a figure of eight bandage and extend from a short distance above the joint entirely around the plantar surface of the foot, so as to enclose the entire ankle joint. The patient is now permitted to walk on the injured member, but will probably have to have the assistance of a cane for about a week or ten days.

Aftertreatment: After the expiration of about two weeks, the time depending on the disappearance of swelling and pain, the straps are removed and the injured joint is gently but thoroughly massaged daily. The patient is now permitted to use the ankle freely, but he should be instructed to be careful not to injure it by overexertion. It is also a good plan to advise the wearing of an ankle brace, bandage, or other appliance, during working hours for several weeks.

If the ankle should become swollen or unusually painful during the aftertreatment, the adhesive strapping may again be employed and allowed to remain in place for a week or ten days.

Dr. Leo Faske, of Brooklyn, New York, states:

As we all know, sprains are divided into three classes according to the severity of the sprain, and our treatment must be for the three classes or divisions accordingly.

The treatment of the first class, where the pain and tenderness are not severe, and there is little swelling, and patient can use the foot with little discomfort—is to keep the foot at rest and apply heat or cold. I get good results from lead and opium wash and also from Burrow's solution. I apply a firm gauze bandage to the foot and saturate it with the solutions, and then keep an ice bag on the wet bandage. This type of cases usually terminate favorably in two or three days. If the cold does not relieve, I apply hot fomentations for a while. I allow this type of patient to walk on the third day. Here adhesive strips, applied so as to form a sandal on the foot, help a great deal.

If there is no improvement shown at the end of the third day, I proceed with the treatment of the second class. In the second class I apply a flannel bandage to the ankle, beginning at the toes and working up to about four inches above the joint; then place the foot in water, which should be very warm, for an hour or two. This treatment sometimes stops the swelling. After this, I apply my adhesive strips in the Blaisdell fashion. I first shave the lower limb if it is very hairy. The strips of adhesive plaster should include the leg, the ankle, and the foot. My first strip is a broad one, being about one and one half inch wide, beginning at the inside of the leg, about four inches below the knee, keeping the foot at a right angle to the leg, covers the inner malleolus, the plantar surface of the heel, the outer malleolus, and ends on the outer side of the leg about four inches below the knee.

This is my main strip; it reenforces the lateral ligaments of the joint, which are usually stretched or torn. When the foot is at right angles to the leg, it relaxes the ligaments, and my first strip is utilized at a great advantage.

Another strip about one inch wide is passed around the leg about one and one half inch above the joint, and still another about three inches above the joint; these two strips hold my first strip in place and make the leg firm.

If you want to avoid any swelling of the leg or foot which may be due to these strips, don't bring them entirely around the leg. The other strips are placed, one at a time; the centre of each strip is placed on the plantar surface of the foot and the ends cross each other on the dorsal surface of the foot in front of the joint and are attached to the sides of the leg above the joint. These strips should be about three quarters of an inch wide and should overlap about one quarter inch and form a perfect sandal, until almost the entire foot, ankle, and lower part of the leg are encased, excluding the toes and about two inches of the foot anteriorly.

On top of the adhesive plaster dressing I apply a gauze bandage and an ice bag. Massaging the foot several times a day does good.

Never allow the patient to walk for at least five or six days. The adhesive plaster should be left intact for ten days, then removed. To remove the adhesive plaster without pain, pour benzin on the plaster and you can easily peel it off; hot and cold douches and massaging of the foot help a great deal.

Elderly people do not seem to stand the cold applications well, therefore try them with the heat first, and then change, if necessary.

In the third class, I always insist on an x ray picture being taken. The foot should be firmly bandaged and hot fomentations applied. We may also use lead and opium warm, or Burow's solution. On top of the wet dressing, keep a hot water bag so that the heat may be maintained. This relieves the pain as well as the swelling.

The dressing may be removed at times in order to massage the foot. When the swelling has subsided somewhat, apply a plaster of Paris bandage and keep it on for at least three weeks. In applying this bandage, have the foot at a right angle to the leg.

After recovery from a sprained ankle, have the patient wear an anklet so as to prevent recurrence in the same joint, which is weakened from the first sprain. If pain is very severe, I resort to codeine, morphine sulphate or Dover's powder. After the acute symptoms have subsided, I massage with stimulating liniments and apply a tight bandage.

In gouty and rheumatic individuals, look out for ankylosis of the joint. In elderly patients I give the iodides, especially potassium, and tonics if the stiffness is marked.

(*To be concluded.*)

Case of Multiple Cartilaginous Exostosis.—H. W. Marshall (*American Journal of Orthopedic Surgery*, June, 1916) reports a case of multiple osteochondromata. Numerous photographs and x rays show growth on many bones of the body. An examination of one of the growths showed it to be benign in character. There was a significant family history in this particular case.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD, DRUGS, AND LONGEVITY.

Some Thoughts on Their Relations,

By Leroy D. Swingle, Ph. D.,
Department of Pharmacology, University of Utah.

(*Continued from page 172.*)

The possible effects of drugs on the germplasm and through it upon the length of life of the soma of the following generations, have not received sufficient consideration. The reason for this probably lies in the facts that the manifestation of any change in the germplasm must be delayed till future generations appear, and that the attention is naturally directed toward the relief of the suffering somatoplasm. All sorts of active drugs are administered, with very little thought as to what effect they may have on the life of the following generations. In the case of the soma, sooner or later, a howl is set up if a deleterious action occurs, but with the germplasm the symptoms are delayed till the next generation, or possibly for several generations, before full effects can be observed. Neither the microscope nor chemical reactions reveal the undifferentiated, specific characters that are bound up in a germcell. Much less, then, will they reveal the slight changes that drugs may produce in those characters. It is only by looking backward through the functions and structure of the somatoplasm unfolded from that germcell that we are able to determine what changes drug therapy is producing in the germplasm. The future generations may rise up and curse us for the attempts we have made to prolong the life of the somatoplasm of this generation, without first considering the possibility of bringing through the medium of the sex cells a curse upon the somatoplasm of the following generations. A fool can injure the germ cells, while the wisest man cannot mend them. In this connection we also ask what effect will the inhalation of the noxious fumes generated in our modern manufacturing plants have upon the life of our progeny?

I fancy that at this point I may be charged with defending the doctrine of the "transmission of acquired characters"; but not so. Well I recognize that the property of stability has been wisely placed in the germplasm, while equally wisely the properties of variability and adaptability have been given the somatoplasm. Were this not so, were the properties reversed, the somatoplasm exposed to varying conditions would not be able to live long enough to reach sexual maturity, while the germplasm by that time would be so deranged that nothing but monstrosities could be produced, and death would overtake both in a few years. Nevertheless, though the germplasm is comparatively stable, there is definite proof that it may be altered by food and drugs. As a result of Weismann's scholarly and effective attack on the doctrine that acquired characters may be transmitted, and on account of the confirmation of his view by modern experiment, there may result a failure on the part of medical men to appreciate the truth of the statement that food and drugs may affect the germplasm. Let it not be thought that the admission of the truth of this statement is an acceptance of the idea that acquired characters may be transmitted. This doctrine has to do with the evolution of organisms by the transmission to the offspring of a character, positive or negative, which has been acquired by the somatoplasm of the parent. It will be seen that this requires that the addition of a character to, or the removal of a character from the somatoplasm of the parent shall so modify the potential relations in the germcells that these very characters will unfold in the embryo of the offspring and will be exhibited by its somatoplasm during some stage in its life. It is needless to say that such a modification of the germplasm would doubtless manifest itself in the generations to follow. To illustrate, suppose that in a salamander, independent of the characters of its parents, should develop an abnormally broad head and heavy jaw as a result of special environmental or food conditions, and further suppose that these same characters should appear in its offspring which is raised under normal environmental and food conditions; this would be a case of the transmission of acquired characters. The first supposition need not be made, for such characters are actually acquired under the conditions mentioned (Powers, 5). Many other similar cases could be mentioned, but in no case is there any tendency for the characters to appear in the offspring. So not only reason but also experiment teach us that acquired characters are not transmitted. Fortunately nature is as wise as the biologist and has purposely determined that acquired characters shall not be transmitted. We cannot imagine the transmission through the germcells of an acquired character, whether it is an addition to, an injury, an atrophy, or an hypertrophy of the somatoplasm, to the offspring, so that such a condition will appear in a corresponding or, for that matter, in a different part of the offspring. But this is what is comprehended in the evolutionary doctrine of the transmission of acquired characters. Yet, on the other hand, we can conceive, in fact would expect *a priori*, that any injury to the germplasm itself would be manifested in some definite defect or a more general weakness of the somatoplasm of the offspring. In the lower animals if direct violence is done to the germ cells to the proper degree, the offspring may lack parts, or present anomalies, or fail to develop completely. We reason that, since from our present knowledge of the cytology and chemistry of the germplasm, it cannot be determined what shape the parts of the offspring will have, or in fact it cannot even be determined whether certain structures will be present at all, it is possible that various unobservable derangements of the germplasm may slowly result from its contact in the body with improper nutrient media or with drugs administered therapeutically, or with poisons taken accidentally or as beverages. It could hardly be conceived that such conditions would ever add any new and valuable characters to the germcell—the most complex mass of structural and physiological potentialities. It would be too much like attempting to improve a delicate watch by going after it with hammer and anvil.

There is much evidence that alcohol—a food, a beverage, a drug, a poison—has a direct action on the germcells and through them on the anatomical structure and physiological processes of the progeny, impairing its health and shortening its life. All are familiar with the deleterious effects on the soma of an excessive use of alcohol and with the fact that the life may be shortened thereby. But recent experiments by Stockard (6), of Cornell Medical College, on the guineapig, where alcohol was given in daily doses, show that the germplasm may be profoundly affected. Offspring from such pigs showed a higher mortality, more deformity and sterility, paralysis, absence of eyes, etc. Moreover, the great grandchildren showed the greatest defects, although none but the great grandparents received alcohol. Thus, the effects were cumulative. The effects on longevity are manifested in the fact that many of the offspring were early abortions, many were stillbirths, and many died soon after birth. The amount of alcohol given, although too small to have any effect upon the length of life of the generation receiving it, produced an extreme effect upon the germplasm. We should expect smaller doses given over many generations to produce, though more slowly, similar results.

Beside these experimental evidences of the deleterious effects of alcohol through the germplasm upon the soma of the progeny, there are confirmatory observations upon the families of drunkards. It may be suggested, therefore, that ever since Noah disgraced the human family, there has been a progressive degeneration of the race, and chiefly as a result of the almost universal use of alcohol as a beverage, a food, a drug. It is doubtful whether any of us can boast of a lineage free from its hereditary contamination. Had no alcohol been used, other things remaining the same, we believe that the preceding data suggest the conclusion that the race at present would be stronger, longer lived, and less defective, especially in respect to the nervous system.

Therefore, we ask, How much effect is the amount of alcohol that is being administered in patent medicines and in other prescriptions having upon the somatoplasm of future generations? Another question may also be asked: What effect will our modern drug therapy in general have upon the life of future generations? Granted that the barrels of medicine that are being swallowed have a beneficial effect on the soma of the present generation, can we be sure that the future generations will not suffer more than the present gains? It is easier to injure the germplasm than to mend it. For the former, knowledge is not required, but certainly ignorance (and what a supply!) can never accomplish the latter. Some toxins and drugs, other than alcohol, have been proved to injure the germ cells. Should we not, therefore, consider the possibility that in attempting to prolong the life of the present individual, before and during the period of procreation, by the use of drugs, the lives of their progeny may be irredeemably shortened? On the other hand, biological and dietetic treatment and prophylaxis for prolonging the life are lines along which medicine may develop without endangering the race. In fact, these measures, instead of having in themselves a deleterious effect upon the germplasm, may check its tendency to derangement by removing the exciting causes such as poisons resulting from infections and from food decomposition, etc. Metchnikoff has gone so far as to suggest that the poisonous products of putrefaction in the digestive tract are the causes of old age and death. Well may these poisons be contributing causes, though Metchnikoff's view is extreme, and if they are, they would probably contribute in a measure to the derangement and senility of the germplasm as well. Treatment and prophylaxis in the form of dietetics, immunization, and possibly even psychotherapy, ought to do much for the life of the present individual and toward the preservation or increase of the longevity of the progeny. Profound changes are known to be brought about in the somatoplasm of animals from various levels in the phylogenetic series, by varying the food conditions; as examples, we may mention the protozoa, the hydra, the rotifers, insects, salamanders, and even man. Of course these changes in the soma are not transmitted to the offspring, but there may be nevertheless certain obscure effects upon the germplasm that have not been determined.

There is some evidence that man in the dawn of history lived to be much older than at present, and also that there has been an impairment in his mental capacity. This is the equivalent of an admission of an organic degeneration in man, an idea which is not generally entertained in modern literature. It is not within the province of this communication to present the evidence for and against this idea. Yet it is patent that the line of argument presented in this treatise leads to such an idea. We have stated or implied that unfavorable environment and food have necessitated a struggle for existence and that in the struggle the fittest have naturally tended to survive. Yet there is nothing, as far as we can see, in struggle for existence and its consequent natural selection, that can raise the race above the best in the race, but on the other hand, if conditions are such as to necessitate a struggle on the part of the protoplasm in order to maintain its existence at all, the protoplasm would tend to be injured by that environment rather than improved. Geology seems to bear testimony in favor of this idea. It is apparent that no somatoplasm escapes injury while in contact with its environment. It has been indicated that bad food conditions and poisons such as alcohol may injure the germplasm, and to such conditions the human race has been quite universally subjected for thousands of years. These alone have, therefore, constituted sufficient cause for the degeneration of the race. We are aware that few will admit the truth of this statement; but many will not admit it because they confound organic change with another quite different matter, namely, the products of the race—its knowledge, its scientific achievements, its customs, its social relations and institutions. The possible fact that the race may have experienced organic degeneration, does not oppose the fact, which all admit, that there has been an upward evolution as respects some of these other matters. It must be remembered that the race today has had at least 5,000 years more time in which to develop and accumulate these things than the race had had at the dawn of history. No one would think of attributing the modern developments, which mark the present age, to a recent upward organic evolution of the race, manifesting itself in a mental brilliance. We ask, Where would the race be now, were it not for its organic degeneration, which has been opposing to some extent the growth or evolution of these other things?

In closing, we reiterate that theoretically an increase in the length of life of the somatoplasm, and as a concomitant to it, an increase in human happiness, which after all is the *summum bonum* for man, must come through three avenues: 1. The development, if possible, of a more perfect organism through the means suggested by eugenics; 2, the improvement of the environment both of the somatoplasm and also the germplasm, which, though comparatively stable, has been proved to be susceptible to poisons circulating in the blood which constitutes its environment; and, 3, the determination of what would constitute a more nearly perfect diet and the application of it in prophylaxis and therapeutics. The best results may be expected along the last two lines.

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Dietetic Food Values.—In a study on food and the food value of the dietary at the New York City Municipal Sanitarium, carried out by Robert J. Wilson and Walter L. Rathbun, the following conclusions were reached: 1. Food studies should be carried on at regular intervals and the records should be made available for comparative purposes; 2, the elimination of meats and eggs from the morning meal and the substitution of milk is a sound and justifiable economy; 3, the dietary of the tuberculous should be high in caloric value, but should be confined to three daily meals in all but exceptional cases; 4, males consume more food than females both in total amount and in number of calories to the pound of body weight, but females make larger gains; 5, the avoidance of frequent repetition of foodstuffs is desirable; 6, small initial servings with as many "seconds" as may be desired is satisfactory to the patients and prevents much plate waste.

Maple Syrup.—According to the *Quarterly Bulletin* of the State Board of Health of New Hampshire for April, 1916, the following standard having been adopted by the national Joint Committee on Definitions and Standards, is hereby established as the standard governing the production and sale of maple syrup within the State of New Hampshire:

"Maple syrup is syrup made by the evaporation of maple sap or by the solution of maple concrete, and contains not less than thirty-five per cent. of water and weighs not less than eleven pounds to the gallon."

Diet in Medicine.—An editorial writer in the *American Journal of Electrotherapeutics and Radiology*, for June, 1916, asserts that diet, more than any other factor, determines longevity. Establishment of correct dietetic habits in a child by the parent does more for its future health than heredity. In childhood, epilepsy, chorea, chronic nephritis, endocarditis, and arthritis are largely due to protein excesses, while in advanced years many are similarly victims to cardiovascular, renal, joint, or other diseases traceable to excessive eating. There is, therefore, no subject in medicine so important as teaching human beings how to live, especially in a land of plenty such as the United States. Blood pressure is in all ages an accurate index of intoxication from excess of food. A child under twelve years of age having a systolic blood pressure above eighty-five mm. Hg., or an adult at any age with a pressure above 120 mm., will as a rule be consuming an excess of poison-producing food, and a correction of diet is indicated when the pressure is above these figures. Thus the question of diet often becomes the most important of all from the viewpoint of both prevention and cure.

Nonirritation Treatment of Pyloric Ulcer.—J. W. Schuman (*Medical Herald*, May, 1916), with the object of continuously preventing the irritation caused by pyloric ulcer and thereby often leading to a medical cure, employs the following diet scheme: At 7 a. m. the patient receives a breakfast of fruit, cereal with cream, buttered toast, crisp bacon, and two glasses of milk and cream. Two hours later a glass of milk and cream with some graham or soda crackers should be taken. At noon the lunch should be taken as usual with the addition of buttered brown bread and two glasses of milk and cream. The 9 a. m. feeding should be repeated at 3 p. m. and at 6 p. m. regular dinner should be eaten, which should include some well buttered brown bread, green vegetables, fat meat, a potato, and two glasses of the milk and cream. The milk and cream should be taken again at 9:30 p. m. along with a bread and butter sandwich and at 1.30 a. m. the patient should be wakened to take another glass of milk and cream with some soda crackers. Eight to ten hours of sleep should be secured, and a good evacuation of the bowels each morning is essential. No fried foods, except crisp bacon should be allowed. It is not necessary for the patient to be kept in bed during the treatment. The régime must be kept up for several months without a break if cure is to be accomplished.

QUESTIONS EVERY MOTHER SHOULD ASK HERSELF.

At the end of *Farmer's Bulletin,* No. 717, issued by the Department of Agriculture, as a review, the author, Caroline L. Hunt, suggests that at the close of the day every mother might ask herself the following questions, to be sure that she has considered the important things in feeding her children:

Did each child take about a quart of milk in one form or another?

Have I taken pains to see that the milk that comes to my house has been handled in a clean way.

If I was obliged to serve skim milk for the sake of cleanness or economy, did I supply a little extra fat in some other way?

Were the fats which I gave the child of the wholesome kind found in milk, cream, butter, and salad oils, or of the unwholesome kind found in doughnuts and other fried foods?

Did I make good use of all skim milk by using it in the preparation of cereal mushes, puddings, or otherwise?

Were all cereal foods thoroughly cooked?

Was the bread soggy? If so, was it because the loaves were too large, or because they were not cooked long enough?

Did I take pains to get a variety of foods from the cereal group by serving a cereal mush once during the day?

Did I keep in mind that while cereals are good foods in themselves, they do not take the place of meat, milk, eggs, fruit, and vegetables?

Did I keep in mind that children who do not have plenty of fruit and vegetables need whole wheat bread and whole grains served in other ways?

Did each child have an egg or an equivalent amount of meat, fish, or poultry?

Did any child have more than this of flesh foods or eggs? If so, might the money not have been better spent for fruits or vegetables?

If I was unable to get milk, meat, fish, poultry, or eggs, did I serve dried beans, or other legumes thoroughly cooked and carefully seasoned?

Were vegetables and fruits both on the child's bill of fare once during the day? If not, was it because we have not taken pains to raise them in our home garden?

Did either the fruit or the vegetable disagree with the child? If so, ought I to have cooked it more thoroughly, chopped it more finely, or have removed the skins or seeds?

Was the child given sweets between meals, or anything that tempted him to eat when he was not hungry?

Was he allowed to eat sweets when he should have been drinking milk or eating cereals, meat, eggs, fruit, or vegetables?

Were the sweets given to the child simple, i. e., unmixed with much fat or with hard substances difficult to chew, and not highly flavored?

Was the food served in a neat and orderly way, and did the child take time to chew his food properly?

The Bluff Meal.—J. M. Bell (*Medical Herald,* May, 1916) points out that it is often necessary to restrict the amount of food taken in various conditions, such as those associated with plethora, heart disease, arteriosclerosis, nephritis, etc., and this is frequently a difficult matter owing to the resistance of the patient. A satisfactory and successful means of securing the desired restriction is by the prescription of the one hearty meal of the day so as to secure bulk without much food value. For this purpose the bluff meal may be ordered, consisting of: A first course of olives, radishes, or celery, and a strained meat soup; a second course of one ounce of smoked fish with an abundance of water cress and potato chips. The third course may contain stewed celery, stewed onions, asparagus, cranberries, parsnips, turnips, carrots, fried egg plant, cole slaw—none being prepared with milk. A salad of tomatoes, lettuce, or cucumbers with dressing may follow, and the final course should consist of gelatin in some form, tapioca, or fruit salad, nuts and raisins. One glass of cold water is allowed with the meal. Such a meal contains only 300 to 400 calories, but tastes well and gives a comfortable sense of fullness. The other meals of the day obviously should be restricted, but this one should be ordered without suggesting to the patient that it is of low food value.

Contemporary Comment

Thought and Action.—Say what you like, thinking is demoralizing, observes *Medical Times* for August, 1916, if you are a man of action, particularly a man concerned with things that you often have to do and which are vitally important. We mean, of course, that it is a bad thing to think about anything but the matter in hand. Take the surgeon; it is best that he be not so cultured and thoughtful as to be unable to keep his mind off a paper on Galen as surgeon to the gladiators when he is relieving a Lane's kink. Take the physician; it is best that he not think about the side chain theory when going over a chest.

Now there are those who think that the ideal physician is one who strikes a cultural balance and who is deeply interested in many things beside medicine. Unquestionably such a man is more human and attractive, but the man who has a passion for medicine alone is apt to be a better and a safer doctor, however much of a bore he may be outside of the sick room. In this discussion we are taking no account of the man who pretends to cultural veneer that deceives but few.

Upon the whole, the man who devotes the major part of his thoughts in repose to the work that he does in action, and who, when in action, thinks only about the particular job he happens to be doing, is a good man to employ.

Versatility is a great thing from an esthetic standpoint; but when one has an acute abdomen a thorough craftsman is needed; one doesn't care then how little the operator knows about Arabian medicine or old china.

Editorial Notes and Comments

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HEALTH INSURANCE.

For some unknown reason mankind in general holds to the belief that good health is an inalienable right; that no matter what else goes awry, it should continue. Comparatively little care, therefore, is taken of this most precious gift, yet if anything goes wrong we feel aggrieved. Inasmuch as there is no way by which our health can be guaranteed permanently, we are making an attempt to protect ourselves against our own neglect by health insurance.

Unfortunately the ability to insure is in inverse ratio to the necessity. In other words, the man who is drawing the largest salary is the one best able to carry insurance, yet it is he who can live in the best surroundings and for that reason be the least likely to become ill. The man who needs the insurance is the one whose environment is poor, because his wage is insufficient to procure anything better.

For many years little attention was paid to the public health, but it is now evident that there is no question of greater importance. The prosperity of a community depends primarily upon the good health of its individual members. If conditions are such that twenty-five out of every thousand employees in American industries are constantly incapacitated by illness, it is time that something more be done. It is the physician who has done much in the past to promote preventive measures, but he seems predestined and foreordained to continue his efforts, even if he eventually destroys his means of livelihood.

It is evident that there must be some provision by means of which any worker, no matter how poorly paid, may receive proper medical attention. It is not only a matter of importance to the man and his family, but the entire social economy is affected, and for that reason all the various elements must eventually take a hand. The employers, the employees, and the public are all concerned, and such being the case each will have to do his share. As it is now, the public, through its State and municipal governments, pays large sums for the poor and the permanently incapacitated. Again the principle of prevention can be invoked; it would be better to provide proper relief at the first indication and thus lessen the chance of future illness. The fact remains, however, that health insurance for the great mass of workers will be provided sooner or later, and also that an additional burden will fall upon the medical profession. In order that this burden be not unduly heavy, it is necessary for the physicians to interest themselves in the laws that will be enacted, not to oppose, but to see that they are fair to all concerned so far as the medical aspects are involved, and democratic rather than bureaucratic in type. Class legislation which seeks to impose compulsory insurance upon wageworkers as differentiated from salaried workers, is essentially un-American. There is a world of difference between general insurance against ill health and compulsory health insurance.

APOPLEXY AND DIET.

The saying that a man is as old as his arteries is generally attributed to Sir James Paget, although this has been disputed. While there may be doubt as to who first gave to the world the phrase, its truth cannot be denied. Perhaps the most critical time of life with respect to the risk of an apoplectic seizure is that lying between fifty and sixty-five years of age; the person who has lived not wisely but too well, one who has indulged too freely in the pleasures of the table, is most susceptible to an attack of this nature. It is the lethargic, full blooded, thick and short necked subject who eats and drinks more than is good for him and who does not take sufficient exercise, who most frequently falls a victim to this class of disorder. F. Barlow, writing on the subject in the *Medical Press* for July 12, 1916, notes that the majority of seizures occur on Sunday or Monday, owing probably to the greater indulgence in the joys of the table on the day of rest and the slight increase in excitement consequent on the return to business. It may likewise be remarked that total abstinence from alcohol confers no immunity on its votaries if they are big eaters and cocoa drinkers. Indeed, the fact is more obvious in cases of apoplexy, that sufferers dig their graves with their teeth, than in any other disease. Alcohol is frequently made the scapegoat for an attack of this character, when really excessive eating is to blame. Heredity appears to play a part of some importance in predisposing to an apoplectic stroke, and a person whose family history suggests a liability in this direction should pay particular attention to his mode of life, especially when he reaches the age of fifty years, which Barlow terms, "entering the danger zone."

From all points of view treatment should be of a preventive nature, before an attack and not after, and upon this axiom great stress should be laid. Patients with degenerated arteries should be made to realize the vital importance of leading a careful life if they wish to attain old age. Moderation in all things should be their motto, and they should avoid excitement. Naturally, diet becomes a factor of inestimable moment. Meals should be light and of an easily digestible character, and meat should be cut out of the menu or its use greatly restricted. Barlow recommends that once a week twenty-four hours should be kept as a fast so far as solid food is concerned. Attention must be paid to the regular action of the bowels, but, as a rule, it is inadvisable to employ strong purgatives; it is best, if possible, to secure regular action by means of suitable food, exercise, etc. The use of petroleum oil is indicated in many cases.

The point which should be chiefly emphasized is that apoplexy is generally brought about by an injudicious manner of living, of which excessive eating of unsuitable food is the main cause, and that it may be prevented from progressing to an acute attack, even when the arteries are more or less seriously degenerated, by adopting a rational mode of life. To cite another adage, we should eat to live and not live to eat.

REPORTING INDUSTRIAL DISEASES.

There seems to be little doubt that after the cessation of the great war there will be instituted another—a struggle for industrial supremacy. It is highly desirable, of course, that the United States should not neglect any means by which her own position in that struggle may be strengthened, and preservation of the health of the industrial workers thus becomes a vital problem. Here it is necessary for the physicians of a community and its legislators to work in harmony. Laws should be enacted upon the advice of experienced health officers requiring that diseases which are in the nature of chronic intoxications from substances handled in various occupations should be reported, not with the idea of debarring those affected from their means of livelihood, but in order that the exact nature and extent of the diseases may become known. Physicians should cooperate willingly in carrying out these regulations; then in time would accumulate a wealth of statistical material bearing on these occupational diseases which would probably be of great service in the campaign to eradicate them.

Some steps in the right direction have already been taken. Rhode Island, in 1915, passed a law making compulsory the reporting by physicians of poisoning from lead, phosphorus, arsenic, brass, wood alcohol, etc. The sanitary regulations of New York's department of health require the same reporting and also demand that cases of apparent poisoning from articles of food be reported. Alabama forbids the employment of children wherever the work is such that poisonous products are evolved. Pennsylvania improves on this in that she adds that children must not work in any establishment wherein their morals may be jeopardized.

In the course of time it may be that we shall have a complete system of reporting these diseases among the workmen, so that by the time we are actively engaged in the battle for the world's business the private soldiers in our industrial army will be as nearly as possible physically fit.

THE BLOOD IN DIAGNOSIS AND TREATMENT.

While the gross appearance of the blood, as extravagantly withdrawn in the days of indiscriminate phlebotomy, was superficially noted, it is but recently that the study of that fluid has been found of any help in diagnosis. Within a quarter of a century, however, the study of the blood has come to be almost of routine importance, and its examination is rapidly undergoing greater and greater elaboration.

The color of the blood was perhaps the first diagnostic sign discovered, and an exact determination of the hemoglobin content followed the invention of test cards and other hemoglobinometers. Then came the counting of cells, the staining of corpuscles, and the differential count; finally, the bacterial examination which has proved of much value, the testing of its bacterial properties, the discovery of the Widal and the Wassermann tests, the properties of cytolysis, and the knowledge, essential for blood transfusion, of the great individual differences in the blood.

More recently the field of chemistry of the blood has been opened up, and the possibilities seem very great. We have had the tests, qualitative and quantitative, for urea, for uric acid, for creatinin, for sugar, for total nitrogen, for carbon dioxide. Already our public laboratories are advertising to do, while you wait, "complete blood tests," as they formerly announced their readiness to do complete analyses of the urine. What comes forth from this chemical study of the pathological blood will be something to have in prospect. We can only hope that in cases of faulty metabolism it may be of aid, not only in early diagnosis, but in the prevention of many distressing diseases.

In the way of treatment, the transfusion of blood has been long tried, and the recent perfecting of technic makes it a more promising therapeutic procedure for the future. The intravenous injection of drugs is safer and more useful. The inoculation of blood from immune subjects for the prevention or cure of infectious disease is, theoretically, most alluring, but is by no means established as therapeutically valuable.

PELLAGRA AND THE VITAMINES.

It is becoming more and more borne in upon the minds of those who have studied pellagra, both from the experimental and clinical standpoints, that it is a deficiency disease and as such may be placed in the same category as beriberi, scurvy, and rickets. The researches of Dr. Casimir Funk and others have thrown much light upon the question of the relationship of the vitamines to deficiency diseases, and it really seems as if we were on the high road not only to the solving of the problem of the causation of what may be termed with sufficient accuracy deficiency diseases, but of a partial solution of the problem of the origin of many other diseases and disorders. It is now universally allowed that diet plays a predominant part in the causation and development of numerous maladies and consequently in their prevention and treatment. Moreover, the painstaking researches of Funk and a band of earnest investigators seem to show that the absence or lack of vitamines in a diet is mainly responsible for a large number of conditions of ill health.

So far as pellagra is concerned, Surgeon Joseph Goldberger, of the Public Health Service, and his associates appear to have proved clinically, or it has been proved by following their suggestions, that pellagra is due chiefly to vitamine absence or insufficiency. Goldberger and his fellow workers concluded: "Pellagra is not a communicable disease, neither infectious nor contagious, but is essentially of dietary origin. It is dependent on some as yet undetermined fault in a diet in which the leguminous protein component is disproportionately small and the nonleguminous vegetable component disproportionately large; and no pellagra develops in those who consume a mixed, well balanced, and varied diet, such, for example, as that furnished by the Government to the enlisted men of the Army, Navy, and Marine."

Doctor Voegtlin, as an outcome of his experience in the south, is strongly inclined to attribute the pellagra which is more or less frequent in certain parts of the southern States to the lack of vitamines in the food eaten by the inhabitants. It occurs among those who subsist mainly on corn products, upon bread made from highly milled corn flour, corn from which the husk or pericarp has been completely removed by the milling. The husk contains the vitamine element. It has been demonstrated to the satisfaction of many authorities that beriberi is caused by eating highly polished rice, rice from which the pericarp containing the vitamines has been removed. The analogy then between pellagra and beriberi is close, and it might not be anticipating too much to state that pellagra, like beriberi, is a deficiency disease and caused chiefly by the vitamine element of the food being destroyed. The discovery that the lack of vitamines is the most potent cause of deficiency diseases is valuable, for the means of preservation and cure are obvious and at hand.

DOGS.

Dr. Joseph S. Bolton, of Nottingham, England, writes to the *British Medical Journal* for July 22d, hoping that a recent editorial note in that periodical will be followed up by the readers and lead to some effectual action. Every one will agree, he thinks, that the number of dogs in town streets is far in excess of requirement. Doctors who visit the poor are well aware that dogs are kept by persons who have no proper accommodations for them, and even by those who are too poor to provide wholesome food for their children. Doctor Bolton advises a guinea tax on dogs, which would reduce their number by one half, much to the satisfaction of motorists and all drivers of vehicles, the safety and comfort of cyclists, and the gratification of sanitarians and all who care for the cleanliness of the streets.

HEALTH INSURANCE AND THE A. M. A.

At the last meeting of the American Medical Association, says *Public Health Reports* for July 21, 1916, the house of delegates recommended that every constituent State association be requested to establish a committee on social insurance to work in conjunction with the committee of the American Medical Association. The American Academy of Medicine adopted a resolution authorizing a committee to be known as the "social insurance committee," to make careful study of the problem of social insurance, especially those phases known as health insurance, industrial insurance, accident insurance, mothers' insurance, and insurance against nonemployment, and to submit to the executive committee before December 1, 1916, a preliminary report dealing with health insurance and its relation to physicians.

The American Association of Industrial Physicians and Surgeons, organized in Detroit June 12, 1916, created a committee to study health insurance in its relation to the industrial physicians. The conference of State and Territorial health authorities with the United States Public Health Service has a standing committee on health insurance. The report of this committee, which was made in May, 1916, appears, *loco citato,* page 1919. The committee is still at work on this subject.

DANGEROUS GOLF BALLS.

We have referred editorially to the danger of cutting into certain makes of golf ball, and we note that L. V. Cargill, F. C. S. (*Practitioner,* July, 1916), in a paper on Recent Work in Ophthalmology, thinks it wise to mention the matter. As the writer remarks, it cannot be too widely known that great risk attends the practice. The contents of the core are generally of a strongly alkaline, soapy consistence, and may contain zinc or calcium chloride or barium sulphate, and being enclosed in a machine wound rubber ribbon under great pressure, the contents escape when the ball is punctured, with sufficient force to strike the ceiling of a room ten feet high. Cases of irremediable damage to vision have occurred both in America and Great Britain, and onlookers as well as players have apparently been victims.

News Items

Personal.—Dr. Donald B. Armstrong has resigned as director of the Department of Social Welfare of the New York Association for Improving the Condition of the Poor, to become assistant secretary and director of the community tuberculosis experiment of the National Association for the Study and Prevention of Tuberculosis.

Mount Sinai Hospital, New York, has announced the receipt of a gift of $150,000 to endow its department of abdominal surgery. The donor is Charles A. Wimpfheimer, who had previously given $230,000 to the institution.

Mercy Hospital, Chicago, has recently opened a new four story addition at a cost of $300,000. The first floor of the structure is reserved for children, a large playroom being one of the features. The second and third floors are divided into wards and private rooms, and the fourth floor is to be devoted to obstetrical service.

Rockefeller Foundation Gifts.—The recent report of the Rockefeller Foundation states that between January 7 and August 7, 1916, the total sum appropriated by the foundation was $3,369,667. Between June 28th and July 31st the appropriations were $506,289, the largest being $189,985.47, to the China Medical Board. On June 28th the foundation appropriated $80,000 to the Rockefeller Institute for Medical Research for its current expenses and $80,000 for laboratory and the hospital alterations. On July 11th $15,000 was given to the Red Cross for work in Serbia and $50,000 to the International Young Men's Christian Association for recreation centres for soldiers on the Mexican border. On July 14th the foundation gave $50,000 to the New York Health Department for the infantile paralysis fight, beside $7,000 for the expenses of the American Social Hygiene Association. It also gave $25,000 to aid Belgian children in Switzerland. Since the first of the year the gifts from that part of the foundation's fund devoted to objects selected by John D. Rockefeller personally have amounted to $575,775.

Additional Poliomyelitis Clinics.—The special poliomyelitis lecture clinics conducted recently under the auspices of the Department of Health were so successful that numerous requests have been received asking that they be repeated. Through the kind cooperation of attending physicians of the various hospitals now treating these cases, a new course of clinics has been arranged as shown in the schedule below. It is to be noted that attendance at these clinics will be strictly limited. Physicians desiring to attend should apply in advance to the respective hospitals for cards of admission. Groups will be formed in the order of application. When the group is complete the applicant will be referred to the clinic held on the following week: Bellevue Hospital—Pavilion 32 (contagious), every Monday at 4 p. m. Lebanon Hospital—every Tuesday at 3:30 p. m. Willard Parker Hospital—every Wednesday at 4 p. m. Babies Hospital—every Thursday at 4 p. m. Mt. Sinai Hospital—every Friday at 4 p. m. Kingston Avenue Hospital—every Friday at 4 p. m. The clinics will continue for the next five or six weeks. There will be no clinic at Bellevue Hospital on Labor Day, September 4th. We advise our readers to register at once.

Examination for Naval Medical Corps.—The next examination for appointment in the Medical Corps of the Navy will be held on or about October 23, 1916, at Washington, D. C.; Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Norfolk, Va.; Charleston, S. C.; Great Lakes (Chicago), Ill.; Mare Island, Cal.; and Puget Sound, Wash. Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary education and medical education. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps, and embraces the following subjects: (a) Anatomy, (b) physiology, (c) materia medica and therapeutics, (d) general medicine, (e) general surgery, (f) obstetrics. The successful candidate will attend the course of instruction at the Naval Medical School. During this course he receives a salary of $2,000 per annum, with allowances for quarters, heat, and light, and at the end of the course, if he successfully passes an examination in the subjects taught in the school, he is commissioned an assistant surgeon in the navy to fill a vacancy. Full information with regard to the physical and professional examinations, with instructions how to submit formal application, may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

The Medical Society of the Missouri Valley.—The annual meeting of the Medical Society of the Missouri Valley, under the presidency of Dr. John P. Lord, will be held in Omaha, Thursday and Friday, September 21st and 22d, at the Hotel Fontenelle. The arrangements are being made by a committee under the auspices of the Omaha-Douglas County Medical Society. The program will be limited to twenty papers, thus affording more time for discussion. A cordial invitation is extended to physicians of other States.

American Aid for Belgian Physicians.—Dr. F. F. Simpson, of Pittsburgh, treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, reports for the month of July, 1916, the following contributions: Dr. Miles F. Porter, of Fort Wayne, Ind. (second contribution), $5. Receipts for the month of July, $5. Receipts previously reported, $7,941.86. Total receipts, $7,946.86. Previously reported disbursements: 1,625 standard boxes of food at $2.20, $3,575; 1,274 standard boxes of food at $2.30, $2,930.20; 353 standard boxes of food at $2.28, $804.84. Total disbursements, $7,310.04. Balance, $636.82.

Infantile Paralysis and the State.—Dr. Hermann M. Biggs, State Commissioner of Health, has announced that one of the most important methods in the control of infantile paralysis is to keep children from infected districts separate from others and under constant observation so that they might promptly receive proper treatment if any signs of the disease developed. In order that this might be more generally understood, a circular letter has been prepared by the State Department of Health and sent to the proprietors of all hotels and lodging houses, calling their attention to Regulation 5 of the Sanitary Code, which requires the proprietors of hotels, boarding houses, and lodging houses, and all other persons to report to the local health officer all facts relating to a person presumably affected with a communicable disease, and Regulation 4 of the Special Departmental Regulations for the control of infantile paralysis, which requires hotel proprietors, boarding house keepers, and all other persons to report the name and address of all children under the age of fifteen years arriving at their hotel, boarding house, or household. By this method Doctor Biggs hopes to have the health officers fully apprised of all children arriving in their districts who had come from centres where cases of infantile paralysis existed.

Proposed Supervisory Commission of American Red Cross Not Approved by British Government.—Great Britain has declined to approve an offer of the American Red Cross to send to the Central Powers of Europe a commission of satisfactory persons to receive American Red Cross shipments, superintend their distribution to hospitals, and supervise their use. Such a proposal was made by former President Taft, chairman of the Central Committee of the American Red Cross, on June 10th. In his reply, which is dated July 12th, Sir Edward Grey, Secretary of State for Foreign Affairs of Great Britain, calls attention to the following statement published in the *New York Times* for May 12th, which sets forth the views of the British government on the assertions of the American Red Cross:

> His Majesty's Government have no reason to believe that there is an absolute lack in the territory of the Central Powers of the materials required for Red Cross supplies; they have, on the contrary every reason to suppose the reverse for, to give only one instance, not long ago a medical member of the Austrian general staff, Professor Hochenegg, stated publicly that there was no shortage and no prospect of shortage in medicines or bandages, nor even in highly special medical remedies, so that Austria was hardly concerned in the success of the protest made by the American Red Cross against the obstacles placed by the Allies in the way of the export of such articles from America. In these circumstances it is evident that if any deficiency in these supplies exist, as to which there appears to be no evidence, it must be due to the fact that the Central Powers prefer to use the materials for other purposes, and any steps that may be taken to give them further supplies would conduce, not to the increased welfare of the sick and wounded, but merely to set free larger quantities of such materials for belligerent purposes.

Free Advice on Tuberculosis.—Free expert advice for consumptives and others interested in tuberculosis is given in a pamphlet just issued by the National Association for the Study and Prevention of Tuberculosis, entitled What You Should Know About Tuberculosis. The pamphlet was prepared by a committee of experts of international prominence consisting of Dr. Charles L. Minor, of Asheville; Dr. David R. Lyman, of Wallingford, Conn.; Dr. H. R. M. Landis, of Philadelphia; Dr. John H. Lowman, of Cleveland, and William H. Baldwin, of Washington. It contains the latest and most authoritative information about tuberculosis. It deals with the nature of the disease; how infection may take place; how the disease is cured; how the family may be protected; what the patient may do after discharge, and how the disease may be prevented in the community. A copy of the pamphlet will be sent free to anyone applying for it at the office of the Committee on the Prevention of Tuberculosis, State Charities Aid Association, 105 East Twenty-second Street, New York, and large supplies of copies for local distribution may be had at cost from the committee.

Chemists and Technical Men to Meet in New York.—Official announcement of the meeting of the American Chemical Society, to be held in New York, September 25th to 30th, in conjunction with the Second National Exposition of Chemical Industries, will be issued to the members by Dr. Charles L. Parsons, secretary, on August 15th. Dr. Charles H. Herty, of the University of North Carolina, president of the American Chemical Society, will open the exposition on Monday, September 25th, at 2 o'clock in the afternoon, with an address reviewing the history of chemistry and the chemical industries in this country and outlining developments since the outbreak of war in Europe. The presidents of cooperating societies, such as the American Electrochemical Society, the American Institute of Mining Engineers, and the American Paper and Pulp Association will follow Doctor Herty with speeches of welcome and reviewing the progress made in the industries represented by them.

The first general session of the American Chemical Society will open at Columbia University on Tuesday morning, September 26th, and arrangements are being perfected for a public meeting in the large hall of the College of the City of New York on Tuesday afternoon when addresses will be made of general public interest pertaining to the interesting developments in the field of applied chemistry during recent years.

The program of the week's meetings will provide for general conferences on subjects in which the chemists of the country are now interested and it is intended that the lecture hall of the Grand Central Palace and Rumford Hall in the Chemists' Club building will be occupied each afternoon at the same time by one or other of the different divisions of the society for the discussion of such industrial topics as the production of dyestuffs, medicinal chemicals, industrial alcohol, the manufacture of paper pulp and byproducts, oils and motor fuels, glassware and porcelain, steel alloy metals, new developments in chemical industries, etc.

On Wednesday and Thursday mornings a general symposium on colloids will be held, theoretical considerations being discussed on the first day and the industrial applications of colloid chemistry on the second day.

The American Electrochemical Society has planned a series of interesting meetings. The electrochemical group will open its meeting later in the week, on Thursday, September 28th, with a technical session devoted to a review of American progress in the electrochemical industry. A complimentary smoker will be held on Thursday evening and on Friday evening there will be a joint banquet at the Waldorf-Astoria of the members of the American Chemical Society, the American Electrochemical Society, and the Technical Association of the pulp and paper industry. This will be a subscription banquet and the price of tickets to members will be $3.50; additional tickets for guests will be obtainable at cost, or about $7.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

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Thirty-first Communication.

DIPHTHERIA.

It would indeed be fortunate if we could develop as specific and distinct means to combat all diseases as we have for diphtheria. Instead of administering a drug which in one case goads a function to increased activity, or in another case depresses a function, we simply add to the blood stream agencies naturally developed by the system to counteract diphtheria toxin and repress bacterial development. We truly aid nature by furnishing quickly to the system antitoxins which the body is not always able to provide in amounts adequate to meet the emergency, and this natural antidote must be forthcoming, else the system will be promptly overwhelmed by the highly poisonous products of bacterial catabolism. Such a logical means of treatment is obtained by injecting the serum of horses highly immunized to diphtheria toxins. In this serum there is a high percentage of agencies antagonistic to poisons of the Bacillus diphtheriæ, wherever found, so that administration of this antitoxin to a person ill with the dread disease is not unlike sending in a heavy brigade to support a sorely pressed battalion.

This aid is not always sufficiently prompt, however; and there result more or less severe disturbances of body functions to be combated temporarily by medicines with definite predictable reactions. Here we arrive on controversial ground. For instance, one recent popular text (Anders) says: "Alcohol . . . is the most powerful drug in our possession to offset the ravages of the disease on the nervous centres, and for the control of the circulation." Yet from the viewpoint of advanced pharmacology it is difficult to see how alcohol can be anything but harmful in the treatment of diphtheria, except as it might possibly conserve the processes of oxidation. It is of course not impossible that alcohol may differ materially in its action in the presence of diphtheria toxins from the way it acts on well subjects in the pharmacological laboratory, but there is no convincing evidence to support such a contention. The pharmacodynamics of alcohol indicates that in its action on the nervous system and circulation it would be synergistic to the diphtheria toxin rather than antagonistic; they are both depressant on the heart and the great nervous centres. All of our laboratory experimentation indicates that alcohol is not a drug to be employed internally in the treatment of diphtheria.

Strychnine may be used advantageously, not for any assumed stimulant action on the heart, but because it serves to maintain the sensory irritability of the cord and, to a less extent, of the medulla.

Caffeine is the most nearly trustworthy stimulant of heart action, but is to be used chiefly when the beat is thin and weak; when arrhythmia exists, digitalis will usually restore the normal periodicity; when the heart is fluttering, combinations of caffeine and minute doses of atropine may prove valuable. Frequently caffeine is best administered in warm saline (160° F.) solution given slowly as an enema; the action of the drug is prompt on both heart and kidney, while the additional water volume received by the blood aids in the elimination of toxic material.

No one drug is relied upon for local effect; but from some experimental data it seems that some of the essential oils, like oil of eucalyptus in solution, might prove somewhat inhibitory of bacterial activity. Theoretically, the vapors of iodine in steam would be helpful. Frequent cleansings of the nose and throat with douches or sprays are desirable.

Treatment of Operative Acidosis.—A. C. Burnham (*American Medicine*, June, 1916) gives as the routine treatment: 1. Adequate nutrition by mouth, especially in the form of carbohydrates; 2, forced carbohydrate feeding in the form of glúcose solutions by mouth—a teaspoonful of glucose to a glass of water. It may also be given by rectum, or subcutaneously, an ounce to a quart; 3, bicarbonate of sodium solutions given by mouth, rectum or subcutaneously; 4, saline solutions by hypodermoclysis during the operation, and, 5, morphine for the relief of pain and to prevent the evil effects of excessive external stimuli.

Treatment of Acidosis in Pregnancy.—Herbert Williamson (*American Medicine*, June, 1916) says that chloroform should never be administered because the existing lesions are made worse and the acidosis is increased. Calomel should not be given because the lesions in the liver and kidney produced by mercurial poisoning are the same in nature as those of pregnancy toxemia. For a similar reason mercurial douches should not be given. Where acidosis exists intravenous infusion with sodium bicarbonate or sodium acetate solution should be employed. Glucose should be administered so that the fat metabolism may be spared. If acidosis exists in a pregnant woman suffering from chronic nephritis, the uterine cavity should be emptied at once.

Treatment of Retained Material in Abortions.—J. Soler Julia (*Revista de Ciencias Medicas de Barcelona*, May, 1916) after a careful review of the literature and of 169 cases treated by curettement in the Santa Cruz Hospital in Barcelona, decides that the proper routine is curettement in all women who show either hemorrhage or retention of material after miscarriage, and furthermore that it is of the greatest importance to maintain uterine drainage by means of tubes. Hysterectomy can be accepted only in cases of uterine gangrene without generalized infection, and such cases are rare. If there is collapse with generalized lesions of the liver or kidneys, all treatment is futile.

The Drug Habit.—Frank A. McGuire and Perry Lichtenstein (*Medical Record,* July 29, 1916), from a study of 12,000 cases in the city prison, conclude that the treatment of such cases cannot be carried out except in a hospital or sanatorium, and that the gradual reduction method, so called, as practised by physicians outside of hospitals is to be condemned as useless. They find that beyond the craving for the drug there are no physical symptoms on withdrawal of opium or cocaine, but that such symptoms are usually noticed in morphine and heroine addicts. Their experience shows that few patients trace their addiction to a physician's prescription, but nearly all place the blame on friends.

Asepsis and Antisepsis in War Surgery.—U. Giannettasio (*Riforma medica,* July 3, 1916) from extensive observation in active service at the front, is convinced that hypochlorous acid is the most potent antiseptic known today, as in four or five days it cleans up the most gravely septic wounds. Its deodorizing powers are well known and thus it is useful in dysidrosis and bromidrosis of the axillæ and feet, in superficial gangrene, as well as in putrid cavities. It is stated that some of the projectiles contain an amalgam of phosphorus which produces necrosis when allowed to remain in the body tissues and here again the use of hypochlorous acid would tend to oxidize this phosphorus and render it harmless.

Constipation in Military Practice and Its Treatment.—A. Martinet (*Presse médicale,* June 15, 1916) calls attention to the remarkable prevalence of constipation recently observed among soldiers in active service, due in part to insufficiency of green vegetables and fruit in the diet, a relatively sedentary life in the trenches, and intestinal inhibition of psychic origin. In the matter of diet the simplest prophylactic measures would consist in the addition of prunes, raisins, and "pounded" apples and pears, together with the avoidance of white bread. From the remedial standpoint, the physician himself may prescribe lin or psyllium seeds, and in particular agar agar, together with the ingestion of pure water on awaking or retiring. Exercises specially designed to excite intestinal activity are entirely appropriate. Morning and evening each of the following movements should be slowly carried out four to twelve times: 1. Elevation of the extended lower extremities from dorsal decubitus to a vertical position; 2, approximation of the thighs to the trunk, with flexion at the knees; 3, raising the trunk to sitting posture from the floor, with arms extended forward; 4, elevation of the abdomen from the floor by extension of the spinal column; 5, throwing the trunk forward along the floor from a kneeling position, and return. Where the measures already given prove insufficient, drugs may be used. These include liquid petrolatum, especially useful where there is hyperchlorhydria and a spasmodically contracted intestine (a frequent condition among troops)—one to four teaspoonfuls on awaking or one hour before supper; belladonna in the form of pills each containing 0.01 gram of the extract and of the powdered leaves is also useful—one to three pills a day, supplemented if necessary by a spoonful of castor oil or by magnesia in the evening; or, castor oil may be used as an initial laxative, followed by liquid petrolatum, daily or at longer intervals, with or without belladonna. In the numerous cases with distinct hepatic congestion small daily amounts, four to six grams, of sodium sulphate in a pint of water, to be taken in two doses, on awaking and later in the morning, are of value. For a frank purgative, derivative effect in congestive states, gastroenterogenous intoxication, hypertension, threatened uremia, etc., sodium sulphate in hypertonic solution is appropriate, e. g., twenty-five to sixty grams of the salt in 200 to 250 c. c. of water, with or without sugar. During active campaigning the following pills may with advantage be ordered for occasional use:

℞ Extracti hyoscyami, ...0.02 gram;
Extracti rhei, ... }
Extracti rhamni purshianæ, } ....āā 0.05 gram;
Extracti euonymi, ... }
Saponis, ...q. s.

Fiat pilula No. 1. Sig. Two to three pills a day at meal time.

Yeasts, Probably Pathogenic, in Throat Cultures.—Grover (*Journal of Infectious Diseases,* July, 1916) noticed yeastlike organisms in many routine examinations of throat cultures sent in on account of suspected diphtheria. Thinking that they might be of importance pathologically ninety cultures were studied. From these, seventeen distinct varieties of yeast were isolated. These were all inoculated subcutaneously into guineapigs with the result that thirteen of the varieties used caused glandular enlargement. Another series of guineapigs was inoculated by scarifying the mucous membrane of the mouth and rubbing in some of the culture. In eleven of these there developed within forty-eight hours a dirty yellowish false membrane. Grover concludes that certain of the yeasts are factors in the production of throat infections, either alone or in association with diphtheria.

Some Uses and Abuses of Massage.—E. Bellis Clayton (*Lancet,* July 8, 1916) finds that one of the commonest of the abuses is the long continued administration of massage in a case of functional paralysis. Instead of helping the victim the massage usually makes his condition worse. In functional paraplegias there is often some rigidity of the back and the legs, but it is useless to rely on massage for a cure. The patient must be got up on his feet almost forcibly and taught to stand and walk, but he can be greatly encouraged by the judicious use of massage and faradism for the first week or two. Paralyzed muscles are best treated by massage and galvanism with passive movements of the joints. Massage also finds a decided field of usefulness in the treatment of flabby heart and poor circulation, for which it should be combined with mild breathing exercises. It is particularly applicable in patients confined to bed. For the great majority of joint injuries massage and passive movement is an essential form of treatment. Massage should always be instituted as early as possible and pursued systematically if any good is to come from its employment..

The Treatment of Amebic Dysentery.—John Pelham Bates (*Jour. A. M. A.*, July 29, 1916) finds that ipecac or emetine has excellent results, but treatment of dysentery is often incomplete, as shown by a considerable tendency to relapse after the withdrawal of emetine. Recurrence should not take place if all the organisms have been destroyed, and this should be possible in the majority of cases. The most satisfactory treatment is as follows: The first requisite is absolute rest in bed until the subsidence of all acute symptoms. An initial purge with castor oil or a saline should be given. Then a daily dose of half a grain of emetine is administered for four days, when the dose is increased to one grain daily and continued until not less than five or six grains have been given. The emetine is then discontinued and bismuth subnitrate is substituted. The bismuth promotes the healing of the ulcers and acts also as an amebicide, destroying such parasites as may have been left by the emetine. The dose should be one dram every four hours while the patient is awake, continued until the stools have become well formed. Then the dose may be reduced to a dram thrice daily until the patient is discharged as well. As soon as the effects of the initial purge have passed, an enema of two to three quarts of normal saline solution should be given every four hours and continued as long as the emetine is being given. After that the enemas may be reduced to three and finally to one a day. During the acute symptoms the only food should be from four to eight ounces of sweet milk every two hours. Later the quantity may be increased and the interval between feedings lengthened. Soft boiled or poached eggs and a slice of dry toast may also be given. With improvement the diet may be slowly increased until the normal is reached. This treatment requires four to eight weeks. The greatest resistance to treatment will be found in cases where the ulcers extend well up into the ileum.

Colloid Gold as an Adjuvant in the Treatment of Typhoid Conditions.—Barachon (*Paris médical*, June 17, 1916) reports excellent results from the use of colloid gold in the form of collobiase, an electrochemically made preparation. Intramuscular injections gave very inconstant results, most marked in mild cases and during defervescence, but entirely insufficient in grave cases. Intravenously, the remedy was generally given in ascending doses ranging from 0.1 to two c. c. None of the patients received even the cold pack as a substitute for cold baths—the latter being impracticable under present circumstances. Each injection was observed to cause typically, at the expiration of fifteen minutes, a severe chill, followed by a rise in temperature to as high as 42° C., sometimes accompanied by slight transient delirium and a general sensation of heat. This was soon followed by a copious sweat, and the latter, in turn, by marked general improvement. The preexisting headache disappeared, the mucous membranes often regaining their normal moisture, the mind was clarified, prostration passed off, and the patient felt improved and sank into a quiet sleep. The temperature fell as much as 40° C., and temporarily remained low. The general condition was, however, especially benefited. When the temperature is not sufficiently lowered or the improvement less than expected, Barachon gives a second injection on the next day; if results are good, the injections are repeated only at two day intervals. The rare cases in which there is no improvement are those of profound and long standing infection, and such lack of effect is of unfavorable prognostic significance. Like all colloid solutions, colloid gold has bactericidal and antitoxinic properties. The constitutional effects seem, however, to show that it acts especially by exciting the defensive processes of the organism. The drug is said to cause a sudden doubling in the number of polynuclear neutrophiles in the blood and thus an intense phagocytosis, the latter favored by a corresponding and equally rapid rise in the opsonic index. The sweat produced does not take place at the expense of the urinary output, an increase in the renal elimination of water being nearly always observed. Each injection is followed, as it were, by a period of truce with the disease, all toxic symptoms disappearing, and although the course of the disease is, perhaps, not shortened by the treatment, the latter enables the patient to pass through the ordeal under unusually favorable conditions. Though useful even at the height of the disease, the injections should, if possible, be begun at the outset, while the defensive resources of the body are still unimpaired. They should be repeated as often as fever and particularly the general condition seem to require them. They are contraindicated only in threatened perforation or hemorrhage and in myocarditis. In cases of sudden defervescence and profuse sweating in weak subjects the heart should, for the sake of caution, be temporarily sustained with one or two injections of camphorated oil.

Tuberculins and Vaccines.—E. Hayling Coleman (*Brit. Med. Jour.*, July 8, 1916) considers that in the use of vaccines there are four classes of cases. The first is that in which vaccine treatment is usually successful and is more likely to give results than any other form of treatment. This group includes cases of recurring boils and carbuncles, chronic nasal and postnasal catarrh due to the pneumococcus, chronic bronchitis of old persons, colon bacillus cystitis and many cases of chronic gleet. The second group contains cases in which the usual remedies have failed and vaccines are known to have succeeded. In this group are cases of acne, nasal catarrh not due to the pneumococcus, obstinate catarrhal asthma, whooping cough, and tracheal infections. The third class includes cases of serious disease in which a vaccine can do no harm and may increase the chances of recovery, such as pneumonia and general septic infections. Finally there is the group in which vaccines often fail and other remedies almost always do, including rheumatoid arthritis, chronic otitis media, colitis, some skin diseases and septic anemias. In almost every type of condition in which a vaccine is to be used much better results will be secured from the employment of an autogenous vaccine than from a stock vaccine. Further, where there is a mixed infection, the two or more offending organisms should be used in separate vaccines, so that the dose of each may be varied according to the benefit produced.

Simple Technic for Intravenous Injections in Infants.—Ann Martin (*Brit. Med. Jour.*, July 8, 1916) finds that the plan of injection into the superior longitudinal sinus, as suggested by Helmholtz, has proved perfectly safe, satisfactory, and easy of performance. As performed by Martin the scalp over the anterior fontanelle is shaved and painted with iodine. The child's head is raised on pillows to a convenient height and held by a nurse. Standing on the right side of the child a short, sharp needle with very short bevel is pushed through the fontanelle in the middle line at a point half way between the superior angle and the middle of the fontanelle. The needle should be held at an angle of 50° to 60° with the plane of the fontanelle. The tip should not penetrate over one eighth of an inch, when it will be found to be in a cavity from which blood can be withdrawn at will. No anesthetic is used in the operation. This method can be used for the removal of blood for examinations or for the administration of drugs in solution and the puncture may be repeated as often as necessary.

Intramuscular Use of Corpus luteum Extract in the Surgical Menopause.—John C. Hirst (*American Journal of Obstetrics*, April, 1916) states that in the surgical menopause his results from the oral administration of corpus luteum extract have been disappointing. The large doses necessary for beneficial effects are often productive of nausea. He has lately tried, however, intramuscular administration of the drug, with gratifying results. In the first case reported, after discontinuance of oral administration on account of nausea, with only slight amelioration, intramuscular injections equivalent to fifteen grains of fresh gland were given, at first daily for eighteen doses, then on alternate days for four weeks, and later biweekly for a few weeks. The flashes of heat and other symptoms began to improve rapidly after about six doses, without nausea, and since the end of the treatment the patient has remained practically free of symptoms. Similar results were obtained in five other cases of supravaginal hysterectomy. Hirst believes the doses he used could be greatly increased with benefit and without harmful effect. Experience will probably show the effect of the drug to be cumulative, and that the interval between doses can be gradually lengthened and the drug then discontinued without a return to the previous symptoms.

Treatment of Thoracic Empyema.—Howard Lilienthal and Martin W. Ware (*N. Y. State Jour. Med.*, July, 1916) report that under routine methods of treatment mortality remained nearly constant. With greater individualization in method a marked reduction in mortality became possible. Success in the treatment was found to rest largely upon accurate diagnosis of the exact location, severity and extent of the condition. Where the patient was extremely ill, a simple thoracotomy, between two ribs, with insertion of a drainage tube was done as the initial operation. Later, when conditions were favorable, the chest was opened by division of the intercostal muscles and by retraction of the ribs to expose the greater part of the interior of the pleural cavity and permit complete evacuation of the pus and liberation of the lung from its confinement in thickened pleura, thus permitting it to expand and fill the chest without the production of deformity. The incision of the thickened pleura to liberate the lung often disclosed unsuspected pus pockets which were also evacuated, and with the aid of the x ray other pockets were located and all were opened. Following such an operation the wound was closed, room for drainage alone having been left. Under such treatment many cases were cured without secondary deformity from sinking in of the chest wall, and general mortality was greatly lowered through elimination of septic absorption from unopened foci of purulent inflammation.

Reactionless Intravenous Milk Sugar Injections.—W. Wechselmann (*Berlin. klin. Woch.*, January 24, 1916) has found by experience that the intravenous injection of lactose for the purpose of the Schlayer test is often followed by a marked reaction with chills, fever, and vomiting. Investigation showed that this reaction did not occur when the milk sugar was freshly prepared and had been kept dry and sterile. The reaction was proved to be due to growth in the lactose of a fungus, which, however, was not readily detectable and which might be present in an apparently fresh specimen of ordinary lactose. With these facts in mind the author suggested the preparation of lactose under sterile conditions and its immediate solution in freshly distilled water. The fresh solution, containing ten per cent. of milk sugar, should then be filled into twenty mil ampoules, sealed, and sterilized. This suggestion was adopted commercially and a preparation of lactose has been placed on the market under the name of renovasculin which may be used for the Schlayer kidney function test without danger of reaction.

Treatment of Vesicular Eczema.—P. G. Unna (*Berlin. klin. Woch.*, Jan. 24, 1916) states that the deep vesicles on callous portions of the hands often cause great distress from itching and resist usual forms of treatment with drying applications. Such treatment must be preceded by the application of agents to soften and exfoliate the overlying horny layer, the most satisfactory application having proved to be rubber plaster impregnated with ichthargan. Even ordinary scaly eczema at times requires exfoliative and softening agents, but these are usually too painful for use. Baths and soaps are far more satisfactory. If there is much itching the baths must be given only moderately warm —always below 30° C.—and of brief duration in order not to produce a vascular reaction. Rubbing must also be avoided and the skin is dred by mopping. The application of a powder such as talcum or magnesium carbonate after the drying often relieves the tendency to itching. If the itching is severe, bran may be added to the bath or from fifty to 100 mils of each of the following solutions:

A.	Tannic acid,	10.0
	Distilled water, to	100.0
B.	Sulphate of iron,	20.0
	Distilled water, to	100.0

The use of the latter, making the so called ink bath, is not sufficiently appreciated. It not only allays itching and inflammation, but is decidedly sedative and prevents maceration of the epidermal layer.

Case of Multiple Cartilaginous Exostosis.—H. W. Marshall (*American Journal of Orthopedic Surgery*, June, 1916) reports a case of multiple osteochondromata. Numerous photographs and x rays show growth on many bones of the body. An examination of one of the growths showed it to be benign in character. There was a significant family history in this particular case.

Infected Conjunctiva.—Walter B. Lancaster (*Jour. A. M. A.*, July 22, 1916) in the course of a discussion of the preparation of the eye case for surgical operation, makes some useful suggestions for the treatment of infection of the conjunctiva. Drainage and irrigation should be prescribed to remove mechanically the bacteria as fast as possible. Hourly instillation of a twenty to twenty-five per cent. solution of argyrol in sterile water and free irrigation two or three or more times daily, with a one to 5,000 solution of mercuric cyanide or chloride will accomplish this purpose. The frequent application of strong irritants, however, is not advisable and the following bland lotion is very satisfactory to replace them:

Boric acid,	0.8;
Borax,	8.8;
Oil eucalyptus,	0.15;
Oil wintergreen,	0.15;
Menthol,	0.050;
Thymol,	0.075;
Water,	1000.0.

The general and local resistance of the patient should be increased by proper dietetic and hygienic measures, and in suitable cases vaccines may be of considerable value, but their field is not yet well defined.

Infection of the Uterine Appendages.—E. E. Montgomery (*N. Y. State Jour. Med.*, July, 1916) makes a strong plea for early diagnosis and treatment along medical lines with as little surgical interference as possible, as thereby many a case can be cured without the sacrifice of organs or material impairment of their functions. In early cases, particularly of gonococcic infection, the woman should be put to bed and the vagina irrigated every two or three hours with two per cent. phenol, one in 4,000 bichloride of mercury, or thirty minims of Lugol's solution to the pint. These irrigations should be hot and the vulva should be kept covered between treatments with a pad moistened with three per cent. phenol or twenty per cent. alcohol solution. The bowels should be kept open and an abundance of water given the patient to drink. If there is evidence of pelvic involvement, ice bags should be continuously applied to the abdomen. On the subsidence of acute symptoms hot applications should be used to promote absorption and destruction of the infecting organisms. In addition it is well to cleanse the vagina through a speculum and paint it with tincture of iodine or a two per cent. solution of silver nitrate. After this it should be packed with iodoform gauze. Pus in the pelvic cavity should be evacuated, if possible, through vaginal incision and drainage, and even when laparotomy is required the infected parts should be conserved as much as possible, for they will often recover if placed in a favorable position and their function will be preserved.

Malta Fever.—Bernardino Luighetti (*Riforma medica*, June 26, 1916) gives an exhaustive résumé of the literature of this disease, and concludes that the anatomical findings show nothing characteristic, but, rather, are those seen in the more common septicemias.

Optochin in Pneumonia.—J. Manliu (*Berlin. klin. Woch.*, January 17, 1916) reports twelve severe cases of pneumonia treated with optochin, with recovery in ten and death from complications in two. Five of the patients did not begin treatment until after the third day of their disease. The dose used was 0.25 gram every four hours day and night until the temperature reached normal, after which one additional dose was given. The effects of the drug were manifest in the rapid reduction of the fever, marked quieting of the patients, and diminution in the dyspnea. The drug did not seem to have any effect on the symptoms of intoxication. The highly conflicting results reported by many other authors are reviewed in this paper, and the conclusion is reached that the drug must be administered with care and stopped as soon as the first symptom—tinnitus—of its toxic effects becomes manifest. If this is done, there is little danger of causing serious intoxication. The administration of camphor seems to be of value in overcoming the toxic effects of optochin when these have made their appearance. It is not enough to restrict the medication in pneumonia to the use of optochin, but all other drugs, such as camphor, digitalis, morphine, etc., should be employed according to their indications. Finally the standard dose of 0.25 gram, four hourly, day and night, should not be exceeded.

Treatment of Cold Abscesses.—E. A. Rich (*Northwest Medicine*, July, 1916) states that if the abscess is a small one the absolute rule must be, "hands off." The indication is for the employment of greater mechanical fixation of the diseased portion of the bony system and enforced physical rest. The only indication for resort to surgery in the case of a cold abscess is when it becomes so large as to produce unendurable pain from pressure. Then the only allowable procedure is aspiration of some of its contents under the most rigid conditions of asepsis possible. The aspiration should always be done with a moderately large needle; never with a trocar and cannula. The needle should be inserted into the abscess cavity obliquely to secure perfect closure of the tract after its withdrawal. In this way we need never fear the subsequent development of a sinus. Following aspiration the abscess should be subjected to some degree of pressure by bandaging, in the hope of delaying the refilling of its cavity. Incision of a cold abscess absolutely dooms it to infection with all of the dire consequences from chronic sinuses through amyloid disease to death. Even retropharyngeal abscesses should be drained only through aspiration. In very chronic cold abscesses cure is not infrequently possible as a result of repeated puncture and complete aspiration with suction. Many abscesses of this nature will undergo complete cure when the bony parts are completely immobilized and the patient is treated for his osseous tuberculosis.

Miscellany from Home and Foreign Journals

Poliomyelitis with Its Preparalytic Symptoms.—Louis Fisher (*Medical Record*, July 29, 1916) describes two preparalytic symptoms, the first of which, described by Draper, is the production of pain and stiffness of the neck on flexion of the spine anteriorly. Another symptom, described by Culliver, is a twitching, or convulsive movement, affecting one or more limbs, the face or the jaw, which is sometimes accompanied by a peculiar cerebral cry. Three types of poliomyelitis are met with: the catarrhal, the gastrointestinal, and the cerebral. Abortive cases are most common, and from their mildness are overlooked by the laity and so spread the disease.

Prognosis in Infantile Paralysis.—Walter G. Stern (*Journal A. M. A.*, July 29, 1916) calls attention to the great amount of harm done by the medical profession in connection with this disease in making an incorrect prognosis. Whatever may be power with a more or less imperfect functional recovery, the prognosis should always be guarded, conservative, and truthful. If too much hope is given, the parents may be disappointed, and sacrifice all of the gain in strength in seeking a perfect cure. It should be remembered that the majority of patients make only an incomplete recovery of muscular power with a more or less imperfect functional result. Spontaneous recovery reaches its maximum in from three to six months, but careful treatment with physiological rest of the affected parts, graded massage, electrical stimulation, resistance exercises, and muscle training not only improve the chances of partial recovery, but also prolong indefinitely the period in which further recovery may take place. The most harmful influences and those most likely to impair the ultimate result are misuse, overwork, overstimulation, and overexertion, with resulting contractures.

Pleuropulmonary Complications in Wounds of the Central Nervous System.—G. Roussy (*Bulletin de l'Académie de médecine,* June 13, 1916) calls attention to the frequency of inflammatory complications in the lungs or pleuræ as the lethal factor in wounds of the skull or spinal cord. Fever and impaired general condition in such cases have generally led to suspicion of an inflammatory lesion of the brain or its meninges or to a diagnosis of infectious myelitis or meningomyelitis. Roussy reports, however, cases of spinal and skull injury in which empyema caused death, and other spinal cases in which bronchopneumonia supervened. In none of these cases were acute inflammatory changes found at autopsy in the meninges, cord, or brain. Patients with major nervous wounds should be considered eminently frail, sensitive to cold, and liable to dangerous injury from even brief transportation. They are also profoundly shocked, and should be promptly stimulated with saline injections and camphorated oil. They should be kept in bed as long as possible and the respiratory system examined daily, especially when fever appears.

Hysterical Mutism in a Boy.—Arthur J. Hall in the *Lancet* for May 20, 1916, describes a boy of eleven years in whom fright and fear of an operation for diseased tonsils and adenoids produced a condition of mutism which lasted five weeks and was cured by another fright in the hospital ward after all treatment had failed.

Syphilitic Infection from Toilet Soap.—M. L. Heidingsfeld (*Lancet-Clinic,* July 8, 1916) reports the case of a man of forty years presenting a well defined roseola, general glandular enlargement, and characteristic facial erythema in whom all efforts to find the initial lesion were fruitless, except in that a pigmented node, with characteristic indurated base, was found on the back of the neck. Two months before, the patient had had a boil there, and had make a poultice of soap and water from his five cent cake of lodging house soap and applied it to the boil for several nights. Extragenital infection in this case is considered traceable to the use of infected soap, and is held to be an illustration that common employment of toilet soap is not devoid of the risk of transmission of syphilitic infection.

Role of the Tonsil in the Production of Appendicitis.—S. C. McCoy (*Lancet-Clinic,* July 15, 1916) thinks it now established on an experimental as well as a clinical basis, that appendicitis is at times of hematogenous origin. The clinical relationship of appendicitis and tonsillitis does not, however, depend for its acceptance on the theory of a hematogenous origin. It has been shown by Chastenet that appendicitis can be produced in rabbits by feeding pathogenic bacteria; the possibility of infection from the tonsil by way of the alimentary tract is, therefore, apparent. Isabolinsky has shown the relative unimportance of colon bacilli alone in the causation of appendicitis. McCoy presents data from the literature illustrating plainly the role of acute tonsillitis as a forerunner of appendicitis.

High Palate and Adenoids.—W. Lublinski (*Berlin. klin. Woch.*, January 24, 1916) calls attention to many cases of adenoid hypertrophy which are not clinically benefited by thorough removal of the hypertrophied masses. In such cases a high vaulted and much narrowed hard palate will be found. Nasal examination will show that the elevation of the floor of the nose has been such as to allow the inferior turbinates to meet its upper surface and occlude the air passages. In such a case the removal of adenoids accomplishes practically nothing and the patient still remains a ready victim to infection of the middle ear, continues as a mouth breather, and is retarded in mental and physical development. Before adenectomy a careful examination of the palate and the nasal cavities should be made, and if the condition just described is found, mechanical means should at once be instituted to bring about a widening of the palate with consequent lowering and freeing of the nasal passages. Then adenectomy will give complete relief.

Cerebrin in Treatment of Cerebral Neurasthenia.—J. S. de Figuera (*Revista de Medicina y Cirurgia Practicas,* July 8, 1916), having tried cerebrin or cerebral extract in six cases finds that, when freshly prepared, it exerts a beneficial action on the headache, vertigo, insomnia and nervous agitation of cerebral neurasthenics. While it may be given by mouth, it is better given hypodermically daily for several months.

Treatment of Cholera.—Stafford M. Cox (*Lancet,* July 1, 1916) thinks that serum treatment offers little if any hope, and is probably even harmful through the further liberation of endotoxins and a consequent increase in symptoms. The greatest utility of this form of treatment lies in its possible prophylactic value. The most dangerous and most difficult stage of cholera to handle is collapse. This can best be treated by the intravenous injection of large amounts of salt solution. Contrary to the views of Rogers, good results follow the use of normal saline solution instead of the hypertonic solutions. Further experience has shown that the best results can be secured by the initial administration of hypertonic saline until from seven to eight pints have been given, and then by continuation of the injection, using normal saline. The rate of injection should be slow—about two ounces a minute, and the saline should be continuously given until a rise of temperature to 103° F. or less, accompanied by a rigor, has been produced; then the injection should be continued until a total of eight to ten pints have been given, the rigor having come on usually after about five pints. By this plan the blood is diluted, the blood pressure raised, the renal excretion restored, elimination of the endotoxins secured, and the subsequent course of the disease is made apyrexial.

An Experience of Galyl.—Sheldon F. Dudley (*Lancet,* July 8, 1916) substituted this comparatively new arsenical for neosalvarsan during the shortage of the latter drug and about 1,500 injections of each of the two drugs have now been made and offer opportunities for a close comparison of the virtues and shortcomings of each. The doses used were 0.4 gram of galyl or 0.9 gram of neosalvarsan and the methods of use and additional treatment were the same for both drugs. Galyl was found to be decidedly less toxic, as revealed by far less likely to be followed by reactions than the first ing its use than after neosalvarsan. In the case of both of the drugs subsequent injections were always less frequent vomiting, headache or fever follow- Neosalvarsan seemed to have slightly more power to produce negative Wassermann reactions than galyl, and also was more effective in preventing early negative reactions from becoming positive. The two drugs removed the spirochetes from open sores equally efficiently, though neosalvarsan acted slightly more rapidly. In general, galyl seemed to be about as satisfactory clinically as neosalvarsan. Since galyl is decidedly less toxic than neosalvarsan, and since the dose used contains just half as much arsenic as that of neosalvarsan, it is suggested that better effects might be secured from the administration of somewhat larger doses. [Galyl is not obtainable in this country.—Eds.]

Digitalis and Physostigmine as Hypotensor Remedies.—D. Danielopolu, at a recent meeting of the Biological Society of Bucharest (*Presse médicale,* June 5, 1916), stated that prolonged observations in thirty-two cases had convinced him that digitalis never raised, but often lowered, the blood pressure. Its hypotensor action seems to be more marked if a suitable dose of physostigmine has previously been administered.

Prognosis in Pulmonary Edema.—T. F. Reilly (*Archives of Diagnosis,* April, 1916) points out that there are many cases of mild pulmonary edema without frothy expectoration nor much dyspnea, in early cases of cardiac decompensation; in these instances the prognosis is good provided, as is almost always the case, that decompensation can be overcome by treatment. Pulmonary edema in the course of apoplectic strokes, when it occurs within the first few hours, may be recovered from; when after the second day it is always fatal unless there is an accompanying cardiac lesion. Pulmonary edema occurring during or after a uremic convulsion is frequently recovered from, especially if the patient regains consciousness within two or three hours. Absence of a very high vascular tension, as well as excretion of a moderately large amount of urine, improve the outlook. Pulmonary edema occurring in the course of toxic states is most frequent in pneumonia. While generalized edema developing late in pneumonia is always fatal, edema developing early —an accident especially frequent in old patients—will often clear up for a few days under active stimulation, though death generally follows later. The pulmonary edema occasionally met with in middle aged patients from alimentary toxemia, usually associated with an underlying renal process, is followed, as a rule, by recovery, though death may seem imminent for a time. In the recurring pulmonary edema of cardiovascular disease, the average duration of life after the first attack in Reilly's cases was about two years. These patients do not generally die during the attack itself, although death occurs in some within the first five or ten minutes. A fall of pulse tension early during the attack affords a serious outlook; when it falls later, however, with coincident respiratory and other improvement, it is a good sign. The outlook in cases without expectoration is no worse than in others. A clanging second sound at the right of the sternum is a favorable sign, but intense vascular phenomena are unfavorable. The average duration of untreated attacks is three or four hours, but under active treatment the paroxysm is over in an hour or two, and the physician may leave half an hour later. Pulmonary edema resulting from the use of pilocarpine or following head injuries is rarely recovered from; in that associated with angioneurotic edema or following thoracic paracentesis on the other hand, the prognosis is good. From pulmonary edema after ether anesthesia, about fifty per cent. seemingly recover; the diagnosis is, however, delicate in these cases. In the pulmonary edema seen during infantile convulsions the outlook is good, the trouble disappearing within an hour or two after the return to consciousness. In that accompanying infectious diseases in children, however, death usually occurs within a few hours.

Nitrous Oxide—the Most Dangerous Anesthetic.—J. F. Baldwin (*Medical Record*, July 29, 1916) insists that this form of anesthesia is not nearly so safe as chloroform, which has always been considered dangerous. He quotes fourteen deaths which are known to have occurred in Columbus alone. Postoperative pneumonia, often attributed to ether, is due to peritoneal infection carried to the lungs and also to poor pulmonary ventilation in laparotomy cases, owing to the limitation of movement of the abdominal muscles. The field of anesthesia by nitrous oxide-oxygen gas is limited to extraction of teeth, and in cases of acute pulmonary congestion or of acute nephritis.

Treatment of Delayed Callus Formation and Pseudarthrosis with Fibrin Injections.—S. Bergel (*Berlin klin. Woch.*, January 10, 1916) reports that animal experimentation with the various constituents of the blood showed that fibrin had a direct stimulant action on the processes of healing. When injected subperiosteally in normal animals it caused the development of exostoses. Applying these observations to human therapeutics, the author employed a purified fibrin, in the form of a fine emulsion, for injection into the region of ununited fractures, pseudarthroses, etc., and found that it materially shortened the period of healing and ossification. The dose usually used was 0.3 gram suspended in ten c. c. of normal salt solution, to be repeated every two, three, or four weeks if required. The injections produced slight constitutional symptoms, such as headache and moderate elevation of temperature. The local reaction was more marked and consisted of edema, which lasted a few days. It is recommended that this form of treatment be employed early in fractures which do not seem to be healing well, since it is simple and harmless.

Perforated Ulcers of the Stomach and Duodenum.—Raymond P. Sullivan (*Jour. A. M. A.*, July 29, 1916) has analyzed a number of cases and concludes that an early diagnosis of either of these conditions should be possible. The treatment should be surgical and should be undertaken immediately. The most characteristic symptoms of perforation are, in the order of their frequency: Abdominal pain, tenderness, vomiting, muscular rigidity, previous ulcer symptoms, anxiety and restlessness, increasing pulse rate, and rise of temperature. The pain and tenderness are commonly in the upper abdomen and usually in the right hypochondrium. The pain is intense and unyielding. Sometimes pain and tenderness may suggest acute appendicitis from the location. Rigidity increases as the time after perforation lengthens, and is usually boardlike. There is little rise in temperature, and the pulse rate usually increases out of proportion to this; the respiration is usually thoracic and is strikingly accelerated. Such symptoms, occurring in one who has had the symptoms of ulcer for some time previously, should make the diagnosis of perforation almost certain, and when such symptoms are present, the physician should not delay for observation or for more accurate diagnosis, but should at once invoke the aid of surgery.

Chronic Purulent Otitis media, With Special Reference to Tuberculosis, by Wendell C. Phillips.—The author believes from clinical evidence alone that primary local tuberculosis of the soft tissues, ossicles and bony walls of the middle ear is the determining factor in the large proportion of all persistent otorrheas, especially in young children.

Total Esophagoplasty.—G. Axhausen (*Berlin. klin. Woch.*, January 17, 1916) gives a detailed report of the various steps taken in this rare operative venture in an account of his treatment of a case of traumatic esophageal stricture. Briefly summarized they comprised a gastrostomy and an intestinal anastomosis between a portion of the small intestine and the upper part of the stomach. The length of small intestine thus united was freed from all attachments save its blood supply, and its opposite free end was carried up toward the ensiform beneath the skin of the abdomen. The remaining small intestine was reunited by lateral anastomosis. A tube was then made down the thorax over the sternum by rolling a strip of skin together so as to bring the epithelial surface inward. This was then covered by the skin from either side. Next the upper end of the esophagus was freed from its attachments, brought forward and united to the artificial skin tube, which was in turn united to the tube made previously from the length of small intestine. The ultimate result was that in a few months the patient had returned to his ordinary diet and suffered no difficulty in swallowing all forms of food.

Pseudappendicitis. — F. Gregory Connell (*Jour. A. M. A.*, July 29, 1916) has analyzed a large number of cases operated in for chronic appendicitis or as interval cases, and found that forty-eight were not relieved of symptoms and there was no rational explanation of their persistence. From this observation and close analysis of all of the cases operated in with this diagnosis, the author questioned the existence of such a clinical entity as chronic appendicitis. Certainly the diagnosis was often incorrect and was made with unwarranted frequency. When all demonstrable pathological conditions which might possibly be confounded with a chronic appendicitis were eliminated, there still remained a number of cases in which complaint was made of pain in the right iliac fossa. These cases might better be classed as pseudappendicitis and were present usually in persons with visceral ptosis, constipation, and neurasthenia. This condition did not call for surgical treatment, but was a strictly medical condition. The difficulty of making a correct diagnosis of these pseudappendicitis cases was great, but every case conforming to the type should be considered as having this condition until careful investigation proved the contrary. The typical features of this group were more or less continuous pain in the right side of the abdomen, mild, but short attacks with short intervals of freedom. The pain was made worse by exercise and was relieved by recumbency. There were cutaneous hypersensitiveness, muscular spasm, gas tumor, cæcum mobile, gurgling, nausea, normal or subnormal temperature and no leucocytosis. Vomiting was rare. The patients often became chronic invalids.

Proceedings of National and Local Societies

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1916.

The President, Dr. J. Wesley Bovee, of Washington, D. C., in the Chair.

Syphilis in Its Relation to Obstetrics.—Dr. Edward P. Davis, of Philadelphia, stated that modern knowledge on this subject dated from the discovery of Spirochæta pallida in 1905-6 as the cause of syphilis. The discovery of the Wassermann reaction as a means of diagnosis, and salvarsan in treatment, were also important factors. Syphilis could be positively diagnosticated in a newborn infant by the characteristic germs in the blood taken from the umbilical vein and from the tissues about the umbilicus and umbilical cord. Examination of the bodies of infants dying soon after birth from syphilis, showed this germ abundantly present in the important organs. A woman apparently healthy giving birth to a syphilitic infant was herself syphilitic, although she might show for some years no clinical signs or symptoms. In these cases syphilis was conveyed from the ovum to the mother through the medium of the placenta. The mother was said to have latent syphilis and could nurse her child without disturbance of her own health, and with positive benefit to the child. She might, however, at any time manifest symptoms of secondary or tertiary syphilis.

The Wassermann reaction was untrustworthy as a positive test for syphilis in parturient women. It might give a positive reaction in severe toxemia and eclampsia where syphilis was absent, and in some other conditions where the mother's general health was seriously disturbed. In the lack of a more reliable means of diagnosis, the Wassermann test should invariably be made in selecting wet nurses, and in all suspicious cases.

Syphilis in the acute stage attacking a pregnant woman could often be promptly checked by salvarsan. While the germs causing syphilis would be destroyed, the toxins which they produced would usually cause death of the fetus. If syphilis occurred early in pregnancy, the best result for mother and child would be obtained by mercurial treatment accompanied by potassium iodide. Where skin lesions were present, hypodermic or intravenous injections of mercurial solutions were useful.

In treating active syphilis in the newborn, salvarsan had been given in the cubital vein with good results. Where salvarsan was used with mother and child, the urine of the patient should be repeatedly examined to determine the presence of arsenic, and the presence of signs of irritation of the kidneys. Should traces of arsenic disappear from the urine, arsenical poisoning might be feared.

Syphilis in parturient women greatly increased the mortality and morbidity for the mother through mixed infection and lesions of the genital organs. Unless promptly detected and treated, it was one of the most important causes of fetal death. No syphilitics should be allowed to marry unless they had been under observation for six years after the last appearance of symptoms.

Syphilis in Relation to Some Social Problems.—Dr. Sigmund Pollitzer, of New York, dealt with three distinct subjects; first, hereditary syphilis in the light of today. The fact that syphilis could be transmitted from the syphilitic mother to her unborn child was recognized four hundred years ago; but the fact that syphilitic children were born of apparently healthy mothers led to the conclusion that syphilis might be transmitted to the offspring by way of the semen of the father without infecting the mother. In fact, paternal syphilis was regarded as the most frequent form in syphilitic heredity. More extended and definite clinical observation, the discovery of the spirochete on the maternal aspect of the placenta, and the results of the Wassermann test had completely changed their views in this respect. Transmission of spirochetes to the ovum might be regarded virtually as a physical impossibility; a spirochete was three times as long as the diameter of a spermatozoid head, and, furthermore, an infected ovum would not develop into a fetus. Colles's law and Profeta's law were true only in the sense that the mother of a syphilitic child and the child of a syphilitic mother already had syphilis, and therefore apparently could not acquire it. The apparently healthy mothers of syphilitic children invariably had a positive Wassermann reaction and generally presented symptoms of syphilis if they were followed up long enough. The failure to show a history of the infection in these cases was not remarkable in view of the statistics of syphilis in women; in only about one third of the cases that were seen with definite tertiary lesions could a history of infection be elicited. The speaker would emphasize the importance of making a Wassermann test in every case of unexplained abortion, instead of resting content with the inadequate explanation of deflections, adhesions, etc.

When May the Syphilitic Marry?—Doctor Pollitzer presented this paper also, and said recent progress had greatly changed their views on the gravity of syphilis, especially with reference to lesions of the heart and central nervous system, and at the same time had greatly improved prognostic and therapeutic possibilities. The question of the medical sanction to marriage of the syphilitic had been most earnestly considered forty years ago by Fournier, and the principles laid down by him had been generally followed. The syphilitic might marry when there was a reasonable certainty of his cure. No criterion of cure being possible, formerly a definite period of time and treatment was arbitrarily fixed upon, based on clinical experience. The syphilitic might marry if he had received three years of treatment and had remained free from symptoms for another year or two. Millions of happy marriages proved the wisdom of the rule, but the thousands that resulted in infection of their wives and the birth of syphilitic children proved its inadequacy. The Wassermann test afforded a trustworthy criterion of cure.

The syphilitic woman might marry without risk of infecting her husband after she had reached the tertiary stage of the disease, but she could not become a mother without the risk of bearing syphilitic children until she was permanently Wassermann negative.

The Control of Syphilis.—This was Doctor POLLITZER's third paper. The attempt to control the incidence of syphilis by segregation, he said, had proved of slight value and, moreover, in Anglo-Saxon countries met with too much prejudice to permit of its enforcement. The control of syphilis must come through education of the public in the risks and dangers of illicit intercourse, and education of the physician in the importance of early diagnosis and proper treatment. Various educational bodies were undertaking a campaign of instruction in these matters; even the public press, which a few years ago had never printed the word syphilis, today contained educational articles which dealt with the subject frankly. The public was being educated. How far knowledge of the risks and dangers of illicit intercourse would serve as a deterrent was a moot question.

The speaker referred to the excellent results obtained by the prophylactic use of calomel ointment in the armies and navies of the world, a procedure which, if generally employed, would as effectively control the great pox as the smallpox had been controlled by vaccination. He contrasted the generous provision made for the care of the syphilitic in the hospitals of European cities, with the attitude of our American hospitals, to most of which the patient with an active syphilis was refused admission, and concluded with a plea to his hearers to exert their personal influence to the end that better hospital facilities be provided for the syphilitic.

Syphilis of the Internal Genital Organs in the Female.—Dr. GEORGE GELLHORN and Dr. HUGO EHRENFEST, of St. Louis, contributed a joint paper on this subject, saying that syphilis had always been assumed to be considerably commoner among men than among women; but from certain investigations this supposition could not yet be accepted as conclusive. At any rate, syphilis was common enough in women to constitute a gynecological problem in the widest sense. Not every disease in a syphilitic woman was syphilitic in nature, but syphilis, if present, would exert an influence of its own upon coexistent diseases. Latent syphilis prevailed more in women than in men.

The course of syphilis in men differed in many points from that in women. To instance but one of the differences, the relative frequency of tabes and paresis in the two sexes was well known.

Primary chancres of the vagina were rare, probably because of certain histological and biological characteristics of the vagina. Tertiary luetic manifestations of the vagina were also extremely rare. They represented, as a rule, the continuation of secondary lesions in the vulva, uterus, or adjoining organs. The isolated submucous gumma broke down early and appeared in the form of a more or less characteristic ulcer. The more destructive processes which eventually led to the formation of fistulæ and strictures almost always originated in strictures surrounding the vagina. Tertiary lesions of the vagina did not exhibit characteristic symptoms, such as pain or discharge.

The primary chancre of the cervix represented the best known and most common type of syphilitic affections of the female internal genitalia. Its frequency had probably been overestimated. Statistics based on a large number of observations had never shown a frequency over 1.5 per cent. of all primary chancres found on the genitalia. Eight personal observations were added by the authors to the few cases found in the literature of secondary lesions of the cervix. Syphilis manifested itself upon the cervix in the form of macules, papules, and ulcerations. These forms probably represented three successive stages in the development of a lesion caused by scattered accumulations of the spirochete in the squamous mucosa of the cervix. The parasite could readily be discovered in the secretion of any of the three forms, and this explained the great infectiousness of secondary lesions. The Wassermann reaction was positive in this stage.

Syphilis of the pelvic cellular tissue appeared in the form of a diffuse gummatous infiltration which involved the pelvic peritoneum secondarily. To the few cases on record the authors added a personal observation. In almost all instances a diagnosis of malignancy had been wrongly made. In their own case the positive outcome of the Wassermann reaction, together with other unmistakable signs of tertiary syphilis about the outer genitals, aided in arriving at the correct diagnosis. Specific treatment produced amazingly quick improvement in an apparently hopeless condition.

Familiarity with syphilitic lesions in the genital tract must prove of eminent practical value to the gynecologist in view of the frequent confusion in the diagnosis of cancer and syphilitic ulcerations or gummata. That occasionally a patient who could have been cured by antiluetic treatment, was subjected to a serious radical operation, there could be no doubt.

The Specificity of the Wassermann Reaction.—Dr. RUDOLPH BUHMAN, of St. Louis, gave the results of the Wassermann reaction in a series of diseases from patients supposed to be free from syphilis, with special reference to malignant diseases. Of 132 cases of malignant diseases, including carcinoma, sarcoma, and malignant adenoma, nine gave a positive reaction; six of these nine cases were both malignant disease and syphilis; the other three cases were not under observation long enough to permit of diagnosis by the test.

Syphilis in the University of Michigan Obstetrical and Gynecological Clinic.—Dr. REUBEN PETERSON, of Ann Arbor, Michigan, presented the following summary and conclusions: 1. Only by routine Wassermann tests would the obstetrician and gynecologist best serve the interests of his patients. 2. Especially was this true in hospital practice, where even careful histories failed to arouse suspicion of latent syphilis. 3. Out of 2,000 in patients in the University Hospital, excluding two services, the proportion of syphilitics was six per cent. 4. The nature of the hospital material would determine the percentage of lues, but in the average hospital the ratio would not be far from eight to ten per cent. if the entire hospital population was included. 5. The same held true for the proportion of syphilis in any special clinic, the percentage varying according to the nature of the material. 6. The percentage of lues in 381 cases in the University maternity was 4.7, as shown by the Wassermann reactions and expert physical examinations. 7. In eighteen cases of syphilis among the number examined, only eight, or less than half, gave a history of lues. 8. In only the same number (eight) were there positive physical signs of lues. 9. As shown by the histories of the eighteen cases, there was a greater chance for the syphilitic mother treated by salvarsan and mercury to give birth to a living full term child than where no treatment was given during pregnancy. 10. The newborn infants of the mothers so treated did not give positive Wassermann reactions, although undoubtedly they were syphilitic and later would probably show signs of the disease. 11. A certain proportion of the newborn children of untreated syphilitic mothers would give positive Wassermanns. 12. Out of 390 gynecological patients subjected to the Wassermann test, twenty-two or 5.6 per cent. gave positive reactions. 13. In only five of the twenty-two luetic patients was there a history of syphilis. 14. Hence the importance of such examinations, or a serious general disease would be overlooked and the gynecological patient would remain uncured.

How Closely Do the Wassermann Reaction and the Placental Histology Agree in the Diagnosis of Syphilis?—Dr. J. MORRIS CLEMONS, of New Haven, Conn., stated that in 360 consecutive confinements the Wassermann test had been made on the mother's blood and the placenta had been studied for evidences of syphilis. The most notable disagreement occurred in cases of toxemia of pregnancy, which not infrequently presented a faintly positive Wassermann reaction, though the placenta was normal.

(*To be Continued.*)

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16, 17, and 18, 1916.

The President, Dr. W. STANTON GLEASON, of Newburgh, in the Chair.

(*Continued from page 286.*)

The Nauheim Method.—Dr. SIMON BARUCH, of New York, stated that when he stood three years ago in that room, it had been his privilege to open the boom for the Saratoga baths. He little thought that there would be today facilities for hundreds of carbon dioxide baths in Saratoga, for at that time the only bath here was one tub with city water, supplied with gas from a cylinder. The Nauheim physicians had evolved a specific method of bathing, the success of which had been established during the most enlightened period of medicine, not by the patient's statement, but by observations of specialists all over the world. 1. The Nauheim water contained a supersaturation of carbon dioxide and certain salines, of which sodium and calcium chloride existed in decided quantities. 2. The mineral springs of Saratoga furnished the most important constituent, viz., carbonic acid, but lacked the strong salines.

Unfortunately the Nauheim method of bathing was rarely administered in this country correctly. The Nauheim bath consisted chiefly of carbon dioxide produced by acids and bicarbonate of sodium, the salines being either omitted or replaced by a few pounds of salt, natural brine or sea water, or as in one large institution, by sodium chloride and bicarbonate of sodium. In some resorts the gas came from a cylinder. There was a lack of precision in giving this bath, which could be obviated only by understanding the physiological action of the gas and salines contained in the Nauheim waters.

The principles of hydrotherapy must be applied judiciously to obtain a vascular training, to raise the functional efficiency of the heart. In Nauheim the highest grades of circulatory insufficiency, with dropsy, etc., were declined. The rationale of the Nauheim bath might be divided into that of the action of carbon dioxide and of the salines. Carbon dioxide produced a sensation of prickling and warmth. The skin was covered with gas bubbles, which protected it more or less against temperature impressions.

1. A cutaneous hyperemia was produced, not through reflex action as after cold procedures, but due to a specific mechanical chemical irritation by the gas. This was proved by the hyperemia being confined to submerged parts. 2. The cutaneous sensibility was heightened, intensifying temperature sensation, whether below or above the point of indifference.

He used the artificial bath in typhoid fever, when the Brand bath was refused or contraindicated, with valuable results. He insisted that the gas was absorbed through the skin and produced a systemic effect, enhancing respiratory activity, which unloaded the right heart and prolonged the diastole. That the absorbed gas also stimulated the unstriated coats of the cutaneous arteries and the heart muscle itself was proved by the fact that animals killed with gas died with the heart in systole. These combined effects prevented those stases which were usually lethal in cardiac diseases.

The temperatures used in the Nauheim baths here were much higher than those at Nauheim. In one large institution the first series was given at a temperature of 98° F., which must damage a defective heart. He had shown long ago, that no vasomotor action occurred after the Nauheim bath unless its temperature was reduced below the point of indifference, which was about 94° F., for carbon dioxide water. Ottfried Miller and his school had confirmed his findings.

Rarely was a lower temperature than 86° F., prescribed by Groedel and others in Nauheim, and the highest was 95° F. The former produced some reflex vasomotor effect, according to Baruch's hydrotherapeutic law, viz., the degree of difference between the water and skin temperature governed the intensity of peripheral excitation and therefore of the vasomotor action. A carbonic acid bath of 94° F., would be indifferent to the skin, while a bath two to seven degrees lower, which was not uncommon in Nauheim, would produce thermic excitation, resulting in vasomotor effect.

There was no doubt of the superiority of the natural water over the artificially prepared in cardiac diseases, but close attention to detail might make the artificial a good substitute for home use.. The Saratoga waters contained from thirty-three to thirty-five per cent. supersaturation, while the artificial baths contained from five to seven per cent. The combination of the resistance at the periphery with the direct stimulation of the heart muscle by carbon dioxide drove the blood with more energy to all the outlying districts, giving the heart a mild training, which produced salutary conditions in the entire vascular system. The action of the salines rested upon a scientific basis. They were not absorbed, but they assisted in the penetration of gas through the skin.

Doctor Baruch advised the authorities at Saratoga to add a definite quantity, twelve pounds of sodium and one pound of calcium chloride, which was the average of the three Sprudels used in Nauheim, to render the Saratoga waters equivalent to the Nauheim waters. Physicians prescribing Nauheim baths should assure themselves that this had been done. By this arrangement the exact formula of the Nauheim waters would be obtained by physicians and could be modified definitely as was done at Nauheim. The physicians, at the latter place, began with two or more thermal baths, which contained the salines. with a minimum of gas. But Groedel had substituted for this complicated formula a simple dilution of fifty per cent. with "sweet water." It would be a simple matter to imitate this procedure in the Nauheim method, in the artificial bath.

All patients should be advised to rest in a recumbent posture for a few days after the journey; in positive insufficiency of the circulation, without great dyspnea, in the recumbent posture. The first series of baths should be with Hathorn No. 1 and added salines, diluted with seventy per cent. plain water at a temperature of 93° F., duration six to eight minutes and repeated every other day. This should be followed by a rest of one or two hours in bed. The patient should be conveyed in a wheel chair or other easily running vehicle to his lodgings. After these baths, the duration might be increased to ten minutes and dilution diminished from time to time. If dyspnea and other manifestations were relieved, the temperature of each bath might be gradually reduced as far as 91°F., and the full salines and gas given. The number and frequency of baths must be ordered in accordance with the effect of the series, ascertained by the report of the nurse, or better still by the physician himself. The prevailing mode of ordering a series of eighteen baths was unscientific and unjust to the patient.

If the cardiac insufficiency was more recent, or compensation appeared to be initiated, the full strength of the salines and gas might be administered for three baths at 93° F., and gradually reduced in temperature, duration increased up to twelve minutes, omitting the third day. The strongest bath was indicated in uncomplicated mitral insufficiency. In the absence of cardiac muscular degeneration, the temperature of each bath might be reduced gradually as far as 86° F., according to its effect upon the pulse and general manifestations. In aortic or mitral stenosis and in cases showing much fibrillation, the bath temperature should never go below 90° F. If palpitation or slight dyspnea occurred only on decided prolonged exertion, or during stair climbing, they might begin at once with the gas and saline bath fifty per cent. and gradually proceed to the strongest bath at 95° F., duration ten minutes, but not exceeding fifteen minutes. Only well ascertained tolerance after each bath warranted lower temperature, which always demanded shorter duration.

In so called fatty or weak heart with feeble compressible pulse at eighty or over, or increased by ordinary exertion, the bath should be gradually increased from the mildest to the strongest. Temperature might go as low as 85°. In arteriosclerosis therapeutic indications were conditioned upon the presence of the high pulse tension and increased blood pressure. The physician should be guided by the effect of each bath. A full bath of Hathorn No. 1, at 93° to 95° F., with saline addition was ideal in such cases, duration being gradually lengthened up to fifteen minutes under careful supervision. In true angina pectoris, Groedel advised refraining from gas baths if amyl nitrite did not relieve the paroxysm. In false angina pectoris, the baths of Hathorn No. 1, Lincoln and Empire Springs without salines were useful.

Neurasthenics suffering from cardiac disturbances were benefited by any gas bath without salines. Purely anemic patients would be favorably influenced by pure gas baths without salines, beginning at 90° F., at five minutes and increasing to eight minutes slowly, going lower, provided that an agreeable reaction followed.

The most favorable time for the bath was in the morning, about an hour after breakfast. While in the tub, the patient should be quiet and avoid inhalation of the gas, which was more apt to occur in the artificial than in the natural water. He should be dried gently, without friction, except in the first two baths, with warm linen sheets or towels, and rest in bed, in a well ventilated room for one or two hours, after each bath. A fairly strong patient, whose pulse was not easily excited might walk slowly to his lodgings, but the majority of patients were advised to ride to their residence.

The object of all treatments was mildly to raise the responsive capacity of the heart muscle by withdrawing obstacles to its free action at the periphery, and enhancing the ventricular energy by slow degrees; in other words, to train the heart muscles as they trained the muscles of the arm, with dumbbells, by gradual increase of labor. This was a coarse analogy; no harm could be done to the healthy voluntary muscles by overexercise, whereas the cardiac muscle acted involuntarily and was related intimately to the complicated machinery of the entire body, to which it furnished pabulum for the organic activities. Moreover, they had to deal with a pathological condition of a delicate organ, demanding cautious adjustment.

Renal Tuberculosis.—Dr. HENRY DAWSON FURNISS, of New York, of thirty-three personally observed cases, in twenty per cent. found a history of other tuberculous lesions, and of these fifteen per cent. were associated with pulmonary tuberculosis. In fifty per cent. of these cases cystitis was the first symptom; in fifteen per cent. microscopical hematuria, which was followed by cystitis. The hematuria was vesical rather than renal in origin. Renal or ureteral colic was seen in fifteen per cent. The cystitis was the most distressing symptom, and caused loss of sleep from frequent urination. Nephrectomy was advised, before extensive bladder involvement had taken place. Pyuria was present in every case. Tubercle bacilli were found in slides in eighty-five per cent., which appeared high, but was probably an understatement.

In all except early cases there was bladder involvement, characteristic of tuberculosis. By the time the patients applied for treatment the lesions were advanced enough to show characteristic changes. These were redness and induration of the ureteral orifice, often with nodular irregularities. With progress of the disease the induration increased, the meatus became more involved, the trigonum retracted, and the ureter shortened. Later, ulceration occurred, and finally the whole bladder became lined with granulation tissue. In cases of long duration the ureter was involved, and in catheterized urine the finding of tubercle bacilli was evidence of tuberculosis of at least one kidney. The general health of these patients was usually good. Most cases were nephrectomized with ligation and division of the ureter. The percentage of postoperative fistulæ was about the same, whether drainage was used or not. Perhaps undrained cases gave better results. It seemed better to excise the ureter through an extra incision, extraperitoneally. Only one death occurred as a result of operation, but this was complicated with pulmonary tuberculosis. About thirty per cent. of postoperative fistulæ had been reported, but this did not seem detrimental to the health of the patients, even though it lasted two years. After operation there seemed to be a typical tuberculin reaction, the exacerbation of other tuberculous processes, and a rise of temperature, this being apparently due to liberation of tuberculous material into the body. About half of the patients seen were between twenty and thirty years of age. It was essentially a chronic disease and seemed to be rather frequent. The prognosis in operative cases was good.

Dr. Alfred M. Wose, of Syracuse, in regard to the cystoscopic examination of these bladders, said it was important to get the cases early because if they delayed sending the cases for cystoscopy the bladder would contract and in many cases it was impossible to make a differential diagnosis of the urinary secretion; in fact, they could not find the ureters. They had then to base their observations on the bladder content and the clinical symptoms.

Dr. Hiram N. Vineberg, of New York, had operated in eighteen cases in twenty years, and the earlier he got the case, the better was the result; the more the bladder was involved, the less benefit the patient would have from the operation. The cystitis would keep up for a year or more if the case was advanced. In any case of cystitis lasting for some time they might suspect tuberculosis.

Letters to the Editors

OUR DUTY POINTED OUT.

New York, *August 2, 1916.*

To the Editors:

In yesterday's issue of a prominent daily newspaper I read a touching story of the first child ever cured by adrenaline injections of the dreadful infantile paralysis. A friend of mine, who knows me to be a great skeptic in regard to the pretended wonderful effects of the remedy, called my attention to the story, convinced that I would hide my face in shame. But instead I told him flatly that the whole story was a fake—*sit venia verbo*—and he called me an incorrigible heretic. The enclosed clipping from today's *Statszeitung*, however, will show you that my missile did not hit far from the mark. Here is that paper's statement and a translation:

ABER SONST STIMMTE DIE SACHE.

Hilfs-Kommissär John S. Billings untersuchte gestern einen Fall angeblicher Adrenalin-Kur. Es stellte sich heraus, dass das, wie es hiess, durch Adrenalin geheilte. Kind weder geheilt ist, noch Adrenalin-Injectionen empfangen hat.

OTHERWISE THE REPORT WAS CORRECT.

Deputy Commissioner John S. Billings yesterday investigated a case of pretended adrenaline cure. It turned out that the child alleged to be cured through adrenaline was neither cured nor had received injections of adrenaline.

It is not necessary to dwell upon the injury of spreading false reports of that nature. It brings to the medical profession anything but a strengthening of prestige, which is not any too great; it causes the public bitter disappointment, and drives it into the clutches of quacks and faith healers. Retracting the report does not repair the damage. Those who believe that a few grains of tonsillar tissue in the body or 0.25 diopter of uncorrected astigmatism are a menace to the human race—and practically the whole public has been educated to that belief (New York Medical Journal, July 29, 1916, pp. 202-204)—put more faith into the original report than into its retraction, after the principle *quæ volumus credimus libenter*.

As editors of a great medical magazine, it devolves upon you to expose the deception and, if possible, to cause an investigation to be made into the question in whose interest such false reports are manufactured and spread.

Max Talmey, M. D.

PREPAREDNESS IN THE MEDICAL CORPS.

New York, *August 3, 1916.*

To the Editors:

In this era of preparedness one reads and hears much of what has been neglected in our military service and in our industrial mobilizing of transportation, etc. As usual, what medical men have accomplished in this line is a closed book.

In Great Britain and in our own country the medical department of the army has shown its foresight, even when the other branches have lagged lamentably. Not long ago, Surgeon General Keogh, of the British army, related to a London medical society that his department had been preparing for a great European war for ten years, having been advised to do so by Mr. Haldane. While the government was unwisely disregarding the late General Roberts's advice to prepare, the surgeon general heeded Mr. Haldane's advice and was ready when the great war opened, very far in advance of all other departments.

Recently I have noted the same wise preparedness in the medical service of the United States army, admonished by the painful and regrettable experience of the Spanish war.

I am led to these remarks by a recent address of Surgeon General Braisted on the remarkable advances in the Bureau of Medicine and Surgery of that service:

During the past two years, the present Secretary of the Navy, in many instances on his own suggestion and in others by his support of the Bureau of Medicine and Surgery, has advanced our service in the following items:

1. He has recommended to Congress the increase of the Medical Corps from 347 to nearly 500, the first increase in twenty years, and most urgently needed.

2. He has provided in his personnel bill a substantial increase in the upper grades of the Medical Corps. No increase in these grades has been made since 1870, notwithstanding the tremendous growth of the service.

3. He has established two Corps Training Schools for

male nurses, and made provision for the increase in this corps by nearly 1,000 men, and has also provided a possible chance for members of this corps to reach commissioned rank, thereby raising the efficiency and esprit of nearly 2,000 enlisted men in the hospital corps of the navy.

4. He has made provision for a new hospital ship for the navy, which will enable us to build the first ship of this kind, designed especially for this purpose, and which will be a model for our country and the world.

5. He has established schools for the training of the native women of Samoa and Guam in nursing, that already are giving most excellent results and are a most important educational effort for these helpless people.

6. He has increased our appropriations to meet our necessities.

7. He has permitted us to take an active part in the regeneration of Haiti by furnishing medical officers and nurses to care for the sanitary needs of Haiti and which ranks with one of our greatest humane efforts.

8. He has supplied already, and gradually will make good our deficiencies in the many large hospital and medical organizations on shore, such as contagious units at Mare Island, Puget Sound, New York, and Newport, and has furnished adequate and commodious homes for our nurses at Mare Island and Boston. We are organizing five Red Cross mobile hospitals of 250 beds, for use at any point on the coast.

9. He has authorized a medical reserve corps of the best medical talent that our country can furnish, to be ready to come to our assistance in time of need, and he is initiating a correspondence school to give these officers a training and working knowledge of their work. He has detailed a number of our best officers for duty in Europe as observers.

Doctor Braisted's comment upon the cause of the solicitude displayed by Secretary Daniels for the medical department is interesting, in that he believes it to be due to the secretary's deep respect and attachment to his family physicians at home.

This fact may furnish a clue to the wiser utilization of the influence of medical men which today is conspicuous by its absence in our legislative halls and elsewhere.

The foregoing are only a few examples showing the interest and activity of our secretary in this branch of the service. Did space permit I should like to continue in detail to show you his interest and help as shown in innumerable questions of sanitation and organization which makes the work of the Medical Department of the Navy one of the most important branches of the service.

SIMON BARUCH, M. D.

Book Reviews

Aids to Bacteriology. By C. G. MOOR, M. A. (Cantab), F. I. C., Captain, First London Sanitary Company, Public Analyst for the County of Dorset and the Boroughs of Poole and Penzance, and WILLIAM PARTRIDGE, F. I. C., Joint Public Analyst for the County of Dorset. Third Edition. New York: William Wood & Co., 1916. Pp. viii-278. (Price, $1.25.)

This little compend contains a wonderful amount of information, well arranged, and specially adapted to readers who want to refresh their memory on the details of bacteriology. The authors have wisely included the pathogenic protozoa, trichomycetes, blastomycetes, and hyphomycetes: there are also sections on fermentation, enzymes, filterable viruses, disinfection and disinfectants, as well as chapters on the bacteriology of sewage, shellfish, meat, soil, air, milk, and water. The book can be recommended as a model of its kind.

La Kinésithérapie de Guerre. La Mobilisation méthodique, la Massothérapie, la Mécanothérapie, la Rééducation. Par Le Docteur P. KOUINDJY, Chargé du Service de Rééducation et de Massage à la clinique Charcot de la Salpêtrière, Aide-major de 2me classe, Médecin traitant au Centre de Physiothérapie d'Arts et de Métiers, V. G. 18. Paris: A. Maloine & Fils, 1916. Pp. 388.

A great deal has been written lately about the treatment of those wounded in battle. The present volume is the author's contribution to the surgery of war. In it are discussed passive movement, massage, mechanotherapy, and reeducation. Each of these procedures is fully explained, the methods of application are shown, and the limitations laid down; at the same time the book contains adequate illustrations. The author has had an unusually large experience in this branch of medical science, and much of what he writes is appropriate to civil surgery as well as to military surgery.

A Manual of Gynecology and Pelvic Surgery. For Students and Practitioners. By ROLAND E. SKEEL, A. M., M. S., M. D., Associate Clinical Professor of Gynecology, Medical School of Western Reserve University; Visiting Surgeon and Gynecologist to St. Luke's Hospital, Cleveland, etc. With Two Hundred and Eighty-nine Illustrations. Philadelphia: P. Blakiston Sons' Co., 1916. Pp. xiv-680. (Price, $3.)

This volume, of handy size, contains a fairly complete account of the diseases of women. Special emphasis is laid upon diagnosis and treatment. The author begins the volume with chapters on anatomy, physiology, and symptomatology and diagnosis; he then discusses diseases and injuries of the vulva; injuries to the perineum; diseases and injuries of the vagina, of the cervix, of the uterine body; uterine displacements; diseases of the tubes; operations upon the uterus and its ligaments; extrauterine gestation; diseases of the ovaries; pelvic cellulitis and peritonitis; congenital anomalies; sterility, gonorrhea, the treatment of menstrual disorders; gynecological therapeutics; diseases closely related to or associated with gynecological lesions; gynecological surgery; and postoperative complications and sequelæ. Particularly useful chapters are those dealing with symptomatology and diagnosis, gynecological therapeutics, and postoperative complications. To each chapter the author has appended a list of references which will serve as a good working bibliography. We suggest that, in a future edition, these references be arranged alphabetically. The size of the book, the size of the type, and the character of the illustrations are all that can be desired. The proof reading has been sadly neglected and the printers seem to have no uniform method of spelling. On one page we find three variations of the spelling of alkaloids, viz., *strychnine, strychnia,* and *atropin; hemostasis* and *hæmostasis* occur on the same page; *hematoma* and *hæmatoma* are found, also *hematocele* and *hæmatocele;* "spirochete pallida," "locus minoris resistensia," "the constrictor radices clitorides," "the rugarum anterior," "pruritis vulvæ," "one of the tubal fimbria," "maculæ cerulæ," "scybalæ," are some of the flaws which we have detected on our way through the volume.

Preliminary Clinical History. Designed by J. MADISON TAYLOR, A. B., M. D.

This history blank of four pages is designed to be filled out by the patient or the family and covers family and personal history. This scheme has been followed with great success by insurance companies and fraternal orders, and it not only saves considerable time in examination and history taking, but it also brings out many points in the history which might otherwise be overlooked. A section is devoted to the teeth, which are playing more and more an important part in modern medicine.

Interclinical Notes

We have often longed for some high literary authority to cast his eye over our fearful nomenclature, and at last we have found the man. Sir Arthur Quiller-Couch, King Edward VII Professor of English Literature at Cambridge University, tells a most satisfying story. The hybrid which Sir Arthur unearthed made so profound an impression upon him that he keeps referring to it throughout his remarkable book (*On the Art of Writing.* New York: G. P. Putnam's Sons), which is made up of a course of lectures delivered at the University. Hark to his first impression:

> It was a work on pathology. I found myself engaged in following the antics of certain bacilli generically described as "antibodies." I do not accuse the author (who seemed to be a learned man) of having invented this abominable term; apparently it passed current among physiologists and he had accepted it for honest coin. I

found it, later on, in Webster's invaluable dictionary: Etymology, "body" (yours or mine), "anti," up against it; compound, "antibody," a noxious microbe.

Now I do not doubt the creature thus named to be a poisonous little wretch. Those who know him may even agree that no word is too bad for him. But I am not thinking of *him*. I am thinking of *us;* and I say that for our own self respect, while we retain any sense of intellectual pedigree, "antibody" is no word to throw even at a bacillus. The man who eats peas with a knife can at least claim a historical throwback to the days when forks had two prongs and the spoons had been removed with the soup. But "antibody" has no such respectable derivation. It is, in fact, a barbarism, and a mongrel at that. The man who uses it debases the currency of learning; and I suggest to you that it is one of the many functions of a great University to maintain the standard of that currency, to guard the *jus et norma loquendi,* to protect us from such hasty fellows or, rather, to suppeditate them in their haste.

* * *

It was by the merest accident that the work on pathology fell into Sir Arthur's hands; and it is most unlikely that he will pursue his reading along such lines. In fact, we doubt if he could read very far just because of the frequent barbarisms. Every one knows how the beautiful lines of Shakespeare sound in the mouth of a bad actor; a similar phenomenon occurs when the purest scientific truth is conveyed in wretched English. The suggestion of the late Achilles Rose was an excellent one, namely, that when a medical discoverer required a new term, he should apply to the University of Athens, describing his wants. The university in question would gladly furnish the neologism, based on impeccable Greek and ready for the necessary modifications when translated into other languages.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 2, 1916:

FOSTER, A. D., Surgeon. Granted eleven days' leave of absence from June 24, 1916, on account of sickness.

HOMMON, H. B., Sanitary Chemist. Directed to proceed to Luray, Va., and such places on the Ohio River watershed as may be necessary in connection with studies of industrial wastes.

KEARNY, R. A., Passed Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

KEMPF, G. A., Assistant Surgeon. Directed to report to Chairman of Board of Examiners at Bureau, July 31, 1916, for examination to determine his fitness for promotion to the grade of passed assistant surgeon.

KERR, J. W., Assistant Surgeon General. Directed to proceed to New York for conference relative to investigation of poliomyelitis.

KNIGHT, C. P., Passed Assistant Surgeon. Relieved at Marine Hospital, Stapleton, N. Y., and take charge of the Pensacola Quarantine Station.

LAVINDER, C. H., Surgeon. Directed to proceed when necessary and instruct officers under his orders to proceed to adjoining and to New England States to investigate outbreaks of poliomyelitis.

McCOY, G. W., Surgeon. Directed to proceed to New York for conference with officers, collection of material, and planning details of laboratory work in connection with investigation of poliomyelitis.

TREADWAY, W. L., Assistant Surgeon. Directed to proceed to certain places in the State of Colorado, for the purpose of making a mental examination of the inmates of four institutions for minors.

WELDON, L. O., Assistant Surgeon. Directed to proceed to New York for duty in the prevention of the interstate spread of poliomyelitis.

Boards Convened.

Board of medical officers reconvened at the Bureau, Monday, July 31, 1916, to examine Assistant Surgeon G. A. Kempf, to determine his fitness for promotion to the grade of Passed Assistant Surgeon. Detail of the board: Assistant Surgeon General W. C. Rucker, chairman; Surgeon E. A. Sweet, member; Passed Assistant Surgeon J. R. Hurley, Recorder.

Board of medical officers convened at the Marine Hospital, Detroit, Mich., at the call of the chairman, for the re-examination of an alien. Detail for the board: Senior Surgeon H. W. Austin, chairman; Surgeon H. W. Wickes, member; Acting Assistant Surgeon K. L. Weber, Recorder.

Births, Marriages, and Deaths

Married.

ANTHONY-CURTIS.—In Springfield, Mass., on Monday, July 31st, Dr. Jeremiah C. Anthony and Miss Anna L. Curtis.

Died.

BRIDDON.—In New York, on Monday, July 31st, Dr. Charles Kelly Briddon, aged ninety years.

COX.—In New York, on Wednesday, July 26th, Dr. Rowland Cox, Jr., of Paterson, N. J., aged forty-five years.

CRAWFORD.—In Milford, Ind., on Wednesday, July 26th, Dr. George S. Crawford.

DETZWELLER.—In Goliad, Tex., on Saturday, July 22nd, Dr. Joseph Detzweller, aged seventy-two years.

ELLISON.—In Kirkwood, Del., on Tuesday, July 25th, Dr. L. Frank Ellison, aged seventy-five years.

ERWIN.—In Oak Grove, Mich., on Sunday, July 16th, Dr. William H. Erwin, aged sixty-five years.

FRASER.—In Presque Isle, Me., on Sunday, July 23rd, Dr. Louis Hanley Fraser, aged thirty-seven years.

FROST.—In Montreal, Canada, on Tuesday, July 25th, Dr. Henry Cooledge Frost, of Buffalo, N. Y., aged sixty-six years.

GRIEBEL.—In Indianapolis, Ind., on Thursday, July 27th, Dr. Herman Griebel, aged thirty-one years.

KELLY.—In Fall River, Mass., on Friday, July 28th, Dr. Michael Kelly, aged sixty years.

KENEFICK.—In Lawrence, Mass., on Sunday, July 30th, Dr. Thomas Kenefick, aged fifty-six years.

LEWIS.—In San Diego, Cal., on Wednesday, July 12th, Dr. Alvah Lewis, of Salt Lake City, Utah.

McHUGH.—In Chicago, Ill., on Monday, July 24th, Dr. M. George McHugh, aged thirty-five years.

McLAIN.—In West Chester, Pa., on Friday, July 21st, Dr. James L. McLain, aged seventy years.

McMULLIN.—In Philadelphia, Pa., on Saturday, July 29th, Dr. Andrew McMullin, aged sixty-two years.

PATTISON.—In Plain Hill, Conn., on Wednesday, July 26th, Dr. Jacob Pattison, aged fifty-eight years.

PHILLIPS.—In Evanston, Ill., on Monday, July 24th, Dr. William A. Phillips, aged fifty-five years.

RAUCHFUSS.—In New York, on Monday, July 31st, Dr. George Rauchfuss, aged fifty years.

RODGERS.—In Sterrett's Gap, Pa., on Monday, July 24th, Dr. Amos R. Rodgers, aged fifty-five years.

ROOF.—In Stamford, Conn., on Friday, July 28th, Dr. Russell H. Roof, of New York, aged sixty-three years.

SHAFFER.—In Creamridge, N. J., on Sunday, July 30th, Dr. George W. Shaffer, aged sixty-three years.

SHEHAN.—In Superior, Wis., on Friday, July 28th, Dr. Lyman B. Shehan, aged sixty-one years.

SLOUGH.—In Emaus, Pa., on Sunday, July 30th, Dr. William C. J. Slough, aged seventy years.

STONE.—In Pigeon Cove, Mass., on Friday, July 28th, Dr. George A. Stone, aged fifty-two years.

TARTAR.—In Wytheville, Va., on Saturday, July 15th, Dr. Herman G. Tartar, of Chilhowie, Va., aged thirty-one years.

WHEELER.—In Pittsfield, Mass., on Tuesday, July 25th, Dr. James H. Wheeler, aged seventy-one years.

WILSON.—In Los Angeles, Cal., on Thursday, July 20th, Dr. Andrew P. Wilson, aged forty years.

WOLFF.—In New York, on Monday, July 24th, Dr. Benjamin Wolff, aged forty-two years.

WOODBURY.—In Groveland, Mass., on Wednesday, July 19th, Dr. Louis Augustus Woodbury, aged seventy-two years.

WOODMAN.—In Washington, D. C., on Friday, July 28th, Dr. Francis J. Woodman, aged sixty-five years.

YINGLING.—In Huntington, Ind., on Monday, July 17th, Dr. Daniel Yingling, aged seventy-six years.

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Original Communications

THE TREATMENT OF ACUTE POLIOMYELITIS.

BY S. J. MELTZER, M. D., LL. D.,
New York.

(From the Department of Physiology and Pharmacology of the Rockefeller Institute for Medical Research.)

Acute infantile paralysis is an extremely serious disease. Including even the abortive cases, apparently not more than fifty per cent. of those afflicted recover completely. In the other fifty per cent. the disease either terminates fatally or leaves the patient in a variable degree of invalidism. Considering the seriousness of the prognosis, the status of the treatment of this disease is very discouraging. Diet, purgation, fresh air, sunlight, and rest are the remedies in vogue; they are not to be neglected, but they ought not to impress us with the idea that we are really doing therapeutic work. As to treatment by drugs, Flexner (1) says: "The only drug which has shown any useful degree of activity is hexamethylenamine, which is itself germicidal. . . . But experiments on monkeys have shown this chemical to be effective only very early in the course of the inoculation and only in a part of the animals treated." Theoretically, there stands against its use the fact that hexamethylenamine is active only in an acid medium; while the tissues and the fluid in the spinal canal have an alkaline reaction. From a practical point of view the statement of Fraser (2) deserves to be mentioned. He treated (at the Rockefeller Hospital) twenty-two cases by oral administration of hexamethylenamine. Doses of 0.3 gm. three or four times a day were given to children of two years. "In two instances hematuria developed that ceased as soon as the urotropin was discontinued." "In no instance did this treatment appear to cut short the acute stage, and in no instance was there evidence of more satisfactory or more rapid recovery in the paralyzed parts." This quotation is given, because hexamethylenamine is employed by a number of physicians in the present epidemic, including physicians of hospitals under the control of the department of health. Netter (3) attempted to control the acute stage by subdural injections of serum from recovered patients. Regarding this treatment, Flexner has to say: "Use of this method has been made in a few instances in France, where the blood serum derived from persons who had recovered from infantile paralysis has been injected into the spinal membranes of persons who have just become paralyzed. The results are said to be promising. Unfortunately, the quantity of the human immune serum is very limited, and no other animals than monkeys seem capable of yielding an immune serum, and the monkey is not a practicable animal from which to obtain supplies." According to newspaper statements, this method is now being tested at the Willard Parker Hospital.

Sophian (4) tested the value of intraspinal injections of horse serum in these cases; it seems to him that it exerts a favorable influence. He also tested in a few cases the injection of serum from patients convalescent from infantile paralysis. Of this he says "the results were certainly no better than in the normal horse serum."

For several years I was interested in the treatment of acute poliomyelitis from several points of view. At the special meeting of the New York Academy of Medicine, July 31, 1916, devoted to a discussion of infantile paralysis, I wished to bring forward three definite therapeutic suggestions; but the time allotted to me was "five minutes or less." I chose to devote the greatest part of this short time to a discussion of the use of adrenaline; but obviously I could do very little justice, even to this measure. In the present paper I wish to discuss my suggestions of the treatment of poliomyelitis from a general point of view and at greater length. Those who are open minded will then see for themselves whether my views deserve scientific consideration and my suggestions an honest and unbiased trial.

I shall begin with the next, chronologically the first incident. Several years ago, I was testing the value of my apparatus for intrapharyngeal insufflation (5) on animals with respiratory paralysis. For this purpose I asked Dr. Paul F. Clark, who was then studying experimental poliomyelitis, to let me have a monkey dying from that disease. The first animal brought to my laboratory was undoubtedly in a dying condition. It was completely paralyzed, there were no respiratory movements of thorax and abdomen, none of the concomitant respiratory movements; deep cyanosis existed, the mouth was wide open and the lower jaw hanging down, and there was no lid or corneal reflex whatsoever; but the heart was still beating. I immediately pulled out the tongue, introduced the pharyngeal tube, and started working the bellows and the respiratory

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valve. In a short time the cyanosis disappeared, lid reflex and consciousness returned, and the animal was biting the pharyngeal tube. When the tube was removed for a while, no thoracic or diaphragmatic movements appeared; but strong asphyctic contractions of the sternocleidomastoid muscles, the *alæ naris,* and the risorius muscles set in, and cyanosis and unconsciousness developed rapidly. When the tube was reinserted, all these symptoms disappeared and the animal returned to the condition it was in before the tube was removed. It was evident from these observations that the development of asphyxia and the subsequent apparent death of the animal was due to a paralysis of the origin of the phrenic nerves and brachial plexus; *the asphyctic contractions of the accessory muscles of respiration proved that at that stage the respiratory centre was still intact.*

The observation of the further course of this and of another animal in a similar state under prolonged artificial respiration proved that *after several hours the respiratory centre also became paralyzed;* when the tube was then removed, no asphyctic contraction of the accessory muscles of respiration set in; the animal simply became gradually unconscious and strongly cyanotic. But even at this stage, when the animal had artificial respiration, deglutition could be induced and the circulation seemed to have remained intact. A few hours later, however, the circulation began to fail, and the animal, though under continuous artificial respiration, finally died.

These observations demonstrated clearly that the ascending paralysis in poliomyelitis strikes first the origins of the brachial plaxus and the phrenic nerves, and the subsequent asphyxia leads to death in a few minutes. Under the administration of efficient artificial respiration, the animals were resuscitated. We then had a chance to observe the extension of the paralysis, first to the respiratory centre, then to the centre of deglutition which is situated just above the respiratory centre, and, finally, to the vasomotor centre, which is situated still higher and which brought about finally the unavoidable death of animals which received a fatal dose of the virus.

On the basis of these observations I arrived at the general conclusion that in cases of poliomyelitis with *ascending* paralysis, death is due to a respiratory paralysis from an involvement of the origins of the chief respiratory nerves, *while in cases of encephalitic poliomyelitis the vasomotor centre may be the first vital point which becomes paralyzed,* and death is due primarily to a rapid sinking of the blood pressure.

These observations led naturally to the question whether efficient artificial respiration was of therapeutic value in any cases of acute poliomyelitis. We have seen that we could resuscitate the asphyctic animals by means of artificial respiration. It is true that these animals finally died from an extension of the paralysis to the vital centres of the medulla, but we know that in many cases of poliomyelitis the progress of the paralysis is arrested. In such animals artificial respiration could indeed maintain life for a long time. But would such a temporary resuscitation, lasting never so long, be of any final value? If the involvement of the origins of the chief respiratory nerves means real destruction of the corresponding tissues, the condition would be hopeless; the destroyed tissue could never regenerate and life could be maintained only by an indefinite administration of artificial respiration, which is obviously unthinkable. But here I was reminded of a subject in which I was interested in previous years, and that is "the difference between the inflammatory focus and the inflammatory area (*Entzündungsherd und Entzündungshof*)." In an inflammation we have to distinguish between the centre which represents the main inflammatory focus and the surrounding area consisting of zones of cellular infiltration, active hyperemia, and edema. In the centre the original tissue may be destroyed, and when a healing process takes place, it is accomplished by filling up the gap with connective tissue. In the central nervous system such a healing is obviously of no avail. On the other hand, the tissues occupied by the peripheral zones of the inflammatory area, especially those of edema and active hyperemia, may be cleared up with comparative rapidity and returned to normal again. Now the question arose: Does the involvement of the origins of the main respiratory nerves in infantile paralysis consist necessarily in a destruction of the corresponding tissue? Or, can the paralysis in its first stage be brought about merely by the peripheral zones of the inflammation? It is certainly admissible to assume that edema alone, by the virtue of the pressure which it exerts upon the nerve tissue, is capable of producing paresis and even paralysis of the corresponding nerves. If we now assume that in some cases the actual focus of inflammation came to a standstill at a segment of the cord *below the origin* of the chief inspiratory nerves, and that the paralysis of these nerves has been accomplished by the peripheral zones of the inflammation, we may well conceive that prolonged efficient artificial respiration may save life indeed, because the inflammatory condition of these parts is reversible, and it may completely disappear within a comparatively short period.

The earlier pathological studies in poliomyelitis were made in chronic cases of the disease, and the lesions described consisted indeed chiefly of atrophic scars found in the anterior horns of the cord. Since the acute stage of poliomyelitis has been recognized, the pathology of this stage presents another aspect. I shall refer here briefly to the descriptions of Flexner and Lewis (6), of their findings in experimental poliomyelitis in monkeys, and to the lucid monograph of Peabody, Draper, and Dochez (7), based upon their pathological studies of human cases of acute poliomyelitis at the Rockefeller Hospital. Flexner and Lewis say: "Definite lesions of the white matter were not made out, while it is common to find the gray matter altered. The chief lesions consisted of an edema (excessive moisture of the surface), diffuse vivid injection of the bloodvessels, and punctiform or larger (pinhead) hemorrhages." "The lesions . . . tend to be most marked in regions of the spinal cord corresponding with the paralyzed groups of muscles." "The lesions of the medulla, when present, resemble those of the spinal cord. The congestion, however, is more apparent than the hemorrhages." Peabody, Draper, and Dochez say (p. 19): "The brain and cord, on section, have a moist, translucent, edematous appearance, and the gray matter of the cord is often swollen so that it projects above the level of the white matter." "These three facts, cellular exudate, hemorrhage, and edema, . . . may perhaps be regarded as the primary reaction of the nervous system to the virus of poliomyelitis." ". . . *the damaging effects can be assumed to result in part from the direct pressure on the nerve cells of hemorrhages, edema, and exudate.* There is also the additional factor of anemia following the constriction of the bloodvessels by the same mechanism." All this was observed at the autopsies. It is possible that, while the victim is still alive and the circulation active, hyperemia and edema are much more extensive than after the heart has stopped beating for some time. That would explain the following statement of these authors: "It is noteworthy, however," they say, "that it is often extremely difficult to reconcile the clinical symptoms which are referable to pontine lesions with the actual autopsy finding. *Cases which have shown bulbar paralysis in life may fail to show adequate anatomical lesions to account for death,* and other cases which have given clinical evidence of spinal involvement may show changes only through the pons and medulla." Apparently some processes may go on during life which disappear as soon as the circulation stops.

From the foregoing it is evident that some of the serious symptoms, those which may even lead to a fatal termination, are due only to edema and other reversible conditions. If, then, the effects of these dangerous but reversible causes could be by some means kept for a time in abeyance, life, at least in some cases, might be saved.

It is therefore a well founded assumption *that there are some patients with acute poliomyelitis with impending respiratory paralysis, the life of whom could be saved by the application of an efficient method of artificial respiration sustained for some time.* Fraser (8) says that in his cases "artificial respiration has been attempted when the respiratory musculature failed rapidly, but in all cases the heart failed before any return of power in the respiratory muscles appeared." The artificial respiration referred to was probably carried out by the Sylvester method. I have tested this method on animals paralyzed by curare (9), and found that twelve minutes was the longest time that this mode of respiration was sufficient to keep the heart beating. With our method of artificial respiration by intrapharyngeal insufflation, the circulation of such animals could be kept up indefinitely (10). That is what I meant when, in my remarks before the Academy of Medicine, I advised to "administer artificial respiration by means of our apparatus for pharyngeal insufflation as soon as the patient shows a degree of unconsciousness and respiratory insufficiency; it is an easy and reliable procedure." While there may be only a few victims who will thus be saved, the attempt should be made in all cases. We do not deal with experimental investigations. *In the practice of medicine we ought to give the benefit of the doubt to our patients, be the chance for success never so small.*

In the foregoing it has been shown that the primary appearance of respiratory paralysis in ascending cases is probably due to the presence of edema and other reversible pathological phenomena in the corresponding segment of the cord. The spontaneous reversion of this phenomena, however, begins only after the chief inflammatory focus has ceased progressing. When that focus starts a regressive process, the edema and other pathological products of the peripheral zone become gradually absorbed. The process of absorption, however, may be very slow, and the lengthy pressure upon the origin of the nerves by these products may, in many instances, lead to a greater or lesser degree of permanent atrophy of the corresponding nerve tissue. It is therefore evident, that if we could find a means by which the edema and other reversible processes of the peripheral zone could be kept down at will continually, or at least very frequently for long periods, even while the inflammatory process of the primary focus was still active, the nerve tissues subjected to the action of the peripheral zone would derive definite benefit. Now, some thirteen years ago, we found that adrenaline is such a reliable remedy (11). In studying the difference of the influence of the sympathetic nerves and of the sympathetic ganglia upon inflammation, we found that we could distinguish these differences best, when the inflammatory area was abolished and the inflammation reduced to its chief focus. This was strikingly accomplished by the injection of adrenaline into the neighborhood of the inflamed part. After a subcutaneous injection of adrenaline into the inflamed ear of a rabbit, the swollen, hot, and red ear soon became thin, cool, and pale in its entire extent, except for a small area in the centre of the inflammation which contained the paralyzed vessels of the inflammatory focus. This effect lasted for some time. Furthermore, in experiments by Doctor Auer and myself on the effects of adrenaline upon blood pressure, it was found that when it was injected into the spinal canal of monkeys, the blood pressure rose slowly, reached its maximum, which was considerable, in the course of half an hour, and often more than an hour passed before it returned to its original level. On the basis of these experiments it seemed to me highly probable that in acute poliomyelitis an intraspinal injection of adrenaline would produce on the peripheral zones around the chief inflammatory foci a prolonged effect of the same character as was observed on the inflamed rabbit's ear. I have therefore induced Doctor Clark, who was then working under Doctor Flexner on experimental poliomyelitis in monkeys, to try the effects of intraspinal injection of adrenaline on these animals. The experiments were carried out under very unfavorable conditions, as the following quotations from Doctor Clark's (11) paper show: "The virus employed *is one that invariably causes a fatal ascending paralysis* or a rapidly fatal paralysis of respiratory centres in the medulla." "The animals selected were *such as were already extensively paralyzed or were moribund* and would have survived only a short time longer." Nevertheless, striking successes were obtained, as may be seen from the following abbreviated protocol B:

February 20, 1912. Animal moribund; breathing feeble and shallow; little tonus in arms and legs, semi-conscious. At 10 a. m., 1.5 c. c. of one to 1,000 epinephrine injected subdurally. No immediate effect. At 10.30 a. m., consciousness had returned and respirations were accelerated. The animal ate part of a banana offered. At 10.45 a. m., respirations deeper. At 11 a. m., marked increase in the tonus of arms and legs; some voluntary motion. . . . At 1 p. m., voluntary movements greater. At 3 p. m., marked improvement; respiration about normal. The animal took food eagerly. At 4 p. m., the tonus in the arms was diminishing; animal still bright. At 4.30 p. m., four c. c. of one to 2,000 epinephrine injected. Animal not seen until 9 a. m. next day, the 21st. On that day, as well as on the 22nd, no injections given.

February 23d. Animal growing weaker and appeared less bright. At 12 m., one c. c. of one to 1,000 epinephrine injected. No marked improvement.

February 24th. Monkey manifested a severe diarrhea during the night; weaker and less tonus in arms and neck. At 12.30 p. m., two c. c. of one to 2,000 epinephrine injected subdurally. At 7 p. m., animal weaker; diarrhea continued.

February 25th. The animal gradually failed and died in the morning.

A moribund animal which received a fatal dose of the virus and which, according to Clark's own opinion, "would have survived only a short time longer," improved after a single injection of 1.5 c. c. of adrenaline, the improvement extending to consciousness, respiration, and paralysis of all extremities; and that animal lived five days longer, although for two consecutive intervening days it received no adrenaline.

It must be evident to every one who is trained in experimentation, that in these few experiments the real value of adrenaline in poliomyelitis received no fair test. The virus employed was invariably fatal; the injections began only when the animal was already moribund; the animal was observed only between 9 a. m. and 5 p. m.; and for two consecutive days had no injections at all; nevertheless, the monkey improved in a striking way and its life was prolonged for five days.

Having conceived this line of experimentation and seeing the striking results in spite of the unsatisfactory execution of the experiments; and being for many decades deeply interested in a critical but broadminded treatment of the sick, could I have acted differently than urgently to recommend a test of the value of adrenaline in the treatment of infantile paralysis in the present epidemic? But having in mind the first principle in therapeutics, which is not to do harm to the patient, I advised that "in human infantile paralysis the injection should be begun with a dose of only 0.5 c. c. of a one in 1,000 solution of epinephrine until more is learned about the effects." But we have learned since from practical experience that much larger doses can be administered without harm to the patient. Furthermore, I discovered that this treatment had already been tried several years ago on human beings. This was done at the Rockefeller Hospital, in 1913, and it was Clark's experiments which gave the stimulus to this therapeutic attempt. I was at that time in Europe and had no knowledge of this fact until I recently read Fraser's (2) article. I shall give here the results in Fraser's own words: "In eight cases in which the *paralysis was rapidly developing and in which there was* EXTREME RESPIRATORY INVOLVEMENT, this line of treatment was tried. The largest dose was three c. c. of a one to 1,000 solution injected along with an equal volume of saline and washed in with one to two c. c. more of saline, but, as a rule, doses of one c. c. or 1.5 c. c. were used." "The dose was repeated in from three to six hours, and the rise of blood pressure was noted. In three cases three doses were given. In one case, twitchings of the limbs came on a few minutes after each dose, in addition to the rise of blood pressure. *In two cases it was thought that the respirations were easier and the diaphragm action better after the injections,* but such improvement was slight and transitory. Of the eight cases, *five ended fatally,* but it is impossible to say in the *three cases that ended favorably* that the arrest of progress in the paralysis was due to the injections." Here we see again that *this line of treatment was tried only in advanced cases in which the paralysis was developing rapidly and in which there was extreme respiratory involvement.* The usual prognosis in such cases would be that all eight would have a fatal termination. The recovery of three out of eight, that is, about thirty-eight per cent., is therefore most satisfactory evidence in favor of the usefulness of the treatment of infantile paralysis by adrenaline; and even in cases in which an "extreme respiratory involvement" has already set in, this treatment is not too late. I wish to point out especially that the experimental and clinical data cited here were obtained several years ago in the laboratories and the hospital of the Rockefeller Institute.[1]

Since my remarks at the meeting of the Academy of Medicine were made, one hospital (N. Y. Throat, Nose and Lung Hospital) has treated with admirable thoroughness all their cases (over seventy, I understand) of infantile paralysis with intraspinal injections of adrenaline.[2] I do not intend to discuss the favorable results which the physicians of the hospital believe they have obtained. I shall leave it to them to publish their scientific report which, as I understand, is under preparation. But one fact I wish to point out, which stands out clearly and indisputably: All the children sick with infantile paralysis in that hospital received two c. c. of adrenaline every six hours (which was carried out day and night with zeal and great care by the house surgeon, Dr. P. A. Lewis), and not in a single instance was any untoward symptom observed which could be ascribed to the adrenaline injections. The important therapeutic requirement that a medicine or any method of treatment should do no harm, has thus been overcome and settled. I am frequently receiving information from private sources of the treatment of infantile paralysis with adrenaline by private physicians. So far all seem to have obtained favorable results.[3]

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[1] Soon after my remarks on the use of adrenaline in infantile paralysis became known through the daily press, persons connected with the department of health assumed an inimical attitude to this treatment for reasons best known to them. One physician of that department went so far as to say that "there is nothing in it and he is sure that the Rockefeller Institute agrees with him." I do not know to whom he refers. But I am sure that nobody who is connected with the Institute is in possession of facts different from those quoted above, which undoubtedly speak in favor of the use of adrenaline in infantile paralysis.

[2] Since July 29th, the department of health is not sending any more cases to that institution, as I understand, on account of a technical regulation.

[3] The following incident in a fatal case is instructive. A young man of twenty years, a patient of Dr. J. Gardner Smith, was sick

My own judgment, however, is not influenced by such reports. I shall quote here what I said in the *Medical Record* for July 22 (p. 160): "Will adrenaline accomplish a real cure? Any one who is trained in experimental and clinical criticism can readily see that this question cannot be answered for some time to come." The report of one case, or of several, of a cure or a failure cannot decide this question, especially in a disease in which the mortality is comparatively low. I have given in detail my physiological, logical, and experimental reasons for my belief that the use of adrenaline in acute poliomyelitis is very rational. The clinical experience brought sufficient evidence that it can do no harm.[4] I therefore honestly believe that it is the duty of every physician who has to treat acute cases of poliomyelitis to give it an honest and unbiased trial.[5]

Furthermore, it seems to me that adrenaline ought to be given even in cases which are treated by the administration of serum from patients convalescent from poliomyelitis. The serum, if efficient, may be capable of arresting only the progress of the inflammatory focus; but the absorption of the edema is a slow process and the prolonged pressure upon the nervous tissues surrounding the focus may cause the area of the residual paralysis to remain more extensive; on the other hand, the simultaneous administration of adrenaline may assist in hastening the removal of the edema and thus be the means of reducing the final size of the residual paralytic area. Scientifically, it may be admitted that the simultaneous use of adrenaline in these cases will complicate the experiment and thus reduce its value. However, *in dealing with human beings we ought to have in mind preeminently the help which we may possibly be able to render to the patient and not look upon the treatment exclusively from an experimental point of view;* we must give the patient the benefit of the doubt. By the way, it is obvious to me that the final conclusions which we shall be in a position to draw from the serum experiments may remain doubtful, at least from a purely scientific point of view.

As can be seen from the foregoing, my advice to use adrenaline in acute poliomyelitis is based upon actual experimental observations of its effect upon inflammatory processes in general. I confess, however, to being guilty of entertaining an accessory hypothesis, according to which adrenaline may indeed exert a specific action upon the virus of poliomyelitis. The hypothesis is, briefly stated, as follows: According to Langley, Elliott, and others, the chromaffine tissues (medulla of adrenals, etc.) are identical with the tissues of the sympathetic ganglia. My hypothesis assumes the possibility that *the adrenals as well as the sympathetic ganglia may be specifically antagonistic to the virus of poliomyelitis.* This assumption is based partly upon the experiments of Flexner, Clark, and Amoss(12). They have examined histologically the lesions present in the intervertebral ganglia, the Gasserian ganglia, and the sympathetic ganglia (solar plexus) of monkeys which died from experimental poliomyelitis. They state that "the severest (lesions) occurred in the intervertebral ganglia, those next in severity, the Gasserian ganglia, while the mildest appear in the abdominal sympathetic ganglia." "The cellular accumulation within the abdominal ganglia (solar plexus) are least marked and so constantly perivascular, that infection by way of the blood is indicated. The nerve cells exhibit the slightest lesions of all the ganglia studied." The adrenals, so far as I know, were not studied. According to the authors cited, the sympathetic ganglia showed the greatest resistance to the virus of poliomyelitis. While this fact may be explained merely by the assumption that the sympathetic ganglia have least affinity for the virus, it does not preclude *the other possibility that the nerve tissues of sympathetic ganglia are antagonistic to the virus.* That is, when an emulsion of sympathetic ganglia was added to an emulsion of the spinal cord, the infectivity of the latter was greatly reduced. Obviously, my assumption is merely an hypothesis; but an hypothesis which is readily accessible to experimental test.

TECHNIC OF ADMINISTRATION.

In the following I shall try to formulate the advice which I wish to give with reference to the use of adrenaline in poliomyelitis—at least at the present stage of our knowledge of the subject. As soon as the diagnosis for poliomyelitis is established, two c. c. of one in 1,000 adrenaline should be injected every four to six hours. Before the first injection is given, a fairly large quantity of spinal fluid should be withdrawn, the quantity being in proportion to the pressure prevailing in the spinal canal. The subsequent injections should be made without regard to the presence or absence of spinal fluid. Unless the pressure appears to be very high, I advise that in advanced cases not much of spinal fluid be withdrawn, because at this stage the spinal fluid may already contain some useful antibodies.. All injections should be washed in with two c. c. of a normal salt solution. but if no spinal fluid is present the adrenaline should be washed in with at least five or six c. c. of salt solution; in the presence of fluid in the spinal canal the adrenaline will more readily spread all over the cord. In serious cases the quantity of adrenaline administered may be as much as three c. c. to each injection. In cases in which the encephalitic symptoms are predominant, however, greater care should be exercised with reference to the quantity of the injected adrenaline; it should be used in inverse proportion to the exciting effect which the injections may produce. In previous experiments I found that adrenaline is often destroyed

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for several days. During this period he suffered from severe headaches and vomited occasionally; the eye muscles and the muscles of the neck were paretic; both anterior extremities were nearly completely paralyzed and the involvement of the respiratory muscles was pronounced. It was a severe case of an encephalic type complicated by bulbar spinal phenomena. The lower extremities were in a state of spastic paralysis. The prognosis of the case was obviously very bad. From 5 p. m. on the day I heard of the case the patient received about every four hours two to three c. c. adrenaline intraspinally. Next morning I learned that the respiration was undoubtedly improved and that the patient could move his arms. The patient died in the evening, apparently under some sort of convulsive manifestations. Doctor Smith will probably publish the case in greater detail. What I wish to bring out here is the fact that in this hopeless case the adrenaline unquestionably reduced the paralysis perceptibly, although to no avail as to the final results.

[4] In encephalitic cases with great excitability it seems that greater care ought to be exercised in selecting the proper doses.

[5] Reports coming from hospitals and physicians who have manifested an antagonistic attitude from the start will obviously have to be taken with a grain of salt. Besides, only such reports could be taken into consideration which come from men who have given evidence of possessing ability for critical observation in the science of medicine.

when mixed with human spinal fluid (13). I prefer therefore that the injections should be given oftener, at least every four hours when possible. The injections should be continued until four to five days after all paralysis has disappeared, or at least until no further reduction in the extent of the paralysis has taken place.

In my remarks at the meeting of the Academy of Medicine (14) I suggested further that in treating acute poliomyelitis, oxygen should be administered "under pressure in a respiratory rhythm by an apparatus which I have recently devised and used on human beings in several instances." I shall not describe this apparatus in detail. It consists essentially of a hollow tongue depresser which is connected with "the respiratory valve." The latter is connected with a large rubber bag, which in turn is to be connected with an oxygen tank. The tongue piece should be introduced into the mouth only so deep as not to produce gagging. When the ring of the respiratory valve is turned to the left and the oxygen is turned on, oxygen accumulates in the bag. When the ring is now turned to the right, oxygen enters under pressure into the mouth. When the ring is turned rhythmically, coincidentally with the respirations of the manipulator, the patient receives oxygen under pressure in a respiratory rhythm. As a rule the patient adapts his own respiration to this rhythm. In several cases with deep cyanosis I saw the cyanotic face of the patient turn in less than one minute to a pink color. There is no doubt that under these manipulations the oxygen of the blood is greatly enriched. Since this manipulation causes the patient no annoyance whatever, I advise employment of this method very early in the paralysis in order to assist in overcoming respiratory difficulties. Furthermore, according to Hill, the administration of oxygen increases the tonicity of the heart muscles as well as of the skeletal muscles.

I have another reason for recommending the use of this method, however, in acute poliomyelitis. Since there can be no doubt that by employing this method the quantity of the oxygen of the blood plasma is for a time considerably increased, a part of this oxygen must escape into the lymph within the tissues. Vernon and Hill hold that oxygen is "five times as soluble in fat as in water at one atmosphere" (15). We have thus reason to assume that the lipoids of the nervous system may be the ones which will receive the greatest part of the oxygen of the plasma surcharged by administration of the oxygen under pressure. Now according to Flexner and Noguchi (16), the infective cause of poliomyelitis is an *anaerobic* organism. If what has been already stated is true, we have good reason to assume that the administration of oxygen under pressure may bring a greater amount of oxygen to the nerve tissue and thus cause greater or less hindrance to the free development of the virus of poliomyelitis. This is what I meant when I said at the Academy that "it may even act specifically on the virus of poliomyelitis."

I therefore recommend the administration of oxygen under pressure by the above mentioned apparatus, for twenty or thirty minutes at a time, every two or three hours. This procedure, in the first place, can certainly do no harm; it is further likely to aid in overcoming respiratory difficulties, and, finally, it may even be a specific factor in combating the development of the virus of poliomyelitis.

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AUTOTHERAPY IN POLIOMYELITIS.

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> In autotherapy the physician treats the patient with unmodified toxic substances elaborated within the latter's body, by the action of the infectious agent on the body tissues, against which the tissues react in a curative manner.

In view of our apparent helplessness in the presence of an epidemic of poliomyelitis, I suggest that the autotherapeutic method of treatment be given a fair trial. It is especially worthy of consideration since cerebrospinal meningitis, another toxic neuritis, appears to respond readily to this treatment.

During the spring of 1910, Dr. C. C. Howard, of New York, cured a case of cerebrospinal meningitis by tapping the spinal canal and injecting intramuscularly the spinal fluid thus obtained. Recognizing this treatment as autotherapeutic, he asked Dr. H. C. Sloat, then of New York, to read a paper, The Relation of Autotherapy to Homeopathy, before the Homeopathic Medical Society of the State of New York, at its annual meeting held in Albany, February 22, 1911. During the discussion that followed, Doctor Howard reported the case of cerebrospinal meningitis mentioned above, and Dr. George F. Laidlaw, of New York, stated that he had cured many cases of cerebrospinal meningitis by this autotherapeutic method. Time and space forbid giving more than that part of the discussion which relates to the injection of the spinal fluid:

> Dr. C. C. Howard stated that last spring (1910) a patient with cerebrospinal menengitis entered the Metropolitan Hospital. The man was an Italian laborer, about thirty-nine years of age, and in a state in which one would expect a speedy death. He was cyanosed, his pulse was erratic, he was bathed in a cold sweat, rigidity was marked, and there was loss of all reflexes. The case approached so near death, that the speaker decided to see what results would follow injection of the spinal fluid under the skin. He made a spinal puncture, drew off quite a large amount of fluid, and injected some of it into the muscles of the back. In the course of three or four hours the temperature fell from 105° to 102° F. Four injections were given in a similar manner. The man had absolutely nothing re-

maining as the result of the attack and was perfectly well when he left the hospital.

Dr. George F. Laidlaw, referring to Doctor Howard's case of meningitis, thought he was the grandfather of this treatment, Doctor Sloat the father, and Doctor Howard their lineal successor. He thought he was the first to draw the spinal fluid in a meningitis case and inject it under the skin. Within the past year he had been puncturing the spinal canal quite liberally. He had been surprised at the number of apparent cases that had a sterile spinal fluid, in which prompt improvement might follow its injection under the skin. One striking case he had about a year ago; another he saw in Scranton, in November, 1910; another in Flower Hospital. Others he had seen about New York at different places. All the symptoms were those of meningitis; rise of temperature, stupor, flexor spasms of the knee, retraction of the neck, etc. In all cases he punctured the spinal canal and drew off a fluid free from pus and bacteria. Those patients seen at different stages of the disorder injected with about ten drops of spinal fluid, within ten hours were so much better that he was forced to conclude that the injection of the spinal fluid had some influence on the improvement. The bacterial cases he had had the misfortune to see late in the disease, ended fatally. Doctor Howard's patient was the only one of this type that he had seen recover, and he attributed this to the adoption of the treatment early in the disease.

It seems altogether probable that if the spinal fluid was passed through a Duncan autotherapeutic apparatus before injection the results would be more certain, in some instances at least.

It is altogether probable that in advanced stages of this neuritis, as in cerebrospinal meningitis, the spinal fluid may contain, in addition to the etiological factor, pyogenic microorganisms which, of course, would be removed by the filter.

This is an autotherapeutic cure, pure and simple, and is freely acknowledged as such by Doctor Laidlaw, Doctor Sloat, and Doctor Howard. If it had not been specifically pointed out that autotherapy is especially applicable in poliomyelitis, it must have suggested itself over and over again to those who do their own thinking, that autotherapy is particularly applicable to this infection. Being a toxic neuritis, with the evidence before us of the effectiveness of autotherapy in cerebrospinal meningitis and other toxic neuritides, it would be only a slight mental effort to conclude that autotherapy might also be applicable in this form of neuritis.

While one swallow does not make a summer, neither does one case ordinarily mean anything, still a straw tells the way the wind blows. The writer has had only one case to study; for the prevention of epidemic necessitated sending it to the city hospital.

Case. Patient, male, aged two and a half years, was taken sick, July 22, 1916. The case was not seen until the twenty-fourth. There was vomiting, stupor, and a temperature of 102° F.; slept with his eyes open and rolled up. There was marked twitching of the muscles of the legs and arms. On the twenty-fifth, there was a partial left sided facial paralysis and partial paralysis of both legs. On the evening of that day the spinal canal was punctured and about ten c. c. of fluid withdrawn, and one c. c. injected hypodermically. Within twelve hours the stupor disappeared and the temperature fell to 99° F. He was sent to the hospital, where 0.5 c. c. injection of spinal fluid was given. At the present writing, August 7th, temperature and pulse are normal.

Since the onset of the paralysis is so sudden and the condition is often not diagnosticated till partial paralysis is manifest, it is altogether probable that the value of this autotherapeutic treatment lies in aborting the disease if treated sufficiently early, and stopping the progress of the paralysis when the treatment is not instituted too late. The partial paralysis without doubt will in many instances be overcome in the course of time. The writer suggests that tests be made in treating tetanus and other toxic neuritides, by the autotherapeutic method.

Since the foregoing was written, the author has had the opportunity to study upward of a dozen cases of poliomyelitis which appeared to confirm the favorable prognosis in patients treated autotherapeutically.

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THE CONTROL OF EPIDEMICS.

What Should Be Done in Invasions Like the Present One of Infantile Paralysis,

By Jacolyn Manning, M. D.,
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The report presented by the council of eminent pathologists and bacteriologists recently assembled in New York city, recommending methods for controlling the present and future epidemics of poliomyelitis, omitted a point of great value in determining the exact degree of invasion of the plague; a point, which investigated, will throw much light on unrecognized cases of the disease, and which uninvestigated allows an enormous and constant leak through the wall of protection quarantine in any community.

When a plague has obtained a foothold in any community, the cause of every death occurring in that community should be scientifically established. A competent pathologist and diagnostician should investigate the cause of death, and the contributory cause of death should be stated on each death certificate, during the period the plague is active. Where there is the slightest doubt of the cause of death, a post mortem examination should be made of the central nervous system, brain, midbrain, and spinal cord. This examination should be both gross and microscopical, and taken together with animal inoculation of the post mortem material, constitutes the only method known to medical science today for determining with absolute accuracy whether or not any person, adult or child, dying during epidemic invasion, has been a victim of poliomyelitis.

The list of diseases terminating in sudden death which may simulate poliomyelitis is quite extensive; including, in very young infants, gastroenteritis, bronchopneumonia, measles, and diphtheria; and in adults, ptomaine poisoning, lockjaw, cerebral apoplexy, and heat stroke.

Many instances are known by epidemiologists of mistaken death certificates having been rendered during epidemics, where a subsequent case of frank paralysis in some other member of the family, gave sufficient indication that the death had been due to the epidemic virus.

The fact that a post mortem examination constituted the only absolute method of arriving at the cause of death, was indelibly impressed on the writer's mind during three years' attendance on weekly autopsies conducted by Ludwig Hektoen in the morgue amphitheatre of Cook County Hospital, Chicago. As we all know by experience, the attending physician and consultant, by elaborate methods, often arrive at a correct diagnosis of an illness terminating in death, and often they do not; but the trained pathologist conducting an autopsy, reads the cause of death from the tissues open before him, as plainly as the reader reads this print.

As a dairyman once said to the writer, he never believed that one of his sleek cows could have tuberculosis, until he attended the post mortem examination of some cattle among his neighbors' equally fine herds, and saw the huge foci of tuberculosis in caseous lungs and suppurating kidneys, and the glandular inflammation of the bags of the cows dissected by the veterinary pathologist of Wisconsin Agricultural College. This man then submitted his cows to tuberculin test; thirty-five were found to be infected and were slaughtered: the remaining herd was removed to a new barn, and no more cases developed. Without the convincing evidence of a post mortem examination, the dairyman's cows and all subsequent additions to it would have contracted tuberculosis from daily contact with unknown carriers.

How much more important it is to apply extreme prophylactic measures when the activities and existence of the children of our nation are threatened. A missed diagnosis and faulty death certificate in a fatal case of epidemic poliomyelitis endangers the community more than a case of frank paralysis. The innocent family, servants, and friends, all may come in contact with the body and its late environment, while a public funeral opens a wide channel for further communication of the contagion.

A point of less but unquestioned value in handling an epidemic, which kills by the thousand, and cripples when it does not kill, is the communal necessity for the *interdiction* of all *public funerals in* any city during the progress of an epidemic.

For the week ending August 5, 1916, the New York city board of health reported 188 deaths from diarrheal disease of children under five years of age. It would be interesting, and might prove instructive, to hold post mortem examinations for one week, with microscopic examination of the central nervous system, of all fatal cases where the death certificate stated gastroenteritis to be the cause of death.

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AN EVALUATION OF PARAPHRENIA.*

By Edward A. Strecker, M. D.,
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The tendency of modern psychiatry to insist on a more rigid distinction between true paranoia and the merely paranoid psychoses has had at least two important results. In the first place it has established clearer concepts relative to these two conditions. It has further served to widen appreciably the border line territory between dementia præcox—the psychosis in which paranoid ideas are most common—and true paranoia where they reach their fullest development. If we are prepared to accept the Kraepelinian valuation, we will think of paranoia in the sense of a "mental twist" rather than as a frank psychosis; we will view it as the maladjustment of a brain inherently biased toward a faulty manner of thinking and finally as a condition maintaining a permanent delusional level and not tending to progress to definite end states as do those chronic mental disturbances which are considered endogenous in their origin. Such an hypothesis at once excludes a vast number of progressive insanities, which in view of their symptomatology and end states, are obviously unable to conform to a condition said to be "the unfolding of a psychopathic personality in contact with the conditions of life." On the other hand, if we establish a criterion for dementia præcox, which implies in its course some dementia of affect-life and some disturbance in the domain of the will, we will again be obliged to withdraw a number of cases from the schizophrenic group. Certain investigators actuated partly by the clinical necessity of finding a place for the paranoid psychoses which could not be forced into the preexisting nosology, and in part, too, by the peculiarity of their onset, course, and terminal status, have attempted to gather them together under new classifications. Perhaps the most notable effort in this direction is Kraepelin's presentation of the paraphrenias.

KRAEPELIN'S CONCEPTION.

Kraepelin (1) separated from the vast mass of chronic paranoid material a group of patients who were remarkable for the late and insidious onset and gradual development of their psychoses; the presence of adequate emotional reaction and will function; absence of dementia in the ordinary sense, and above all the striking retention of personality. These cases stood out so sharply that he was unable to find a niche for them, even on the outskirts of the præcox group. He was therefore led to announce a new classification—paraphrenia—for which he asserts a more or less true clinical entity. Individual differences suggested a subdivision into the systematic, the expansive, the confabulatory, and finally the less clearly recognized fantastic form.

Briefly, paraphrenia systematica is a chronic paranoid psychosis of late onset and extremely gradual course, in which persecutory ideas are subjected to an exhaustive mental consideration; later, grandiose delusions are engrafted and the system thus evolved is maintained without perceptible shrinkage for many years. Hallucinations, usually of hearing, appear only after the delusional condition has become well established. The dwindling of psychic life, the disappearance of personality, the loss of emotional values, catatonic phenomena, and in short all those manifestations which we regard as indicative of the *dementia* in præcox, are strikingly absent.

Expansive paraphrenia presents the gradual construction of an elaborate system of grandiose delusions, with prevailing elevated effect and mild excitement. Undoubtedly many of these cases would parallel "chronic mania," a favored diagnosis ten and even five years ago. The same factors which drew the boundary line between systematic paraphrenia and dementia præcox are also present here, though they are often less clear.

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The third division, confabulatory paraphrenia, is quite rare. Kraepelin has seen only twelve cases in thirty-five years. It is marked by highly elaborated and detailed falsifications of memory forming the foundation for a psychotic structure consisting largely of related delusions of persecution and grandeur.

The final variety, the fantastic form, is deserving of but little consideration as a separate disease group. Kraepelin himself recognizes its close kinship to dementia præcox. It comprises cases which show a profuse development of highly fantastic, disassociated, and ever changing delusional conceptions.

THE LITERATURE.

While Kraepelin's attempt to enlarge the classification of mental diseases has excited practically no comment and apparently awakened but little interest in this country, it has on the other hand been productive of an extensive literature from European authorities. Not the least fruitful result of the general discussion has been a more intensive study of all that interesting and rather indefinite group of psychoses in which the paranoid trend is most prominent and characteristic.

Bleuler (2), who thinks of dementia præcox or schizophrenia more and more as an abstract psychopathological mechanism, and less as a clear cut disease form, feels that paraphrenia is merely a highly unusual expression of paranoid dementia præcox. Of course, the observer who views mental irregularities through psychological lenses, and who rather shrinks from any definite and final delimitation, and the one with the vision of the clinician who is naturally seeking to classify symptomatically, can find no common ground on which to reconcile their differences. Bleuler's premises relative to schizophrenia are so broad that practically every chronic paranoid condition must be included at some point in its course. His three so called primary symptoms, namely, some alteration in the processes of thought; some disproportion of emotional reaction; and some withdrawal from the environment are capable of numerous interpretations and elaborations. Hallucinations and delusions which are usually regarded as such important clinical landmarks, are here set aside as secondary symptoms, merely incidental and not necessary for diagnosis.

Krambach (3) made an intensive study of fifty unselected chronic paranoid cases in the hospital at Dösen, and found that about ten per cent. might be regarded as paraphrenia. Subjected to the criterion of Bleuler, practically all of these fell by the wayside, chiefly on the basis of inadequacy of thought and emotional reaction. To escape the præcox label Bleuler would have his chronic paranoids display, not only what might be termed "logical affectivity," that is, the emotional status of the patient must be in keeping with the delusional content, but there must further be "logical and well ordered thought processes." Therefore, to merit any consideration as distinct from the schizophrenic group, the ideas which form the content of a psychosis must be consistent with the individual false premises which are its foundation stones. This is systematization carried to the highest possible degree, a conception which seems rather more theoretical than real. If it exists at all, it will only be in the occasional rare case of paranoia vera, and paraphrenia, as defined by Kraepelin, can never survive such a severe test. Careful analysis will always uncover a thought ramification, which in relation to the central delusional vein is either elaborated too much or is perhaps too constricted, or which may even remain abortive.

Krambach reached a conservative conclusion from the study of his cases. He feels that the relative integrity of the affect and will is certainly highly suggestive and deserves further investigation, but that the close relationship in many respects to dementia præcox is too important to be ignored. His verdict as to paraphrenia is that it is a protracted and very unusual expression of paranoid schizophrenia in which the will and emotional fields escape the brunt of the dementing process.

Kleist's (4) exhaustive study of a rather small group of cases, nine women and one man, led him to differ materially from both the "disease process" theory of Kraepelin, and the psychogenetic interpretation of Bleuler. This is merely illustrative of the fact that no matter how scientific may be the attitude in which an investigator approaches a problem, the result is found to be influenced by the personal equation. The age of onset, well beyond the fifth decade, the period of involution, was evidently the important determinative factor in the formation of Kleist's etiological theory along the lines of retrogressive changes in the sexual organs, the circulatory system, and the body in general. He suggests organic brain changes, physiological rather than destructive in their nature. By adding to these a psychopathic personality (fairly well substantiated in the anamneses of his cases), he arrived at the result of a paranoid symptomcomplex of the involutional time, which he designated involutional paranoia.

Albrecht (5), in reviewing the functional psychoses of the involutional age, was able to isolate a group of twenty-four, two thirds of whom were women, which practically parallels paraphrenia and involutional paranoia. He recognizes the kinship to the chronic paranoid deterioration of Kraepelin, but feels that his cases showed even less tendency to progress. They are designated the "presenile paraphrenias."

Moravesik (6) of Buda-Pesth, makes the basic distinction between paranoia and paranoid on the ground of reaction to environment. The former observes, ponders over, and weighs carefully the happenings in the world about him. Slowly he weaves them into his psychotic life. Finally he reacts, and the response is always entirely in accord with the false conception. On the other hand, the paranoid shows an affective reaction almost immediately, but it is lacking both in depth and completeness. He is inclined to ally paraphrenia to dementia præcox.

Hosslin (7) likewise regards harmony between behavior and mental conceptions as essential for paraphrenia, and questions the validity of this diagnosis with the possible exception of the confabulatory form.

Neither Pfersdorff (8) nor Gregor (9) can bring himself to accept the Kraepelinian viewpoint.

Most of the authors who object to the paraphrenic classification have retained their chronic paranoid cases in the dementia præcox group. Stransky (10), on the other hand, would include them with paranoia on the basis of richness of delusional content and completeness of systematization.

Hübner (11), in reviewing the chronic cases at Bonn, found an interesting group in which in the course of years there ensued a gradual and partial correction of the delusional system. The intelligence was well preserved and the personality intact. Therefore, the reduction in psychotic content could not be ascribed to a dementia in the ordinary sense of the word. On the other hand, there was in no sense a recovery, for the original groundwork of distrust, seclusiveness, and peculiarity was still very evident.

AN ANALYSIS OF FOURTEEN CHRONIC PARANOID CONDITIONS.

At the present time there are more than one hundred cases in the hospital which have been diagnosed as dementia præcox. An overwhelming majority of this number, about eighty-five per cent., have in the course of years deteriorated to a common level of profound dementia. Whatever individuality they once presented has been blotted out by the permanent stagnation of every mental faculty. Indeed were it not for the histories it would at times be impossible to piece out even the nature of the original psychosis from the mental wreckage remaining after a lapse of thirty and sometimes forty years. About fifteen per cent. of the entire number, however, possess certain points of interest. Even a rather superficial survey of the mental status of this smaller group will at once show that its claim to separation from the majority, lies chiefly in the fact that the integrity of personality has in these patients been better able to withstand the disorganizing shock of the psychosis. We are inclined in some sense to view them first as individuals and only later as schizophrenics. The average age of these fourteen patients is fifty-two years, the youngest being thirty-three and the oldest sixty-seven; the duration of the mental symptoms ranges between one year and forty-six years and averages seventeen and one half. In about fifty per cent. there is a history of mental disease in the ancestry, two being particularly notable in view of the prominent and far reaching effect of the hereditary taint; were it possible to complete early histories, the percentage would probably be materially increased. Generally speaking, they were not normal children; seclusive tendencies were most frequently noted and there was a fairly large proportion of intellectual precociousness. An analysis of what in some sense might be termed the "basic mental faculties," namely, attention and memory, reveals little deviation from the normal. Unless the question happened by chance to strike against one of the pillars of the psychotic structure, the answers were usually without error. Orientation was practically undisturbed. In the emotional field we find the first and perhaps most important determinative factor in placing these cases within the schizophrenic group. More or less complete apathy, the dementia of affect life, is present in eight of the fourteen cases; severe blunting can be demonstrated in five, and in only a single instance is there apparently an adequate emotional tone. In the domain of the will there are even more general and more significant disturbances. In ten of the patients the expression of defective will inhibition is to be seen in such symptoms as mutism, resistiveness, violent scolding or screaming spells, refusal of food, negativism, and catatonic manifestations of various kinds. Hallucinosis is present in more than two thirds of the cases and in more than one half it involves both the auditory and the visual fields. A large percentage of our group had been variously diagnosed as mania, chronic mania, and allied to manic depressive, classifications conditioned perhaps as much by the uncertain character of the symptomatology in the early stages as by the restricted methods of study. The delusional structure, beside being essentially paranoid, possesses at least two other points of interest. In more than one half of the cases there has been a progressive contraction, both as to the quantity and quality of the delusional content, until at the present time there remain only a few scattered threads of a once richly woven fabric. This seems to be of considerable importance, for it may well be regarded as almost conclusive proof of a dementia, even though such deterioration may be difficult or even impossible to establish by any series of formal tests. The same association of mental functions which in the normal mind gives rise to a conception, must also operate in the insane, even though its method of working is an abnormal one. If therefore a false idea or a system of false ideas, which was once complete, connected, and detailed, begins gradually to lose its cohesiveness and sequence without essential correction, we are justified in inferring a decline of those mental elements which gave it birth. The general reaction to the delusional content is also, in some sense, a measure of the amount of mental loss, which has been sustained. If the response throughout is adequate and logical, it would indeed be difficult to establish deterioration, no matter how unbalanced the individual might happen to be. If, on the other hand, there is a marked disproportion between belief and behavior, which increases from year to year, there is additional proof that we are dealing with some type of dementing process. In all but one, or possibly two of the selected group, there is a significant gap between the delusion and the behavior response of the patient who holds it.

TWO CASES OF PARAPHRENIA.

It will thus be seen that a group of psychoses which at first glance appeared to offer considerable variation from the usual dementia præcox type, falls readily into line when subjected to a more critical analysis, particularly in respect to the affect and the will. A single case deserves further consideration as illustrative of so called paraphrenia.

CASE I. M. R., admitted in 1908 at the age of forty-five years, had been living in a very secluded way for three years; denying admission to all visitors and securing provisions by summoning a messenger boy and dropping written instructions with sufficient money, from one of the windows. It is said that for two years she did not leave her house. Apprehensive and suspicious. Wrote many defamatory letters. Imagined herself very wealthy and possessed of great landed estates in England. It was necessary to force an entrance into the house in order to bring her to the hospital.

At first there was apparently a free expression of delusions, both persecutory and grandiose. She called on the police to arrest the President of the United States and other foes who were accusing her of immoral conduct; King Edward was trying to obtain possession of her property; Emperor William was her particular friend; she was only twenty-nine years old, of foreign birth, and had no connections in this country. Later, she became much more chary of her spoken productions. Hallucinations of hearing were noted shortly after admission. Apparently they increased during the first four years and then gradually became less prominent. There was no definite evidence of either affect or will abnormality and her conduct in general was a consistent protest against detention in the hospital.

At the present time the patient is highly suspicious of a direct question and will not cooperate in any examination, either physical or mental. She cares for her person and room, in spite of an unusually large ovarian cyst, which has greatly reduced her strength and lessened her activity. Attention and memory, both recent and remote, are quite good. She is perfectly oriented. She is interested in daily happenings; keeps in touch with the world's events through the columns of the newspaper; and is able to discuss intelligently what she reads. Her affective life is in fairly good alignment with her delusional beliefs. To her enemies, who are legion, she shows scant courtesy; to her friends she is pleasant and affable; often she jokes in a natural manner. Her reactions to the ordinary incidents of daily life, when not affected by her delusional conceptions, are not much overdrawn. It is difficult to decide whether or not hallucinations are present. Her letters contain reports of numerous imaginary conversations, always of a derogatory nature. There is a rich delusional structure. Men and women prominent in political and social circles; officers of the hospital, the nurses, and even the chance visitor, are all drawn into the conspiracy against her; the connecting link consisting of innumerable ideas of reference and possibly intentional falsifications. She speaks of the crowned heads of Europe and their courts in terms of closest intimacy. The ultimate conclusion, the *pièce de résistance* of her delusions, is concealed even in her written productions; occasionally there are veiled hints as to her real identity. Probably her touch with the actual world is too real and her understanding too shrewd, to let her commit the error of divulging all her beliefs at the present time. The system of persecutory and grandiose delusions has not undergone any contraction with the passing of years; on the contrary, it continues to expand and flow into new channels.

The following selected productions will give some idea of the patient's fancied intimacy with the crowned heads of Europe and others who at present occupy a prominent position in the public eye. Of course, falsification cannot be excluded and is probably an important factor in the patient's psychic life.

I see by the paper that the King of Greece has decided not to go in with the Allies.

Do you know the King, Miss R?

No—but I do know the Queen—she is the Kaiser's sister and she certainly wears the "pants." She can twist her husband around her little finger. I well remember the last time I was home in England—I was at the Lord Mayor's reception in London and the Queen of Greece was there raising money for a German hospital; I never liked the Germans much and I said to an old duchess with whom I had been discussing the Queen's activities—I'll never give one red cent toward a German hospital. Shortly afterward the Queen came up—ah—she's a smooth talker—and what do you think—in less than ten minutes she had my promise for several thousand dollars. (Lord Kitchener's name was mentioned.)

You know Kitchener, do you not, Miss R?

Oh, yes indeed—I know him very well. I well remember talking with him at one of Queen Victoria's receptions. He is fine looking, and many titled ladies had their eyes on the General, but he would scarcely look at them. He is a woman hater and always avoids affairs when they are present. He told me it was his custom when he got any invitation to go out to ask the question: Will there be ladies present? And only when a negative reply was received would he accept. Queen Victoria tried a dozen times to marry him off and I remember one of the last stories she told in my presence was this: Kitchener, why don't you marry—is there no one you love? There is, your Majesty—one whom I deeply love and adore. Ah—said the Queen, scenting a romance, and who is the fortunate lady? Your Majesty, replied the General. The Queen never tried again to make a match for Kitchener.

Things don't look any better over in Europe?

Not a bit—I see no change—no improvement. Now the question is—nobody seems to know the cause of the war— Nobody practically knows what the cause of it is—Whether Emperor William wants to be boss—I can't get head or tail of it.

We don't hear much about the King of Greece now, do we?

No.

What has happened there?

It was in the paper about three months, or four months ago, where he had to go under an operation—it didn't state what the operation was for. You see—Sophia—she's the youngest sister of Emperor William—she is said to be the handsomest princess of all Europe— She's a beautiful woman— Not a picture really gives her justice.

You said you met her?

I know her, but I'll tell you—she's so polished— Oh, my—her manners—she's like the Kaiser— He would just kill you with politeness—he's very polite. She's a beautiful blonde—beautiful blue eyes—the most magnificent golden hair— She's the best looking one in the family. You take the Kaiser—he's what you would call a handsome man— He's just as straight as an arrow.

Is there anything in the story of him having difficulty with his arm?

Yes—it's his left arm— Notice in his pictures you will always find his hand inside his coat— Ever notice that? Never leaves the arm down— That arm is shorter than the right arm— It might be about a finger length shorter.

Enough to make him sensitive about it?

He's more sensitive about it than what anybody else would be. Now if he wouldn't do those things— This is what gets me—sticking his hand inside his coat and inside his trouser pocket draws people's attention to it.

Was it his sister that got in on you for that donation?

Yes—Sophie— Nobody else could get in on me for a donation.

She got around you pretty well, didn't she?

Oh, yes— She's a lovely person.

The quite voluminous correspondence of the patient forms a very interesting chapter, of her psychosis. A number of communications are addressed to department stores and contain orders for large quantities of carefully described articles with explicit directions for delivery. In others, real estate agents are instructed to buy various properties which have been advertised in the daily press. Of a more intimate nature are the letters to her attorney. They keep him informed of the progress of the conspiracy; direct him just how to proceed, instruct him as to the individuals who are to be subjected to legal action and the damages to be sued for. In these epistles she reports the overheard conversations of her persecutors; describing just how she has been annoyed and closing with a demand for immediate release. In another series she addresses the representative of Great Britain in terms of polite superiority, advising him to move cautiously and "make no rash promises." Often there is an order for goods enclosed, which are "to be charged to the British Government and taken out of my income."

Her communications are clearly written, but there is a tendency to monotony of phraseology, misspelling, insufficient punctuation, and a lack of connection between the individual phrases of a sentence, which suggests beginning intellectual deterioration.

I include a few excerpts from the patient's letters. The following was her reaction to the visit of a consulting surgeon.

> There was a man came here on Sunday, March 7, 1915, and gave his name as Dr. G. He lives at 1618 S—— Street, this city, and he stated that he was asked to come here by Dr. S—— to examine my abdomen and he demanded me to lie down on the bed and I will not lie down on the bed as there is no *law* to compel me to do the same. He also said that he would fix me and that I could not have any law suit. And he did not obtain his end this Dr. S—— told him he did not know he was coming and if he did he would have given me a dose and when I came to it would be all over. I want you to put these two men under arrest as soon as you receive this letter.
>
> He told me that you were a friend of his and that he had removed your appendix two years ago, and if this was so, I would have seen this in the daily paper and when Dr. G—— told me this I knew he was telling me a bare face *lie* and you are to handle him roughly and also hand in an injunction on everything he owns and when he is up against me he is not up against a fool and this same Dr. G. is going to be made pay the penalty for the same. What is more I will not stand the insults of the low born subjects and not resent the same and I will make trouble for the U. S. A. all right.

She often refers in her letters to the yacht *Niagara*. "I am very much worried about my yacht, *Niagara*, and I leased it to some Americans from Chicago for two years' cruise of the world and I have not heard from them and as their time is nearly up and they might be detained in the war zone."

From a letter to a former nurse, now visiting Ireland: "I hope you had no trouble in fishing in the River Bawn on my estate, Gilford Castle, Corner Gilford Station, Portadown, County Down, Ireland."

From a letter to the British Consul: "I have been here six years and five months and I do not propose to stay here and not be well paid for doing the same and which I demand from the U. S. A. thirty-five million dollars."

Following the staff meeting at which her case was considered: "I want to know just what right this Dr. N—— had to question me and try and pry into my private affairs and you are to try to find what his object was. I just stood and looked at them and made no answer to any of them. Also find out the names of the other men and who or whom sent or told them to come here and do the same."

From a letter to her attorney:

> I heard that some one got into my house at 1441 S. B——- Street, this city, and destroyed my things, broke all the glass in the china closet and also the china and the glass, etc., and tore the paper off in the dining room and sitting room, etc. For this loss this man will be made to pay five million dollars for the same and I do not say that this man B—— B—— mayor of Philadelphia, did the same himself, but he paid some one to do the work for him and he will be held responsible for the same and will surely be made to pay the *Penalty*.

From a letter to her attorney: X—— Y—— Z—— is the name of a nurse and appears many times in the patient's communications:

> This old slut, X. Y. Z., is going around among the patients telling them I have nothing and now I would like to know who or whom gave her the authority to do the same and what is more I do not know that I had hired her as my bookkeeper or private secretary and if I wanted one I would not hire a common old slut like this X. Y. Z. or any one belonging to her.
>
> On my way to dinner I heard this dirty common old slut, X. Y. Z., telling an attendant some of her lies about me and whose name is a Miss A. B. and I would like to know just what she said and I would like if you would send a detective to find out just what old slut, X. Y. Z. had said.

From a letter to her attorney: The advertisement mentioned actually did appear in the paper and is her former residence:

> Enclosed you will find where there is an add in the Sunday *Inquirer*, where my house at 1441 South B—— Street, this city has rooms to rent and as I am just tired out about this thing. In addition to the five million which the Mayor of Philadelphia will have to pay me, as there are sixteen words in this *add*, he can pay five hundred dollars a word, which will make it a total of eight thousand dollars additional I do not say he put same in said paper himself, but he hired someone to do the same for him and he will be made to pay the *Penalty*.

From a letter of protest to her attorney: The date of admission is correctely stated:

> I am here just six years and eleven months today, June 2nd, 1915, when I was brought in here I was only to stay one half hour, and its the d—— longest half hour I ever saw and you can state in the letter to the Mayor of Philadelphia that he will be made to *pay* the penalty to date, June 2, 1915. This Dr. O. N. or M. said to an attendant by the name of Miss M. N., from Sunbury, Pa. that I was a devil let loose out of *Hell*, and he also said on the same day to the man who had charge of the electric lights some kind of a remark about me and he told Dr. O. N. or M. if he said the same about a sister of his, he would be put in jail for life, in the Penitentiary where he belongs.
>
> P. S. The new title that I have now is that old slut X. Y. Z. called me an *English Devil* and when I get at her I will make her jump sky high, and I would not want anyone to be saying about me what is said about old slut, X. Y. Z. that she was a notorious thief and liar, and how she will lie, and then lie to get out of the same.

From a letter to her attorney: Similar complaints frequently appear:

> This J. S. told some patient that she was going to stretch some heavy cord across the hall to throw me and I want her arrested at once as she is not fit to run at large, as this is not the first time, or the second time she has made this threat, and now I want to know who or whom she is and all about her.

From a letter to her attorney: A prominent financier is drawn into the conspiracy:

> I heard this on Christmas day, December 25, 1915, that this man, Edward S. had gone to Mrs. —— —— corner of Eighteenth and W. Streets, where he told her he would pay up all he owed and she said, that he had had seven years to do the same and has not done the same. You are to get habeas corpus for his arrest at once and above all you are not to allow him out of jail on bonds and also you are to run in an injunction on all his money, bonds, stocks, real estate, personal property, horses and carriages, autos, etc., and all the jewelry that he had given that woman he had married, and also the house of 1925 W. Street this city, and also the country house at G. Pa. As he had admitted that he had stolen

the same and do not let up on this man ——— ———, supposed to be president of Z. and Company, S. E. Corner of D. and C. Streets, this city.

From a letter to the British Consul:

Enclosed you will find a list of articles of which I have need and which you are to charge to the English Government and they are to take the same out of my income. You are to make no rash promises of any kind as none will be granted and I will give nothing and neither will I make settlement of any kind and remember I will do all that I said I would do and carry out the same to the last letter.

The incidents related in the following letter are correctly recalled after a lapse of almost seven years:

West Phila. *Nov. 25,* 1915.

Mr. A. P. L. S——— Dear Sir

Would you please take this matter up for me in the Court as I would like to know why I am held in the Penna. Hospital for the Insane at 4401 Market St., West Philadelphia, Pa. for 7 yrs. and 3 months on Dec. 2nd, 1915 as I do not know that I did anything to keep me here and I was put in here by a Special Officer A——— B——— on July 2nd, 1908 and I was taken from my house at 1441 So. B——— St., Phila., Pa. by the same said Mr. B——— and another man whom I did not know his name and they forced an entrance in my house by the use of chisel and by breaking the catch and the lock of the upper and lower sash of the window on the front of my house and as my house has bay windows and the one they forced an entrance was the one that was near the steps and also breaking inside shutter and I was in the 2nd story-front room and was looking over some papers and this Special Officer A——— B——— came up to me and put his hand on my shoulder and he said that he was going to take me to Court and in the place of that I was placed in the Penna. Hospital for the Insane, 4401 Market St., West Phila., Pa. and I have been here ever since and this is why I would like if you would please take the matter up for me to have a hearing in the Court as I would like to know who it was or whom the person or persons that placed me in this Hospital and also for what was the cause for them to do the same and I do not think that I gave any reason why I should be held as a captive? And I hope you will please get me my liberty and so I can pack all my clothes and all that belong to me so I can return to my home at 1441 So. B——— St., Phila., Pa. hoping you will please give this your personal attention and thanking you in advance for the same and hoping to hear from you at your earliest convenience.

Oblige yours truly
(Miss) M——— C——— R———
(My home) 1441 So. B.——— St.
Phila., Pa.
At present time is (Miss) M——— C——— R———
4401 Market St.
West Phila., Pa.

In addition to the possibility of intellectual loss, this case is further separated from paranoia vera by the absence of marked inner psychic tension, the disproportion between many of the individual false concepts and the lack of logic displayed in linking them together; the tendency to overpromptness of affective reaction, which thereby loses something in depth; the hallucinosis, and above all the fact that we are here dealing with a frank psychosis and in no sense with the unfolding of a psychopathic personality.

It is still more distantly removed from dementia præcox, because the affect and the will have remained relatively intact; after a duration of at least eleven years, the patient still possesses her points of contact with the every day world and retains her personality; finally, characteristic dementia has not appeared.

(*To be concluded.*)

A STUDY OF DRUG ACTION.

Fifth Communication,

By Thomas J. Mays, M. D.,
Philadelphia.

MUSIC.

Sound, the basis of music, is a force like heat, light, and electricity, and possesses the fundamental physical properties of motion, action, and reaction, etc., with which the other physical forces are endowed, and is amenable to the same therapeutic laws which obtain among the substances that have been considered in the foregoing pages of this series of papers.[1]

Speaking more specifically, music is a force, the elective action of which is confined to the field of the human emotions. But one distinguished writer presents this subject by asking, "How do we account for the expressiveness of music? Whence comes it that special combinations of notes should have special effects upon our emotions?—that one should give us a feeling of exhilaration, another of melancholy, another of affection, another of reverence? Is it that these special combinations have intrinsic meanings apart from the human constitution?—that a certain number of aerial waves per second, followed by a certain other number, in the nature of things signify grief, while in the reverse order they signify joy? Few will be so irrational as to think this. Is it, then, that the meanings of these special combinations are conventional only?—that we learn their implications, as we do those of words, by observing how others understand them? This is a hypothesis also devoid of evidence. How, then, are musical effects to be explained? If music, taking for its raw material the various modifications of voice which are the physiological results of excited feeling, intensifies, combines, and complicates them; if it exaggerates the loudness, the resonance, the pitch, the intervals, and the variability, which, in virtue of an organic law, are the characteristics of passionate speech—it produces an idealized language of emotion; then its power over us becomes comprehensible."

This theory implies that if music takes for its basis the vocal expressions of excited feeling and exaggerates their loudness, resonance, pitch, etc., it produces an ideal emotional language, but this ideal language gives us no inkling why war, patriotic, drinking, and national songs arouse and electrify human emotion to the highest pitch of ecstasy, while mournful tunes and funeral marches spread a universal feeling of depression. Whence this power? Does it reside in the very fibres and constitution of music? Is it not possible that it is the result of special tone combinations of music itself, and is independent of any exaggeration of the "loudness, the resonances, and the pitch of passionate speech," as is held by the authority herein cited?

It may, indeed, be said that some music is exhilarating because it is written in a major key, and another kind is depressing because it is expressed in a minor key. The real cause for the contrast must, however, be sought further down.

When the sounds of the major chord C, E, and G, for example, are compared with those of the minor chord C, E flat, and G, we find that the small and almost indistinguishable difference in the number of vibrations between E and E flat is responsible for the profound difference of effect between these two combinations, and, as a principle, it illustrates the dissimilar impressions which are produced on human sensibility by major and minor music—the former, being of an agreeable mould, promotes a pleasurable and satisfied feeling, while the latter is the result of incomplete harmony and produces a disagreeable, or only a half satisfied impression.

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[1] See this Journal, for August 14, November 20, 1915; January 1, March 16, 1916.

It must be fully understood, however, that a minor key does not stand for an actual discord, but merely for a jar just sufficient to cause what Professor Helmholtz denominates "dysharmony." In qualifying this peculiar phenomenon, this eminent authority[2] says: "Harmony and dysharmony are distinguished by the undisturbed current of the tones in the former, which are flowing as when produced separately, and by the disturbances created in the latter, in which the tones split up into separate beats. . . . In dysharmony the auditory nerve feels hurt by the beats of incompatible tones. It longs for the pure efflux of the tones into harmony. It hastens toward that harmony for satisfaction and rest."

Moreover, music is a physiological force of great power; it moulds human feeling and conduct, and it is frequently employed, either consciously or unconsciously, with that end in view. The music of a brass band, marching through the streets of a town, sends a thrill through the whole population. Music of this class is indispensable in time of war, to excite the people, and to maintain the discipline and ardor of the soldiers while going into battle, when making long and tiresome marches, to cheer up the wounded and the sick in hospitals, and to relieve the despondency of dreary camp life. Much of our social and domestic life is greatly strengthened and invigorated by music that pertains to home, love, the cradle, parting, to wandering, college, the church, patriotism, and nationalism. So do the waltzes, the polkas, the minuets, the schottisches, etc.

Considered physiologically, it has so far been found that music is an agency that possesses a profound influence on human emotion, and that it exerts a stimulant, as well as a depressant action; and it now remains to be pointed out how these properties may be made available in the field of therapeutics.

Its stimulant action lies within the bounds of the various major keys, which may be said to move in harmony with the normal bodily forces: and its depressant action, while not having an intense antagonism to the normal movement of the bodily forces, nevertheless, sets up a sufficient degree of interference with the latter to occasion a state of mental despondency. In other words, major music is a tonic to the emotions, at least in moderate quantities, and evokes joy, animation, hope, happiness, and courage, and its action may be compared to that of a tonic or stimulant dose of strychnine, or of quinine; while minor music depresses emotional activity, the action of which is analogous to that of a bromide, or of a sleeping potion.

It is in place here to anticipate an objection which may be made in reference to the foregoing classification of the effects of major and minor music. Why is it, it may be asked, if minor music is likely to subdue and to quiet emotional activity, that most lullabies, which are supposed to soothe restlessness and to promote sleep, are written in major keys? Does it not seem that minor music would be more serviceable in bringing about quietness and repose?

This is an apparent, but not a real, contradiction. For, if it is true that major music possesses a stimulating or a tonic influence, it is not a difficult matter to show how this form of music may serve as a sleep producer in children. Sleeplessness may be due to at least two causes. One, that of a depressed or weakened physical or mental activity of the body, or both, and the other because of mental or nervous excitement; each condition, however, indicating a subnormal mental or nervous state.

In the former trouble, it seems to be preferable to resort to means which tend to tone up and to elevate the underlying depressed and weakened nervous system, and which, as has already been indicated, incline to move in harmony with the natural forces of the body—the class to which major music belongs—rather than to employ depressant agents which interfere or clash with the tendency of the healthy body forces. Moreover, stimulants and tonics are more permanent in their effects, and their administration is also in accord with the common practice of giving a little hot milk, beef tea, a few drops of aromatic spirits of ammonia, or a sip of anise or peppermint tea, for the same purpose, and far preferable to the pernicious custom of flying to the paregoric bottle, or to some popular soothing syrup.

Furthermore, major music, which is assumed to be of an exclusively stimulating nature, is often combined with minor passages in the same composition, and, indeed, in national airs or war songs, the sole object of which is supposed to arouse and to excite human passion. This is another seeming inconsistency, but really the combination is in perfect accord with the main object of this article; for such a feature is frequently introduced, and for the sole purpose of exalting the stimulating and exciting effect of the music as a whole. This is specially obvious in the construction of the *Marseillaise*, probably the most vigorous and intensifying belligerent air ever produced. In this hymn, the eighth and ninth lines are depressed into a minor key, and the immediately succeeding major lines are thrown into such a bold and brilliant relief that the intensity and power of the emotional effects are driven beyond the bounds of description. It is related that when Rouget de Lisle, the composer, gave the first rendition of this song, his audience was thrown into a fit of wildness, which changed into furore when he made the final passage from the minor key to the major refrain: "To arms! to arms! ye brave! ye brave!" etc.

Professor Helmholtz, as already quoted, makes clear the purpose of such combination when he says that when the ear is offended by dysharmony it longs for harmony and rest. Similar effects are brought about in some lullabies, and in other songs written in major keys, by the employment of one or more minor chords, or by the introduction of a few accidentals.

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[2] *Harmony in Music*, p. 105.

When we come, then, to make a practical application of music as a therapeutic agent, it may be well to remember that it has already been tested as such in certain forms of insanity and of nervous diseases, and not without success, and it is the writer's belief that, as an agent in the treatment of consumption, it probably has a stronger claim on the scientific attention of the medical profession than many of the remedies which are in use at the present day. Indeed, no system of treatment, in our enlightened knowledge of the physiological pathology of this disease, can afford to ignore the perturbed nervous and mental condition which is an ever present factor, and which is actually demonstrated to belong to that domain of phenomena which are deeply influenced by the agency under consideration.

In considering the form of music most available in the treatment of consumption, it seems probable that by far the larger number of such cases will receive benefit from the various forms of major music. For it is a patent fact that, no matter how cheerful and elated patients of this kind may seem to be, in their lonely moments there is nearly always present an undercurrent feeling of tribulation and of oppression. It is this feature which must be kept uppermost in mind when treating this disease; and, in view of this, it is hardly necessary to add that the interests of such sufferers are best subserved when they are protected, so far as possible, from all mental annoyances, and when placed under the influence of agencies that create an atmosphere of cheerfulness and buoyancy, in which major music does not fail to play an important role.

1829 Spruce Street.

AMERICAN MEDICINE OF THE EIGHTEENTH CENTURY.*

By George Wythe Cook, M. D., LL. D.,
Washington, D. C.

Unlike the moral sciences—which are based on more or less determined principles—medicine as a science has been greatly circumscribed by reason of the small knowledge we have had of the intricate physiological functions of the body, and our no less limited understanding of the pathological changes, as well as dense ignorance as to the causes of these changes, to say nothing of our imperfect understanding of the physiological and therapeutic effect of the so called remedies we are accustomed to use, so that our practice has necessarily been largely empirical. Measured by the light of today, medical men of the eighteenth century—even in the old countries—were groping in the twilight of great uncertainty.

These reflections are not prompted by a censorious spirit, but merely emphasize the difficulty by which the science of medicine, even under the most favorable circumstances, is encompassed. Therefore in undertaking a study of American medicine of the eighteen century we must keep in mind the limitations by which medical men of this country and of that period were circumscribed. We must remember that they lived in a new and sparsely populated country, that they were thousands of miles removed from the centres of civilization, with a broad ocean lying between, which in those days it took weeks to traverse, and when the transit had been accomplished the fountains of medical science from which they could drink were shallow indeed! But they had a thirst for knowledge and many of them sought those springs and imbibed with avidity such knowledge as was to be obtained. They were qualified by preliminary education, too, and it is surprising at what an early age—fifteen years—many of them received their literary degrees. That they were thorough is evidenced by the fact that each one wrote his thesis in Latin and defended the opinions therein expressed in the same language.

There was no medical school in America until after the middle of the eighteenth century. The method of instruction was by a system of apprenticeship which extended over a period of from three to seven years—a most valuable method of instruction, for it brought the student into close contact with his master, enabling him to acquire the latter's methods in the most practical way. Many of these men had been born and educated in Europe before coming to the New World, and their students in turn went to Europe in order to obtain a medical degree. It is not intended to intimate that all practitioners were so well educated, for such was not the case, but in a study of this kind it is only right to give first place to the best.

Considering the sparse population of not more than three hundred thousand at the beginning of the eighteenth century, strung out along the Atlantic seaboard from the rock bound coast of New England to the sunny shores of Georgia, remote from the centres of civilization, we should scarcely expect to find among a pioneer people struggling with the wilderness and battling with savages any who could find time or opportunity for scientific pursuit. Yet there were some who stood as shining lights in science and should be of interest to us as medical men, though they may be overshadowed, in the view of the general public, by the clergy, the statesman, and the soldier.

Perhaps the most interesting and notable event occurring in the medical annals at the beginning of the period with which we are dealing was the acrimonious controversy originating in Boston over the introduction of inoculation for smallpox, the great protagonist of that procedure being the redoutable Cotton Mather, of witchcraft fame, a distinguished politician and divine.

In 1718, Dr. William Douglass, an educated and astute Scotchman, came to Boston, bringing with him among other scientific papers, one written by an Italian named Timoni and communicated by Doctor Woodward, in 1717, to the Royal Society of London, describing the method of inoculation as practised among the Turks. Though not on the best terms with Mather, Douglass gave him among others this paper on Turkish Inoculation. Smallpox was raging in and about Boston, and Mather was profoundly impressed with the Turkish method of inoculation. He proposed to Douglass that he give the method a trial, but Douglass ridiculed the idea, as did other Boston physicians to whom Mather proposed it. But the resolute old clergyman was not deterred by the rebuffs of the Boston physicians.

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*Read before the Medical History Club, of Washington, D. C., February 26, 1916.

There lived in Brookline, contiguous to Boston, Dr. Zabdiel Boylston, whose father, Dr. Thomas Boylston, an Englishman having the degree of M. D. from Oxford, in conjunction with Dr. John Cutter, an eminent physician and surgeon of Boston, directed his education, though it does not appear that he ever received the doctor's degree. Yet he was a distinguished physician and besides was noted for his interest in botany and natural history. To him Mather proposed that he undertake the work. Boylston readily assented and "entered eagerly into the scheme to stamp out the plague." Boylston must have been a man of strong conviction and rare courage, for notwithstanding the violent and threatening opposition of medical men, the clergy, and the laity, the first subject whom he inoculated was his only son, a lad of thirteen years; then two negro servants were likewise inoculated, all of which operations were entirely successful.

The controversy was sharp and stubborn, the opposition being led by Dr. William Douglass, to whom Mather originally proposed that he initiate the procedure, assisted by Dr. Lawrence Dalhonde, a Frenchman, who had a large practice in Boston. Many of the clergy denounced the practice from their pulpits, and the *New England Courant*, a paper edited in part by Benjamin Franklin, was active in opposition. Mather and Boylston and their supporters were persecuted unmercifully. Boylston was assaulted in the streets, attempts were made to burn his house, and bombs were thrown into his and Mather's houses. Notwithstanding this vehement opposition the practice was so successful that it gained steadily, and doctors established private hospitals for the purpose of inoculation.

Hutchinson, quoted by Packard, says: "In the year 1721, and first part of 1722, Doctor Boylston inoculated 247 persons; thirty-nine were inoculated by other persons in Boston and its vicinity. Of this number only six died, and several of those were supposed to have taken the infection before inoculation. In the same period 5,759 took the disease the natural way, of whom 844 died, and many of those who recovered were left with broken constitutions and disfigured countenances."

Mather wielded a tremendous influence with the clergy, and his prestige was no less potential with the laity, so that he rallied his followers—who had at first opposed him—to the side of inoculation. Here was the remarkable circumstance of the clergy advocating science and the faculty opposing it; but the dominating influence was the cool perseverance of Doctor Boylston, who ultimately experienced the pleasure of having his practice endorsed. That arch objector, Dr. William Douglass, recanted, and Benjamin Franklin was converted to a belief in the utility of inoculation. Boylston's triumph was complete. He was invited by Sir Hans Sloan, physician to George I, to come to London to demonstrate his method, which he did successfully. His reward was great. He was made a member of the Royal Society of London, being the first native American to be so honored. He also received a thousand guineas as a gift from the King.

There were many practitioners of the type of Zabdiel Boylston scattered throughout the colonies. They were men who, though they had not acquired the doctor's degree, had nevertheless been trained by skilled physicians and surgeons who had migrated to the Colonies, and who were, as well, educated in the school of experience and well qualified to treat disease according to the light of their day. These men must not be included with the pretenders and charlatans, of whom there were not a few, for they were conscientious and trustworthy practitioners.

There were also many notable medical men of fine attainments in the various Colonies. They came as surgeons to the King's troops, or were those adventurous spirits who came to the new El Dorado in search of fame and fortune. They were principally from the British Isles. As the colonists acquired wealth, those who undertook the practice of medicine were not content with their apprenticeship, but went to Europe in order to increase their knowledge and obtain the coveted medical degree.

It would be profitable to study some of these men individually, were it within the scope of this paper, for some of them were most interesting and attractive. They were acute observers and beside being skillful physicians they were adepts in botany and natural history. They corresponded with the members of the Royal Society and with the great botanist, Linnaeus, who honored some by naming plants after them. Dr. Howard A. Kelly has found material enough to write a most interesting volume about these botanists.

Dr. John Mitchell, who lived in a small village on the Rappahannock River in Virginia, was a Fellow of the Royal Society of London. He was distinguished as a botanist as well as a physician. Among other papers he wrote one giving an account of the yellow fever which prevailed in Virginia in the years 1737, 1741, and 1742. Some years after his death, the paper came into the hands of Benjamin Franklin, who transferred it to Doctor Rush; he published it and acknowledged his indebtedness to it for information enabling him successfully to combat the disease.

Dr. Hezekiah Beardsley, of Connecticut, was the first to describe congenital hypertrophic stenosis of the pylorus in the infant.

Dr. John Lining, of Charleston, S. C., in the year 1740, made careful studies in metabolism from observations upon himself, ascertaining daily his weight each morning and evening, the weight of food taken, and the weight of his urinary and alvine discharges. These investigations were carried on throughout a year and were published in the *Transactions of the Royal Society of London* in 1743.

Dr. William H. Welch in a discussion said: "Many of these frontier doctors were fully the equals in education of their contemporaries along the Atlantic seaboard; in Boston, New York, Philadelphia, Charleston. Of course in the middle of the eighteenth century Charleston was perhaps the most cultured centre. There is a wonderful group here that has never been presented to us. I have made many appeals to have this done, by some one from that region, if possible."

Beside being physicians they were men of affairs, taking great interest in the wellbeing of their country. A number of them were in the colonial legislatures—several were lieutenant governors (and practically governors) of the colonies, and no fewer than five were members of the Continental Congress, and, as such, signers of the Declaration of Independence. General Warren, who lost his life at the battle of Bunker Hill, was a doctor, as was General Hugh Mercer, of Virginia, who was killed at the battle of Princeton.

Opportunities for the study of practical anatomy were few not only because of popular prejudice, but because in some of the colonies the study was a legal felony. The bodies of executed criminals were sometimes given for the purpose of dissection, but the prejudice was so great even against that practice that one body which had been given the doctors by the authorities of Baltimore was forcibly taken from them by the infuriated populace.

The famous "doctors' mob" that occurred the same year (1788) in New York city was most serious in its results, and gives evidence of the intensity of feeling in the matter. Some doctors and students were dissecting in the New York Hospital building. A boy peeped in at the window. A dare devil student waved an arm of a cadaver at him, which so terrified the boy that he fled crying down the street, and soon an excited multitude had assembled and hearing his gruesome story made a vicious attack on the building. It was now the doctors' and students' time to run, and, pursued by the mob, they sought refuge in the jail. The police were unable to control the situation, and the militia were called out. The mob remaining defiant and aggressive, the militia fired, killing seven of the rioters and wounding many others.

Doctors are expected and required to know all about the human anatomy, but many obstacles are put in their way to prevent their acquiring such knowledge. A number of sporadic efforts were made in the first half of the century to cultivate practical anatomy, but with indifferent success. It was not until about the middle of the century that it made much progress. The bodies of executed criminals were furnished by the authorities for dissection purposes, but the principal supply of material was obtained by "body snatching."

Historians agree that unquestionably the best anatomist and the equal of any surgeon of his day in this country, was William Baynham, a native of Caroline county, Virginia. He received his preliminary education at home, and when twenty years of age was sent to London and entered St. Thomas's Hospital as a student. Here he made the acquaintance of Mr. Else, the professor of anatomy, whose assistant he became. His skill in injecting and preparing anatomical material was declared to be wonderful.

He remained in London four years and returned to his native colony to settle in Essex county, where he had an extensive practice and a wide reputation as a skillful and successful surgeon. Here is an instance of a scholarly man and skilled scientist remaining in a country district remote from the centres of population attaining success and distinction. There were some great doctors in the years gone by, and geniuses are not to be found within the metropolitan districts only.

Midwifery, in the earlier part of the eighteenth century, was practised almost exclusively by women, except that in some difficult case a doctor might be called to give aid, though the practice of obstetrics by men was extremely unpopular. It was said of Doctor Attwood, of New Jersey, he "is remembered as the first Dr. who had the hardihood to proclaim himself as a man midwife: it was deemed a scandal to some delicate ears, and Mrs. Grany Brown, with her fees of two or three dollars, was still deemed the choice of all who thought women should be modest."

Dr. John Moultrie, a Scotchman, who came to Charleston, S. C., in 1733, was perhaps the earliest regular obstetrician of the colonies. He died in 1773, having stood at the head of his profession in that city. It was said of him: "He was especially distinguished for his skill in obstetrics, and his death was regarded as a public calamity. Several of the ladies of Charleston bedewed his grave with tears, and went into mourning on the occasion. The year after his decease was distinguished by the deaths of several women in childbirth. While he lived they thought themselves secure of the best assistance in the power of man or of art, in cases of extremity: In losing him they lost their hopes. Depressing fears sunk their spirits, and in an unusual number of cases produced fatal consequences."

Dr. James Lloyd, a pupil of William Hunter and Smellie, who settled in Boston in 1752, was probably the first medical man in New England to devote himself to the practice of obstetrics.

Dr. William Shippen, Jr., of Philadelphia, was the earliest teacher of obstetrics in this country, his lectures beginning in 1762.

Dr. John V. B. Tennant, of New Jersey, an alumnus of the University of Edinburgh and a Fellow of the Royal Society, was the first professor of obstetrics of the Medical School of New York.

Dr. George Buchanan, of Baltimore, in 1789, delivered a course of lectures on the Diseases of Women and Children and the next year a course on Midwifery. These sporadic efforts were indicative of a desire for further improvement in medical education.

To the physician the hospital is not only a refuge for the sick and wounded, but is an educational means of vast importance. The first general hospital established in the colonies was the Pennsylvania Hospital of Philadelphia, which was organized in 1751, and in February of the next year advertised that it was ready to receive patients. Dr. Thomas Bond, of Maryland, who had settled in Philadelphia, was its chief projector; he was ably and efficiently seconded by Benjamin Franklin.

This hospital was established on a sound and enlightened basis, as is evidenced by the wise and judicious rules adopted by the board of managers.

M. de Warville, who visited the hospital in 1788, wrote: "I have seen the hospitals of France, both at Paris and in the provinces; I know none of them but one at Besançon that can be compared to this at Philadelphia. Every sick and every poor person has his bed well furnished, but without curtains, as it should be. Every room is lighted by windows placed opposite, which introduces plenty of light. . . . The hospital is fine, elegant, and well kept."

Although the Pennsylvania Hospital provided for the care of lunatics, the earliest institution for the special care of the insane was the Eastern Lunatic Asylum, at Williamsburg, Virginia, chartered in 1772 and opened the next year for the reception of patients.

The second hospital to be founded in the colonies was the New York Hospital, chartered in July, 1771. Doctor Fothergill, of London, was one of the incorporators. Before its completion, the building was almost completely destroyed by fire in February, 1775, but it was quickly reconstructed and the Provisional Congress took possession of it for use as a barracks in April, 1776. When the British entered New York city the same year they used the building as barracks for the Hessians. It was not reopened as a hospital until 1791.

That the colonists were interested in education is obvious from the fact of the establishment as early as in the seventeenth century of Harvard College in Massachusetts, and William and Mary College in Virginia. In the eighteenth century many other colleges were founded, but in none of them was there a medical school, until, in 1765, the medical department of the College of Philadelphia was organized.

The two moving spirits in this adventure were Dr. John Morgan and Dr. William Shippen, Jr. Both were Philadelphians, and both were graduates of the medical department of the University of Edinburgh. They were well qualified for the undertaking. The former was appointed professor of theory and practice of medicine and the latter professor of anatomy and surgery. Other professors were added from time to time, including Dr. Adam Kuhn and Dr. Benjamin Rush. Dr. Thomas Bond, who was the founder of the Pennsylvania Hospital, was appointed to give clinical lectures. Three of these were the most conspicuous medical men of the colonies. Two of them, Morgan and Shippen, were surgeons general of the Continental armies, and Rush was surgeon general of the middle department of the Continental army.

Here was laid, and well laid, the foundation of medical education in this country. Students came in at once and in increasing numbers—there being between thirty and forty in attendance in 1775—when the school was interrupted by the Revolution.

The medical department of King's College, New York city, was organized with a complete faculty, in 1767, and the first regular degree of M. D. in the colonies was conferred upon Samuel Kissam, in March, 1770, by that school, the degree of M. B. having been conferred upon him the preceding year. King's College has become the famous College of Physicians and Surgeons of New York. Toner says: "The honorary degree of M. D. was conferred upon Daniel Turner by Yale College in 1720 As Doctor Turner had been a liberal benefactor of the college, the M. D. was facetiously said to signify *multum donavit.*"

The medical department is a most important component of an army, and until very recent years it had received scant consideration. Of course at the time of the Revolution there was no organization whatever, and commissary and equipment materials were almost impossible to obtain, but the medical department was even worse off, for no medical supplies could be had. The few instruments and drugs that were obtainable came mainly from the surgeons' very limited private store. Many of the surgeons were appointed without reference to skill or ability, so that altogether the condition of the medical department was most lamentable. As an evidence of the little material to be had, the "razor" letter from Surgeon General John Morgan, just befor the battle of Long Island, in August, 1776, will illustrate:

> Sir:—I have sent to the surgeons, desiring the youngest off duty to go to your assistance, and take four mates with him: to carry over five hundred additional bandages, and twelve fracture boxes. I fear they have no scalpels, as whatever I have committed to the hospitals has always been lost. I send you two, in which case, if you want more, use a razor for an incision knife. Let me know, from time to time, at Long Island. J. MORGAN.
>
> To Dr. Warren, Surgeon of the General Hospital at Long Island.

The following extract from *Thacher's Military Journal* for October 24, 1777, will give an idea of the acuteness of intelligent observation on the part of the American surgeon. Referring to the hospital at Albany, he says:

> This hospital is now crowded with officers and men from the field of battle. Those belonging to the British and Hessian troops, are accommodated in the same hospital with our own men and receive equal care and attention. The foreigners are under the care and management of their own surgeons. I have been present at some of the capital operations and remarked that the English perform with skill and dexerity, but the Germans, with a few exceptions, do no credit to their profession; some of them are the most uncouth and clumsy operators I ever witnessed and appear to be destitute of all sympathy and tenderness toward the suffering patient. Not less than one thousand wounded and sick are now in this city; the Dutch Church and several private houses are occupied as hospitals. We have about thirty surgeons and mates, and all are constantly employed. I am obliged to devote the whole of my time, from eight o'clock in the morning to a late hour in the evening, to the care of our patients. Here is a fine field for professional improvement. Amputating limbs, trepaning fractured skulls, and dressing the most formidable wounds, has familiarized my mind to scenes of woe. A military hospital is peculiarly calculated to afford example for profitable contemplation and to interest our sympathy and commiseration.

Dr. James Tilton, who was left in charge of the American sick and wounded at Williamsburg, Virginia, after the surrender of Cornwallis at Yorktown, the French troops being encamped at the same place, in his Observations on Military Hospitals, says:

> Being thus in a French garrison I had some opportunity of observing the French practice and management of their sick. In passing the wards of their hospital, their patients appear very neat and clean, above all examples I had ever seen. Each patient was accommodated with everything necessary, even to a night cap. Nevertheless, they were not more successful than we were. Even their wounded, with all the boasted dexterity of the French to aid them, were no more fortunate than ours. I was led to attribute their

failure principally to two causes. For ease and convenience, they had contrived a common necessary for their whole hospital, the college, a large building three stories high, by erecting a half hexagon, of common boards, reaching from the roof down to a pit in the earth. From this perpendicular conduit doors opened each floor of the hospital; and all manner of filth and excrementitious matters were dropped and thrown down this common sewer into the pit below. This sink of nastiness perfumed the whole house very sensibly and, without doubt, vitiated all the air within the wards. In the next place their practice appeared to me to be very inert. When passing their wards with the prescribing physicians, I observed a great number of their patients in a languid and putrid condition and asked occasionally if the bark would not be proper in such cases. The uniform answer was no, too much inflammation. And when they attended my round of prescription and saw me frequently prescribing the bark, in febrile cases, and even for the wounded, they lifted up their hands in astonishment. Few or no chemical remedies were employed by them. One of their regimental surgeons declared that he never used opium. Their hospital pharmacopœia consisted chiefly of ptisans, decoctions, and watery drinks, fitted only for inflammatory disorders. All these circumstances considered, satisfied my mind why their ample accommodations gave them no advantage of us in the result of practice. I was the more surprised as Doctors Cost and Borgelli appeared to be men of science, well qualified to make research.

During the Revolution the practice of medicine was at a low ebb, both because of the incompetence and dishonesty of most of the surgeons, and the lack of necessary drugs and essential supplies. The following extract from a letter of Washington to Congress in the autumn of 1776 gives his estimate of the surgeons of the army:

> No less attention should be paid to the choice of surgeons than other officers of the army. They should undergo a regular examination, and if not appointed by the Director-General and surgeons of the hospital, they ought to be subordinate to and governed by his direction.
>
> The regimental surgeons I am speaking of, many of whom are very great rascals, countenancing the men in sham complaints to exempt them from duty, and often receiving bribes to certify indispositions with a view to procure discharges or furloughs.
>
> But independent of these practices, while they are considered as unconnected with the general hospital, there will be nothing but continual complaints of each other—the director of the hospital charging them with enormity in their drafts for the sick, and they him for denying such things as are necessary. In short, there is a constant bickering among them, which tends greatly to the injury of the sick, and will always subsist till the regimental surgeons are made to look up to the Director-General of the hospital as a superior. Whether this is the case in regular armies or not, I cannot undertake to say; but certain I am, there is necessity for it in this, or the sick will suffer. The regimental surgeons are aiming, I am persuaded, to break up the General Hospital, and have in numberless instances drawn for medicines, stores, etc., in the most profuse and extravagant manner for private purposes.

To illustrate the scarcity of food and hospital supplies in 1778 the letter of Dr. John Warren is quoted:

> *To His Excellency the Governor and the Honorable the Council of The Commonwealth of Massachusetts:*
>
> Gentlemen—Though I have frequently represented the distressed condition of the sick in the Continental Hospital, yet I have never had so ample occasion to deplore their miseries as at present.
>
> For some days they have not had an ounce of meat; not a stick of wood but what they have taken from the neighboring fences; for near a week not a vegetable; and scarcely any medicine for above a year. In fine, to sum up the whole in a few words, the sick and wounded, many of which are exceedingly dangerous, and some of them in a state which requires immediate amputation, are not furnished by the public with a single article of sustenance except bread alone, and must have perished ere this had not the charitable donations of a few individuals in some measure contributed to their relief. I have been incessantly making application for these last twelve months to all the departments for supplies, but cannot procure any. During which time the groans of the sick and wounded, suffering and perhaps dying, for want of necessities, have been perpetually saluting my ears. I must, therefore, beg your Excellency and Honor's action in this matter, and am with the greatest respect, gentlemen,
>
> Your most obedient servant,
>
> J. WARREN.

With the close of the Revolutionary War there was a quickening of enterprise and medicine received its degree of stimulation too. The College of Philadelphia was merged with the University of Pennsylvania and the medical department went forward with renewed energy and success. In 1783, Harvard Medical School began its honored career. Medical societies were formed and every energy that tended to forward medicine in this new era was active. There were no startling events in medicine in this country in the eighteenth century. Not many papers and few books were written. But the medical men were keen observers and alert to avail of all progressive means. Considering the period—the remoteness of the new country and its difficulties, not much could be expected.

3 THOMAS CIRCLE.

RADIOTHERAPY IN CHRONIC ARTHRITIS.

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(A Report from the Medical Clinic of the University of Maryland Hospital.)

In the treatment of such a chronic disease as arthritis, medication with salicylic acid and its derivatives would seem the most rational. If for the same disease, instead of one specific remedy, so many others are recommended, the multiplicity of therapeutic means would suggest that the practical therapeutic results thus far obtained make it desirable to improve the methods of treatment. In accordance with the progress of science today, we are surprised by the various nocent influences, bacterial (1), toxic (2), nutritional and metabolic (3), which are supposed to constitute the basis of such a disease.

Admitted that all these factors are etiological, the treatment necessarily cannot be uniform in all instances. If in former years a few writers did not approve the general opinion of the specific action of the salicylic compounds in chronic arthritis (4), a perusal of the literature suggests that lately the discussion has again been opened, when and how the salicylates fail to fulfil our therapeutic expectations (5).

A detailed discussion of such an interesting problem cannot be given at this time without increasing unduly the length of the present communication. Only a few facts may be recalled which are liable to change our opinion as to the specific action alleged for the salicylic compounds. Experimental study of the prophylactic and curative effect of sodium salicylate in animals infected with virulent streptococci has failed so far in the proof of the specific and superior therapeutic action of the sodium salt (6). Expecting that other investigators will add more facts, it would be interesting to learn of the individual experiences of the general practitioner.

More than ever are we impressed by the necessity for careful examination and supervision of the cases (7), since the prescription of antirrheumatics alone, even if the patient can be trusted with the careful fulfillment of the medical instruction, is not sufficient to obtain cure or relief.

Whether such a failure is due to the dose of salicylates given is not settled as yet: different suggestions have been made (8), new methods of administration, rectal, intramuscular, intravenous, cathaphoretic, have been advocated (9). Even without the use of the salicylates favorable results were obtained by phenol injections (10), formaldehyde (11), intravenous administration of mercuric chloride (12), different extracts from endocrinous glands (13), dietetic measures (14), beside the various applications of physical means, including radiotherapy (15).

The list of therapeutic methods has been further increased by the use of different vaccines (16), and with such a variety of recommendations, including surgical help, it would seem difficult to select just the proper method of treatment. Medical progress is not reached all at once: little by little we learn to treat cases properly, so that the following clinical data may be of interest to the general practitioner:

Case I. I. B., aged thirty years, laborer in a tin factory, married, had several attacks of gonorrheal urethritis, a sore on his penis, multiple articular rheumatism since 1903. Patient came to the University of Maryland Hospital, on September 10, 1913, with the complaint of severe pains in his knees, ankles, wrists, fingers, backache, inability to walk, headaches, dizziness, anorexia, occasional nausea, yellow discharge from the urethra. The articular manifestations were particularly aggravated since August 17, 1913.

The physical findings of interest were the involvement of the following joints with redness, swelling, impaired motion, local rise of temperature: Sternoclavicular, right and left shoulder, right and left knee, left elbow, wrist, and the second, third, fourth and fifth metacarpophalangeal joints of the left hand, both ankles, tenderness of the right cervical muscles (sternocleidomastoid, etc.) and of the entire spine, hypertrophy of prostate, active urethritis, with many intracellular gonococci. The urine had a trace of albumin. Blood: Hemoglobin eighty-three per cent., 16,866 white blood cells, polynuclears fifty-nine per cent., small lymphocytes twenty-nine per cent., large lymphocytes eleven per cent., eosinophiles one per cent. Blood culture negative, complement fixation for gonococci negative, on September 28th, at a later date (February 21, 1914) positive; Wassermann reaction and Noguchi test negative.

This patient, from September, 1913, to January 24, 1914, received the following treatment: Hexamethylenamine grains five, three times a day, sodium salicylate grains fifteen every six hours, aspirin grains five every two hours, two injections of antigonococcic serum of one c. c. each; local applications to the joints involved, with chloroform liniment, Stokes's liniment, oil of gaultheria, sodium cacodylate, local irrigations of permanganate of potassium one in 6,000.

This treatment had not the slightest effect, so the first attempt was made to treat the patient by local applications of radiothorium contained in a sealed glass tube. This tube examined under the fontactoscope emanated through the glass container 90,000 maché units an hour. Previous to that application physical examination of the left knee showed considerable swelling; infiltration, tenderness on touch, remarkably reduced motility, thickened capsule. The patient was hardly able to bend his knee on account of the pain and the inflamed condition of the joint.

The radiothorium tube was applied to the upper cul-de-sac of his left knee, fastened by adhesive plaster, and remained there for two hours. The patient noticed an immediate improvement of his pains; he was able to move his joint. This treatment, excluding internal medication, was continued on the following days. Examination, two days later, showed less swelling, the outlines of the joint were better defined, the infiltration of the upper cul-de-sac was less pronounced, and slight spontaneous pain upon pressure could be observed. The lateral parts of the joint, which had not yet been exposed to the treatment, showed no improvement whatever. The radiation tube was therefore applied for the same length of time. The result was, that the patient had no more pain in his knee, the swelling and periarticular infiltration had considerably diminished; the patient, who before maintained his knee in a forced extension, could bend it and walk without much difficulty.

After these favorable results with radiothorium a similar attempt was made with the application of radiating energy to the wrist and metacarpophalangeal joints of the upper extremities. The average duration of this treatment was from two to three hours a day, 180,000 to 270,000 maché units. A similar improvement was observed as regards spontaneous and provoked pain during motion, swelling, infiltration, local tenderness, and gain in motility of the affected joints.

It would lead too far to give all the details of the clinical improvement of the patient's condition during radioactive treatment, which was continued for a various length of hours, according to the condition of the joints involved. As a summary, the knee was exposed to radiothorium for ten hours—900,000 maché units: the right and left wrist and fingers seventy-two hours—64,800,000 maché units; the elbow forty-seven hours—42,300,000 maché units.

It seems that, according to the extent of the morbid process, the joints differ in their reaction after being exposed to radiotherapy. In some instances, as for the wrists, the elbow in this particular case required several treatments before subjectively or objectively any change could be noticed.

The improvement in the patient's condition was striking, if we consider that during the first period of treatment at the hospital, from September, 1913, to January 24, 1914, the patient was greatly troubled by the pains in his joints, the swelling, thickening, and tenderness of the capsule, which made the movement of these joints hardly possible, and if we follow the improvement which succeeded the radiotherapy after January 24 up to March 6, 1914, we must attribute a therapeutic action to the radiothorium application. The patient left the hospital considerably improved locally, subjectively, and objectively; having lost his pains, he was able to use his limbs, and he could walk.

Case II. C. G. (Ward D, No. 18), colored, sixty years old, fireman on a steamboat; widower; complained of a deformity in his hands and fingers, which had been gradually getting worse for the past few years. From his past history we learned of his previous acute infections by the following diseases: Measles, whooping cough, mumps, smallpox, malaria, and acute articular rheumatism every winter for the past ten years. Joints were painful, swollen, with reduced motility. At first the attacks were situated in the larger joints and only later were the small joints involved. Patient was alcoholic, used all kinds of stimulants without moderation. Considerable constipation; no digestive disturbances; easily inclined to colds, pretended to have spit up blood occasionally. Slight dyspnea upon exertion, palpitation of the heart, but no edema of ankles. No urinary disturbances; frequently subject to headache.

Among the physical findings the following were of interest: Sluggish reaction of pupils, moderate paresis of the left lower facial nerve, very bad condition of the teeth, marked pyorrhea, tremor of tongue, congestion of posterior pharyngeal wall and fauces. Enlarged cervical glands, chronic endocarditis with zone of hypertrophy and dilatation.

As to the extremities, both shoulders presented tenderness on pressure and pain on slight movements, with thickened capsule, moderate tenderness on pressure over both elbows, thickened capsule, impaired flexion and extension, limited supination and pronation. Lateral deviation of the fingers of the left hand, involving the second, third and little fingers, partial ankylosis of the middle and end phalanx, skin glossy, ankylosis of the interphalangeal joint of the middle finger, lateral deviation of the phalanges, thickened capsule and enlarged head of the first interphalangeal joint of the index, marked tenderness with moderate crepitation.

The right hand showed glossy appearance of the skin, lateral deviation of the fourth finger, enlarged metacarpophalangeal joint, thickened capsule of both interphalangeal joints. Tenderness, middle finger thickened, heads enlarged, no rise of local temperature, swelling, tenderness of the joints of the index. Wrists of both sides enlarged in the lateral direction, swelling, tenderness, thickening of the capsule with pain on motion, moderate flexion and extension, with crepitation. Hip joints of both sides are found in good condition, absence of pain, tenderness, swelling and diminished motility. Knee joints very painful to touch, with impaired flexion and extension, ligaments and perarticular structures thickened but no swelling noticed. Ankles stiffened, painful on flexion and extension, movements limited, slight thickening of the capsule and of the ligaments; crepitation present. Metatarsophalangeal joints of both feet enlarged in all diameters; limited flexion and extension with crepitation, which existed also in the metatarsal and phalangeal joints.

Vertebral column: Extension and flexion in dorsal lumbar region limited but not painful. Cervical region normal.

The rheumatic pains being particularly pronounced in the right wrist and in the second to the fifth metacarpal phalangeal joints, mesothorium was applied for two hours each day (180,000 maché units). The immediate result was satisfactory, followed by quick disappearance of the inflammatory swelling, of the tenderness, and by return to almost normal motility, without causing pain.

The knees were also treated similarly; before treatment they presented considerable pain, tenderness, swelling, and lack of motility. On the one knee mesothorium radiation (180,000 maché units) was applied for two hours each day; to the other knee a compress of radioactive magnesium sulphate solution was applied for several hours. Following the medication on either side, the patient soon experiences distinct relief, which was evidenced objectively by considerable reduction in the swelling and tenderness and gain in motility, without distress or pain.

This radiotherapy was repeated daily for four hours (360,000 maché units a day) for about three weeks without internal medication of salicylates or other drugs. Subjectively the patient felt very well satisfied; objectively, the fluid in the knees had disappeared, the articular capsule presented less infiltration, and on pressure no pain nor discomfort could be noticed.

Case III. P. M. (Ward G, No. 9), aged forty-two years, marine fireman, single, white. Complaint, "rheumatism" of right elbow, left knee, and left foot, due to exposure, to sudden changes of temperature from the heat of the engine room to the changeable weather conditions on deck, enhanced by perspiration and insufficient clothing. Moderately alcoholic and a smoker. Family history: Father living and well; mother dead, aged forty-eight years, of heart disease; one brother and one sister living and well. One sister died of tuberculosis when nineteen years old; patient during two years lived with his sick sister. No history of malignant disease in family. Past history: Children's diseases as follows: Measles, mumps, whooping cough. Other infectious diseases negative. About twenty years ago patient had inflammation of the right lung, kidney, gastrointestinal disturbances, sciatica. Three months ago, suffered from dysentery for two weeks. Luetic or gonococcic infections denied.

Present illness began about September 17th. While at work, noticed sharp localized pain in right elbow, which persisted with the same character and intensity until now. For two weeks patient complained of similar pains at the lower part of his spine, left knee, and lately in the left foot. Four days ago, like complaints in the right ankle, with swelling. No history of injury to the joints. Absence of chills or sweats, except when in the engine room. The sleeping quarters in the forecastle were very cold; worked in shifts of four hours and usually felt cold. Negative history as to the circulatory, respiratory, gastrointestinal tract, genitourinary, and nervous systems.

Physical findings: Atrophy of muscles of the left thigh and leg. Brown discoloration of skin of upper third of leg, and scar on the anterior surface of tibia. Skin not adherent to subcutaneous tissue. Roughened tibia at that level, contrasting with right leg, which was normal. Upper and lateral culs-de-sac of left knee prominent, distended by fluid. White scar below the inner condyle. Fair amount of fluctuation, capsule distended and thickened, particularly in upper sections of joint. Both menisci normal, not tender nor swollen. Flexion of the knee reduced to an angle of 125°. Active extension of the knee performed very slowly, accompanied by a dull aching pain in the knee. Passive flexion impaired to about the same extent. Left hip joint normal. First metatarsal phalangeal joint swollen and thickened, with cracking sounds during motion. Right knee normal in every respect. Muscle contraction of the left thigh considerably weaker compared with right side. Left inguinal glands considerably swollen and tender, normal on the opposite side, except slight swelling.

Right elbow in, flexion and inward rotation, total extension impossible, leaving still an angle of about 150°. Marked wasting of muscles of upper arm. Diffuse swelling of elbow, especially at level of epicondyle and capitulum radii, considerable tenderness of the capsule and ligaments, particularly of external condyle. Enlarged epitrochlear gland. Considerable thickening of capsule, more on external condyle than on inner side; periarticular infiltration with tenderness. Passive flexion possible as far as an angle of 100° with considerable resistance. Reduced pronation and supination, particularly during outward rotation. Shoulder joint normal. Axillary glands on right side enlarged. Normal condition for left elbow, wrists, and remaining joints. Cervical glands on both sides enlarged. Moderate tremor of fingers. Teeth in very bad state of preservation, with wornout surface of mastication (pipe).

Laboratory findings: Urine, amber color, acid reaction, specific gravity 1020. Albumin and sugar negative. Few pus cells, no casts. Urea 3,0 grams. Blood, hemoglobin eighty-five per cent., leucocytes 8,400, Wassermann test negative.

Medication: On admittance sodium salicylates fifteen grams every four hours. No relief being obtained after two days, the internal medication was stopped entirely and replaced by compresses of saturated magnesium sulphate solution to elbow, and mesothorium treatment to knee.

Bedside notes next day (October 10th): Pains in right elbow considerably relieved, swelling and tenderness reduced. Left knee treated for two hours each day with mesothorium tube (180,000 m. u.) to upper and lateral cul-de-sac. Slight erythema of the skin, motility of the joint seemed increased and less painful; local tenderness less marked.

October 12th, left knee swelling less noticeable, hardly any tenderness produced by touch, pressure, and motion. Motility more extensive. Slight tenderness on deep pressure upon inner lateral ligament. Right elbow swelling had disappeared, extension and flexion increased and less painful. October 17th, left knee infiltration much less noticeable, hardly any pain, spontaneous or on motion; circumference of left knee cap 14¼ inches, upper cul-de-sac 14⅛ inches. Right elbow swelling no longer present, pain greatly diminished, improvement noticed in every way. October 18th, mesothorium application extended to three hours on each side of knee. October 24th, mesothorium applied also over patella. Patient advised to make passive and active exercises for his elbow in raising a slight weight attached to foot of bed. October 27th, left knee, less infiltration and swelling, outlines of the patella very noticeable. Slight degree of fluctuation. Infiltration of the articular capsule markedly less. No pains spontaneous nor on deep pressure and forced motion. Flexion and extension of knee had decidedly gained, extension of knee as far as possible to 100°. Menisci not enlarged and not more tender. Inguinal glands diminished in size and not more tender.

Right elbow swelling considerably lessened, capsule had become normal, no pains spontaneously nor provoked by pressure and palpation. Increase of extension about 15°, compared with initial statement. Flexion hardly surpassed right angle. Bones no longer tender. Condition of teeth still poor; pyorrhea, however, less marked.

During the first eleven days of the patient's sojourn at the hospital he had a moderate subfebrile temperature, varying from 100.40 to 98.40 F.; pulse was from seventy to ninety-eight on the average; after that temperature and pulse remained normal. Only the articular manifestations could explain these facts, since physical examination of the rest of the body revealed nothing abnormal.

Epicrisis. In this patient, affected with subchronic arthritis of the right elbow and left knee, considerable improvement was obtained by external applications of concentrated magnesium sulphate solutions and radiotherapy. Subjectively and objectively the inflammatory symptoms subsided and motility was improved. The radiotherapy to the left knee was applied for ninety-six hours, giving an energy of 8,640,000 maché units for twenty days. The magnesium sulphate therapeutics was equally satisfactory; the results perhaps were not as rapid as with the mesothorium applications, while the salicylates did not cause any appreciable improvement.

Among my observations I will briefly mention Case IV.

CASE IV. J. O. C., twenty years old, cartoonist, in August, 1914, acquired a Neisser infection. Vaccine and local treatment gave partial relief, to which manifestation arthritis of the elbow and the phalangeal joints was added. The ordinary methods of treatment remained without success, so the patient entered the hospital. The elbows and small phalangeal joints presented considerable infiltration, swelling, tenderness, impaired active and passive motion, and considerable pain.

Salicylates in high doses did not afford the slightest improvement, so a trial was made with mesothorium applications over some of the affected joints; the other joints, receiving no treatment, served as control. Immediate and lasting relief of the local objective and subjective symptoms resulted, while the control joints did not show the slightest improvement. Once this result was obtained, the mesothorium tube was omitted entirely, and a trial was made with the application of compresses of radioactive magnesium sulphate solution to the joints as yet untreated and still involved. Within twenty-four hours considerable improvement could be noticed, as the swelling, tenderness on pressure and impaired motility had been reduced, and spontaneous pain was no longer present.

This favorable change persisted and maintained itself during the successive days, and as a general result the patient, who before the radioactive treatment had remained stationary for at least three weeks, was discharged, markedly improved. Although slight tenderness of both heels was noticed, no special application was made to these latter parts, as the complaints were not such to justify a local treatment. The patient was seen four months later; the treated joints remained well, while for the yet untreated heels local corpuscular radiotherapy was successfully applied; a report will be presented later.

CASE V. J. B., Owings Mills, fifty-eight years old, married, night guard at Home for Feebleminded. Admitted November 14, 1914, discharged December 23, 1914. Complaint, inflammatory rheumatism.

Family history: Father died at age of twenty-seven years of cholera morbus; mother twenty-three years of pneumonia; one brother in infancy; one half-sister at age of fifty-one years from gallstones operation. Wife died at age of fifty-seven years, insane; four children living and well, one died in infancy of intestinal disorders. Wife had no miscarriages. Past history: Had scarlet fever in 1856, complicated by cellulitis of neck and cervical adenitis; glands breaking down, abscess formation, and rupture. Measles, chickenpox, whooping cough, uncomplicated, during childhood. In 1883 tonsillitis; in 1891, influenza, uncomplicated; in 1892, typhoid with myalgia. Patient said he had had four attacks of pneumonia, each of one week's duration. Had had countless attacks of malarial fever while living on the eastern shore of Maryland, not attended by complications or sequelæ. Venereal history negative.

Present illness dated from end of September, initiated by tiring of his legs and soreness of his feet. Work was continued until acute symptoms in the right knee appeared as follows: Rise of local temperature, swelling, redness, pain on touch and on motion. Several days later, left knee became involved, then left ankle and both shoulders; elbows and wrists becoming involved alternately and showing the same symptoms as noted above; the intermaxillary and the small and clavicular joints were never involved. Fever and sweats observed during the first days of his disease; absence of herpes. Patient admitted a similar attack of "rheumatism" twelve years ago (1902) of mild character, so that he was not obliged to discontinue his work. Alimentary tract: Digestion impaired for about twenty-six years, often associated with pains along the costal margin, increased by intake of food.

Pulmonary findings negative Heart, except palpitation, nothing in particular noted. Urinary symptoms: At present time some trouble at micturition, ardor urinæ, no undue frequency. Nervous manifestations negative.

Physical examination: Teeth in extremely poor condition, numerous cavities, extensive pyorrhea, slight tremor of tongue, moderate anemia of lips and the mucous membranes, thorax emphysematous. Respiratory movements fair, hyperresonance on percussion, harsh breathing over both apices, more pronounced over the right side.

Heart, apex beat not visible nor palpable. Sounds very distant, faint, hardly audible, regular, maximum tension; fifth intercostal space, 3½ inches from the midsternal line, distinct accentuation of second pulmonic. Absence of murmurs and shocks.

Examination of joints on date of entrance to the institution; showed, over the buttock below the tuberosities of the iliac bones on right side, a tumor about the size of a hen's egg, freely movable with the tissues, slightly reddened, painful, and tender. Symmetrically, on the left side, a larger mass (size of an orange), fixed, hard, painful, tender, with induration of the surrounding tissues. Rectal examination negative except enlargement and thickening of the prostate (perirectal or gluteal abscess?).

On entrance, both shoulders, both knees and ankles were very tender on pressure; no particular swelling, the previous redness, according to patient's statement, having disappeared. Right knee normal, left knee painful on forced movements, enlargement of the bones, thickened capsule, patella mobile, crepitus, but no fluid. Ankles seemed normal. Joints of the hands: Fingers enlarged, thickened, with lateral outside deviation. Transverse diameter of both wrists seemed enlarged by diffuse swelling which extended to the lower third of both ulnas, markedly painful on the slightest touch and on motion. Both shoulders painful on deep pressure and upon hyperabduction. Reflexes could not be tested on account of great tenderness.

Laboratory findings November 15th. Urine, specific gravity 1.013, albumin negative; acid reaction; except a few epithelial cells and calcium oxalate crystals, nothing particular found in sediment. November 20th, total amount 1,000 c. c., specific gravity 1.012, trace of albumin, no casts, sugar, urea 11.52 grams. December 18th, specific gravity 1010, albumin and sugar negative.

Blood examination on November 16th: Hemoglobin, 90 per cent.; leucocytes, 12,800; polymorphonuclears, 68; small mononuclears, 21; large mononuclears, 2; transitionals, 7; eosinophiles, 2; basophiles, 0.

At entrance of patient to the hospital, sodium salicylate grains ten three times a day, were given for two days, but as no evident improvement was noticeable, radioactive magnesium sulphate solution was applied to both wrists and ankles and repeated every four hours. Already, on the following day, the application of compresses of magnesium sulphate solution yielded considerable relief. On November 23rd, the left knee and ankles are also improved locally, there being no swelling nor fluid; the capsule was slightly thickened and cracking sounds were still noticeable in the left knee. On November 25th, patient is out of bed and walks for a short time.

On December 2nd, the magnesium sulphate medication is discontinued entirely; patient feels very comfortable. On December 12th, the deep seated abscesses in both gluteal regions are opened and drained.

On account of his heart, which is found enlarged, the additional prescription of infusion of folia digitalis two drams, thrice daily, is given, which medication, two days later, did not seem to benefit the patient materially, wherefore pituitrin, as recorded on December 22nd, was given. Patient left the hospital decidedly improved with regard to his articular and cardiac manifestations.

From the preceding reports of cases, where the ordinary antirheumatic remedies did not produce the desired therapeutic effects, we learn that radioactive substances, such as mesothorium locally applied to diseased joints, is apt to produce a remarkable change in the subjective and objective symptoms of acute chronic and deforming arthritis. Not only is pain relieved by the local application of radiating energy, but also the infiltration of the articular and periarticular structures becomes less noticeable, and a reduction of the synovial fluid, and a gain in the active and passive motility are noticed. The danger of ankylosis, so frequent a consequence of the acute and chronic forms of rheumatism, resulting from the immobility of the joints engendered by the pain, can and should be overcome by radioactive treatment whenever the ordinary internal medication proves unsatisfactory.

In the course of the past few years our knowledge of the curative effect of highly radioactive substances in acute and chronic joint affections has been increased by various contributions. Although the number of domestic authors is small (see literature in my previous papers, 15) compared with those found in foreign literature, the therapeutic utility of radium and thorium in these instances can no longer be ignored by the profession. In dealing with a most frequently chronic course of the disease, sequelæ of which remaining unchecked do not add to the fame of our therapeutic achievements, it must be the aim to find and adopt new means of reducing these inconveniences.

Admitting that the highly radioactive substances, radium and mesothorium, merit application in rheumatism, it may seem strange that magnesium sulphate solutions, which can be rendered radioactive, should produce similar therapeutic results. Although the proof of such a statement will be given in a later article, even now I wish to say that between radium, mesothorium, and magnesium sulphate there seems to exist a physical similarity, which difference appears to be one of quantity, rather than of quality.

So far as my studies along that line have advanced, I am inclined to say that this difference is also expressed in the biological effect, where the rapid and longer lasting effect must be expected from the more radioactive and fresh preparations.

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TOLUOL.

Its Value in the Sterilization of Vaccines Made from Nonsporogenous Gram Negative Bacteria.

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INTRODUCTION.

The value of well prepared vaccines in the prevention and cure of certain bacterial infections has been quite universally demonstrated. Such vaccines consist of measured quantities of dead bacteria suspended in salt solution. Most authorities agree that the highest grade of immunization follows the use of living or "attenuated" bacteria, but the danger of spreading or increasing infection thereby has prevented the use of this method on a large scale.

Undoubtedly the most important step in the preparation of a vaccine is the killing of the bacteria, for the immunizing power of the vaccine may be greatly impaired by careless or improper methods. As a rule, bacteriologists and immunologists have followed the example of Wright (1) in subjecting the salt solution suspension of bacteria, in a water bath, to a temperature of 60° C., for an hour on one or more days. Some workers prefer a lower temperature, such as 55° to 56° C., recommended by Russell (2) in the preparation of antityphoid vaccine, or 53° C., as recommended by others. Instead of killing bacteria by heat, a few have preferred to depend on the germicidal effect of such chemicals as phenol or tricresol, highly diluted, both to sterilize and to preserve vaccines. With the heat method of sterilization, one of the latter chemicals has generally been added as a preservative.

It has been fairly well established that overheating reduces or destroys the power of vaccines to stimulate antibody formation. Also, it has been demonstrated that bacteria, or even strains of the same organism, may differ in their thermal death points. It is quite certain that as a rule typhoid bacilli are killed at a temperature below 60° C. Metchnikoff never believed that heat-killed vaccines are the most efficient.

The purpose of this study has been to find a method of sterilizing vaccines satisfactorily without heat. It has been noticed by the writer that such chemicals as phenol and tricresol, unless used in considerable strength, vary considerably in their germicidal effect on vaccines, and that in addition to the use of high dilutions of these agents, a final heating of a vaccine is often necessary to bring about sterility. It is true that a strong solution of these chemical agents is effective in killing bacteria, but it has been noticed that vaccines thus prepared are not so effective in the process of immunization. Furthermore, several instances of marked tissue injury have been noted at the sites of inoculation following the use of vaccines to which such irritating chemicals have been added.

Our object, then, has been to find a chemical agent, bland in character, which has the power of killing bacteria, but which does not materially affect their antigenic properties; that is, to get as "live" a vaccine as dead organisms can provide. Such an agent, at least for the killing of nonsporogenous Gram negative bacteria, is toluol, which the writer (3) has been using for some time in keeping cell enzymes free from bacterial growth in connection with his study of experimental cancer.

DEFINITION AND HISTORY OF TOLUOL.

Toluol is a hydrocarbon of the benzene series, having the chemical formula $C_6H_5CH_3$. This hydrocarbon (also known as toluene, methylbenzene, or phenylmethane), was discovered many years ago by Pelletier and Walker (4) as a byproduct of illuminating gas made from the resin of pinus maritima, and first named by them retinaphtha. The same hydrocarbon was later obtained by Deville (5) in the distillation of resin of tolu balsam, and was named by him benzoene. Later, Berzelius (6) gave this hydrocarbon the name toluol. It may now be obtained on a large scale from the distillation of light coal tar oil.

Toluol is a very light, volatile, refractive, colorless liquid, having an aromatic odor like that of benzene; it boils at 110.3° C., and freezes at —93° C.; the specific gravity at 0° is 0.882. On oxidation it is converted into benzoic acid. In full strength toluol is quite bland, causing no irritation of tissue. It does not hold or mix with water in solution and always rises to the top when the two are combined. Benians (7) has observed that toluol has a germicidal action on many bacteria, especially those of the Gram negative nonsporogenous organisms, and also to a considerable degree on tubercle and diphtheria bacilli, and streptococci.

ACTIONS OF CHEMICAL ANTISPETICS AND HEAT ON LIVING CELLS.

Chemical antiseptics may be divided, according to Buchner and Rapp (8), into two classes, depending on their action on living protoplasm. In the first class they place those which combine chemically with the protein constituents of the cell, such as salts of copper, silver, mercury, cyanides, fluorides, etc. The second class consists of antiseptics which do not combine with the protein constituents, such as chloroform, ether, phenol, thymol, and toluol. Their action probably is due to their solubility in the fat of the cell, and the alterations set up in the lipoidal plasma skin. It is supposed that the plasma itself undergoes change subsequent to the penetration of the plasma skin by the antiseptic, and that the dissolving of cell lipoids destroys cell substances necessary to life and growth.

It was early demonstrated that these antiseptics of the second class killed practically all nonsporogenous organisms, so far as growth and reproduction are concerned, without apparently injuring the active cell contents, such as enzymes and toxins. Because toluol apparently has the weakest effect on enzymes of all the above named antiseptics, E. Fischer introduced it to keep enzyme solutions free from bacterial growth. In contrast to the harmless action of toluol on cell enzymes and toxins, most of these important bodies (which have so much to do with cell metabolism, growth, reproduction, and poisonous effects) are destroyed by temperatures ranging from 55° to 75° C. The longer the time in which they are subjected to such heat, the more certain is their destruction. Are not these facts of considerable importance in connection with the problem of vaccine sterilization? If we desire the enzymes and toxins in full strength to stimulate the formation of antienzymes and antitoxins, we must use heat very carefully or not at all in killing bacteria for vaccines.

METHOD OF STERILIZING VACCINES BY TOLUOL.

A pure culture of the bacteria from which the vaccine is to be made is inoculated upon the slant surface of plain agar medium and incubated at 37° C. for eighteen to twenty-four hours. When sufficient growth has taken place, enough toluol is run into the tube so that the entire surface of the medium containing the bacteria is covered. The toluol is allowed to remain in contact with the bacterial growth for variable periods of time, according to the nature of the organisms to be killed. As a rule most of the Gram negative, nonsporogenous bacteria will be killed in twenty-four hours. After the toluol has been allowed to act for the necessary time it is poured off into a container for "waste" toluol (for the sake of economy), which may be subsequently filtered and used on other cultures. The agar slants containing the killed cultures are then replaced in the incubator for a short time to hasten the complete evaporation of the few remaining drops of toluol. Because of the extremely volatile character of this hydrocarbon the dead culture will be completely and quickly dried without the formation of a residue. Subcultures are then made to control the sterility of the vaccines, after which sterile salt solution is added and the dead culture carefully scraped off the medium into suspension in the salt solution. At this point a sufficient amount of the suspension is withdrawn for the counting of bacteria, which may be done according to the method of choice. If the toluol has not had too long an influence on the bacteria, the latter retain their size, shape, and staining qualities so that they may be satisfactorily seen and counted by the usual methods.

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ABNORMAL LABOR.*

Some Essentials in Its Management.

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This subject is so large and so complex that it seems almost impossible to do it any sort of justice in a brief space. The sins both of omission and of commission which are perpetrated in the management of abnormal labor are so many, and their consequences are so readily fraught with disaster, that the cardinal principles which should govern our practice in this most important field cannot be reiterated too often, be it ever so briefly. I shall limit my remarks to those cases of abnormal labor in which there is no distinct abnormality of the pelvis or of the shape of the fetus—no fetal monstrosity—and the pelvis is of normal, or approximately normal, size, and configuration. It would be impossible to include the subject of pelvic deformities in this brief discussion.

EXCESSIVE UTERINE CONTRACTIONS.

With a normal baby and pelvis excessive contractions usually spell precipitate labor. The treatment as a rule consists in—repairing the damage! If the doctor is so fortunate as to arrive on the scene before the baby does, he can diminish the force of the contractions by the administration of small quantities of ether or chloroform with each pain. Keeping the patient on her back, or even in a slight Trendelenburg posture, will aid in the protection of the perineum from serious injury. It is unwise to give a sufficiently large dose of morphine to diminish the strength of the contractions in these cases. Morphine given shortly before the birth of the child is not eliminated with sufficient rapidity by the mother's excretory organs; the child's respiratory centre will be markedly depressed, and it may be born in a state of deep asphyxia.

UTERINE INERTIA.

This subject has acquired renewed interest in recent years because of the widespread abuse of pituitary extract. The discovery of its remarkable action upon the parturient uterus has been perhaps the greatest single addition to the obstetrician's armamentarium in recent decades; but like every other good thing it is vastly abused.

There are certain rare instances in which a woman pregnant at term or beyond, cannot be made to go into labor. Her uterus will not respond to chemical or mechanical stimulation; uterine contractions do not occur. To dilate the cervix by the introduction of a succession of elastic bags and then do a version and accouchement forcé is now fortunately an obsolete procedure. It is brutal, fraught with grave danger to the fetus, and likely seriously to injure the mother. There is never an indication for great haste; the patient should be transported to a properly equipped operating room and abdominal Cæsarean section performed. Please do not misunderstand me; I am not advocating Cæsarean section in every woman with weak uterine contractions; far from it. But in those fortunately rare cases where the uterus cannot be made to contract at the very onset of labor, when every known means to make it do so has failed—Cæsarean section and not accouchement forcé is the procedure indicated.

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*Read by invitation as part of a symposium on the obstetric patient before the Yorkville Medical Society, April 17, 1916.

How shall we treat inertia in the first stage of labor—the cervix is not fully dilated, the pains are weak and ineffective, or even cease? If the patient has been many hours in labor, rest is the first essential, and a small dose of morphine followed by a few hours' sleep will often accomplish wonders. Chloral given by rectum has been recommended for this condition, but in my experience it has not proved nearly as effectual as morphine given hypodermically.

Of mechanical means to stimulate contractions at this stage, the best and safest is the introduction of the elastic bag into the cervix. The use of drugs is contraindicated. I am well aware of the "stunts" that are daily accomplished with pituitrin. Their perpetrators are even beginning to boast of them in the journals; but the stillbirths and the ruptured nteri are not so loudly acclaimed!

The mechanical rupture of the membrane is usually an efficient means of stimulating uterine contractions. It should not be attempted, however, before the cervix is fully dilated and the presenting part is engaged. Serious consequences are very apt to follow disregard of these conditions.

The disadvantages of a prolonged "dry" labor are too well known to necessitate comment. The dangers of rupturing the membrane before the presenting part is engaged are very real. I have seen, in consulting practice, prolapse of the cord, prolapse of an arm alongside the head, and face presentation in cases where the doctors ruptured the membranes early in labor to hasten matters and as they fondly hoped, to make things easy!

Inertia in the second stage of labor due to maternal weakness or exhaustion is a common condition met with in practice. It is here that pituitary extract has its legitimate field of usefulness. If the cervix is fully dilated, the head is well engaged in the pelvis, and there is no undue disproportion between the fetal head and the pelvis, one half to one c. c. of pituitrin may be given hypodermically; not to hasten a normally progressive labor, but when pains have ceased or have become very weak and ineffective. Chloroform must be kept ready for instant use should the contractions become excessively strong, or the head fails to advance. In this event the forceps, which should be ready for use before the pituitrin is injected, should be at once applied. The practitioner who would summarize for himself the use of pituitrin in labor, should look upon it as an efficient substitute for the low forceps operation.

Pituitrin may occasionally safely be employed as a *preliminary* to median forceps, but not as a substitute. That is to say, with the patient fully prepared for the forceps application and the anesthetist ready, a hypodermic injection of pituitrin is given; if with strong pains the head advances steadily, events may be awaited; if the head fails to advance, the patient should promptly be anesthetized and the forceps applied.

As to the dose of pituitrin—more than one c. c. should never be injected at one time; if at the end of half an hour or more there has been no result, or the contractions again weaken a second dose may be given. Very rarely should three doses be administered; if they fail, mechanical means of delivery should be resorted to.

PERSISTENT OCCIPUT POSTERIOR.

Never attempt to hasten labor by rupture of the membranes. If the head failed to engage, this would make it difficult or impossible to do a version which might become necessary. Dilatation of the cervix is best hastened by the introduction of the elastic bag. Before the head is engaged, it may be grasped with the whole hand, under full anesthesia, and an attempt made to rotate the occiput anteriorly. Pressure on the chin during pains favors flexion of the head and so aids rotation. When the head is firmly engaged and the progress of labor comes to a standstill, forceps are indicated. Pituitrin is contraindicated in persistent occiput posterior. If the forceps fail and the child is still alive, pubiotomy may, in selected cases, give the additional room necessary to bring the head through. It should rarely be resorted to. Cæsarean section can be considered only before rupture of the membranes, and when the aseptic conduct of labor has been perfect. Even under these circumstances the risk to the mother is smaller with a prophylactic version. When the child has died craniotomy is the operation of choice.

FACE PRESENTATION.

Forehead and brow presentations, unless corrected, terminate in face presentation. They may therefore be considered together. Preventable predisposing causes of this condition are a full bladder, full rectum, and artificial premature rupture of the membranes.

Before the head is engaged it may be possible to correct its position manually under anesthesia. The whole hand should be introduced for this procedure. If it succeeds, the hand should not be withdrawn, but the occiput should be held in place until uterine contractions have forced it into the pelvic inlet.

When the manual correction of the presentation is not possible, version should be done if conditions are right for it (membranes not too long ruptured, uterus not too firmly contracted).

Rarely labor will terminate spontaneously with a face presentation, but, unless the child is very small, with enormous damage to the maternal soft parts. With an impacted face, forceps may be attempted as a last resort before craniotomy. This is possible only when the chin rotates to the front. If the chin remains posterior, delivery of the whole head from below is impossible.

Pituitrin has no place in face presentation.

PROLAPSE OF THE CORD.

The fetal heart sounds and the pulsations of the cord should be carefully noted. If they are absent the child is dead and need not be considered. The most important point in the management of this condition is to discover it at the earliest possible moment. Therefore every patient should be examined shortly after the rupture of the membranes.

As soon as the prolapse is discovered, the patient should be placed in the knee chest or Trendelenburg posture. If the cord does not slip back it should be replaced manually or by means of a loop of tape fastened to the end of any long instrument (bougie). If these attempts at replacement fail, version should be performed if the condition of the cervix and uterus permits. If the cord is prolapsed alongside the head and cannot be replaced, a quick delivery by forceps may be attempted.

PROLAPSE OF THE ARM ALONGSIDE OF THE HEAD.

Before rupture of the membranes, this should be treated by posture, the patient lying on the side opposite to that on which the limb is down, and with the pelvis elevated.

After rupture of the membranes, the arm should be replaced manually under anesthesia, and if it shows a tendency to come down again, held out of place until uterine contractions have brought about the engagement of the head. If manual replacement fails, version is the operation of choice.

After the head is engaged, prolapse of the arm should be treated either expectantly or by forceps, depending upon the progress of the labor.

BREECH PRESENTATION.

This might perhaps be included under the heading of normal labor, but complications are very apt to occur, and where they do not arise spontaneously "meddlesome midwifery" frequently brings them about. There is no reason why a labor with the child presenting by the breech should not terminate spontaneously, and it frequently does if the doctor will only give it a chance. The general principles which govern these cases can be summed up in the lately popular term, "watchful waiting."

Inertia uteri in the first stage should be treated on the principles already enunciated. In the second stage, with the breech well down in the pelvis, pituitrin may be tried for inertia, provided that all preparations have been made for a rapid manual extraction should it prove necessary.

If a foot has come down, it furnishes a ready means of traction; before this occurs one finger may be hooked into the groin and traction made by grasping the wrist of this hand with the other free hand until the thigh and leg have been sufficiently developed to make it feasible to grasp and bring down a foot.

In the normally progressing case the doctor should do nothing but await developments. One prime essential in these cases is a watch in plain sight of the obstetrician; if more than three minutes elapse between the birth of the umbilicus and the descent of the head into the vagina, interference may shortly become imperative to save the baby. These few minutes usually seem like as many hours, and unless the time is actually measured by a watch the temptation to seize the child and attempt extraction is too strong to be resisted. It is most desirable to await the descent of the arm below the pelvic brim, if at all feasible. If traction is made before this time, the complication of extended arms is almost inevitable.

If the arms have become extended, the posterior arm should be brought down first; the accoucheur's hand being passed up into the uterus along the hollow of the sacrum, the extended arm is swept downward by a maneuvre which has been aptly described as wiping the baby's face with its hand. This can usually be accomplished as soon as the bend of the elbow is reached. When the posterior arm has been brought down, the child should be rotated until the anterior arm lies posteriorly; it is then extracted similarly to its fellow. The extraction of the aftercoming head should proceed by the familiar method of Smellie-Veit. Moderate pressure by an assistant on the mother's abdomen just above the symphysis may aid materially at this stage. It is well to remember that the head may suddenly come through with a rush, and if the operator is not braced for this the perineum will be badly torn.

It should be reiterated that all this manipulation has no place in a normal breech case. The accoucheur should merely be prepared to extract the aftercoming head if it sticks too long. If things progress normally he has only to support the child's body, and with the descent of the head bring the fetal back forward over the mother's abdomen with one hand, while he supports the perineum with the other.

If the aftercoming head cannot be delivered by traction, an attempt may be made to deliver it with forceps, which should always be ready at hand in breech cases. Should this fail, the child will be dead, and it is far better technic to perforate and crush the aftercoming head than to force it through by brute strength.

Cæsarean section has recently been advocated for breech presentation in primiparæ. With a normal pelvis this procedure need only be mentioned to be condemned.

TRANSVERSE PRESENTATION.

Transverse presentation cannot be left to nature and always warrants interference. Early in labor external version should be attempted. Failing in this, with unruptured membranes and perfect asepsis having been maintained, Cæsarean section is the operation of choice in primiparæ. In multiparæ or in primiparæ not seen until after rupture of the membrane, version should be done when not contraindicated by the condition of the uterus.

The membranes are apt to rupture very early in labor; if so, dilatation of the cervix should be aided by the elastic bag as a preliminary to version.

In the neglected cases of transverse presentation, where version is no longer feasible, morcellement should be resorted to. Cæsarean section is too risky because of the danger of infection.

PLACENTA PRÆVIA.

Wherever possible it is highly desirable to deliver every case of placenta prævia in a well equipped operating room. In any event the physician should never leave the patient for a moment during labor, once the diagnosis is established.

The treatment must depend to a considerable extent upon whether the placenta is central, lateral, or marginal. The methods of treatment at our disposal are—gauze packing, insertion of an elastic bag, rupture of the membranes, version, and Cæsarean section.

In the simplest type of marginal placenta prævia, rupture of the membranes with the descending head acting as a tampon will prove all that is necessary to check the hemorrhage. Indeed some cases can be treated expectantly in the hope that the head will act in just this fashion without rupture of the membranes. Should bleeding become active, the membranes can at once be ruptured.

Gauze packing should be avoided, if at all possible. It predisposes to infection even with the most perfect technic. It may become imperative, however, if there is marked bleeding before dilatation of the cervix has occurred. Once the cervix is sufficiently opened, rupture of the membranes and insertion of the elastic bag is far preferable. This not only checks the bleeding, but helps to dilate the cervix and prepare for subsequent operative delivery should it become imperative.

After sufficient dilatation of the cervix, if the elastic bag does not control the hemorrhage until the head has come down, version with the pulling down of a leg to act as a compressor should be performed. Whether or not this should be followed by the immediate extraction of the child depends upon whether the hemorrhage has been checked or not. The policy of waiting for the natural forces to expel the child is much more favorable to its being born alive.

For central placenta prævia the operation of choice today is abdominal Cæsarean section; this applies especially to primiparæ and where the cervix is only slightly dilated. When section is not feasible, all the foregoing methods of procedure are applicable until the cervix is sufficiently dilated to perform a version. Once this stage of labor has been reached, the operator's hand must force its way right through the placenta, grasp a foot, and bring down a leg.

In the exigencies of general practice, version in placenta prævia will still give the best results for the mother.

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Contemporary Comment

Social Insurance.—One of the important reports to the House of Delegates of the American Medical Association at Detroit, observes the *Journal of the Missouri State Medical Association* for August, 1916, was on social insurance. This report was largely statistical, and presented in a very comprehensive manner the workings of social insurance laws (or health insurance, as it is sometimes termed) as established in Germany and England, where the system has been in force and given satisfaction for several years. The report indicated that this method of dealing with health problems will soon become a general practice in this country, and therefore the medical profession should be prepared to adjust itself to the new conditions. A recent bulletin from the American Association for Labor Legislation says:

"In response to public interest in health insurance the Massachusetts legislature has created a commission to study social insurance with special reference to sickness. The State department of health and the bureau of statistics are directed to cooperate with the commission of nine members, which will prepare a report and recommend the form of legislation to be introduced in January, 1917. California has a similar State commission already at work on this problem, which is attracting wide attention since the introduction this year of bills for health insurance in Massachusetts, New York, and New Jersey. Proponents of this legislation believe it will bring about a movement for 'health first' comparable to the safety first campaign which followed workmen's compensation for accidents."

The American Association for Labor Legislation has given much study to health insurance, and has prepared a tentative bill for introduction in State legislatures, which represents the most recent measure that has been constructed for inaugurating health insurance as a State law.

The Sore Head.—It is plain to any one interested in the economic and social problems of medicine, remarks the *Buffalo Medical Journal* for August, 1916, that which is popularly termed sore headedness is a considerable and serious obstacle to professional unity, even to professional efficiency in its potential benefits to the community. If the sore head could be eliminated, the profession and the laity would both be immeasurably better off. But it is only fair to recognize that the sore head is, to some degree, a secondary evil. That is to say, his Ishmaelism is more or less justified by the existence of primary evils to which his own attitude is merely a natural reaction.

Once we commented on the difference between two brothers, one of whom had risen far beyond his original status but whose success was checked by his general reputation of being tricky and dishonest, while the other, though in humble circumstances, seemed to be perfectly upright. "Bless you," was the reply, "——— (the second brother) is eating his heart out because he does not know enough to be as much of a shyster as ——— (the former)." This is the trouble with many sore heads. It is not so much the existence of an ethical evil that troubles them as the fact that they are the victims and not the perpetrators of it.

We have heard of a physician, by no means a sore head, who, toward the close of an active independent career, very successful, too, expressed the regret that, instead of becoming known as one who would always protest fearlessly against an evil however prominent its source, he had not acquiesced and thus gained friendship and prestige from the very sources that he had antagonized. Such regret is itself regrettable. The sore head is not only a general nuisance, but he damages his own cause most of all. The essential trouble with him is his personal bias. He is thinking too much of the effect of general conditions on himself, too much of the individual source from which such conditions emanate. If he will think in terms of all who are injured; if he will act without malice to any one but against wrong conditions in general, he will cease to be a sore head and will exert a real influence toward reform.

Editorial Notes and Comments

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NEW YORK, SATURDAY, AUGUST 19, 1916.

THE UNUSUAL.

There has been much ado, there has been much running to and fro, much offering of prizes for miraculous cures developed on short notice, and much newspaper and other talk over the alleged presence of an epidemic of anterior poliomyelitis. It is quite right that there should be active agitation over this disease, but the only reason that there is this unusual stir, is that infantile paralysis is uncommon, and that its epidemics are, for this country, comparatively new. We have had diphtheria and measles and scarlet fever with us for a long time, and yet, we believe, no large prizes have been offered for their cure, no specialists have been hurried to the scene of the epidemic to see what could be done to check its spread, and the national government has never had a hand in its suppression. Even local authorities have seldom taken the trouble to clean up on a large scale in order to check an epidemic of these diseases. Yet the death toll from diphtheria is still approximately 25,000 for the United States each year, the mortality from scarlet fever is six times that from anterior poliomyelitis, while its annual incidence in all our cities usually far surpasses that of the worst outbreaks of the more unusual malady. Even tuberculosis, about which there was a wave of excitement some time ago, is fairly holding its own with a death rate reduced only from 201 to 147. Infantile paralysis is always present in the community, but it leaves a large percentage of cripples in its wake, and so seems the more dreadful. Doubtless this has something to do with our fear of it, but the crippling from scarlet fever alone, the impaired hearing, damaged kidneys, and heart defects, if not so evident, is more serious than an abbreviated and weakened limb, and the army of scarlet fever cripples is larger than we realize. The same is true of measles, diphtheria, whooping cough, typhoid, and malaria.

We become attached to old acquaintances, especially those that were once believed to have been sent for our chastisement and the correction of our evil ways, and perhaps, after all, we like to have the plagues (no one calls *them* such) of the good old infections with us. At any rate, no one is making any great fuss about them commensurate with that which is being made over this less common and less destructive disease. We are reminded of the incident related by an African explorer looking for sport with big game. A native, finding he was interested in crocodiles, told him that at a nearby village he could get, without difficulty, a shot at a fine specimen. The hunter expressed much skepticism over the presence of a beast of the kind described so near to human habitation, but, being further assured by the man, he followed his guidance, and, close by the village, he found an enormous beast grown obese and lying, lazy or satisfied, on the bank of the stream. He had no difficulty in dispatching it with a bullet, to the evident satisfaction of the natives, who told him that for some years he had made his meals on unwary children or adults of the village. To the hunter's wondering inquiry why they had allowed him thus to prey upon them for so long they replied, "Oh, powder and lead are very expensive, and we are a poor people."

In our attitude toward the familiar diseases which take enormous toll of innocent children and adults we are very like the people of this poor African village. Our dollars and cents seem very precious and we use them for other purposes than health protection. We cannot, or at any rate do not, afford even a national department of health, though we do have a department much devoted to the health of plants and animals. We often have no local health departments, and where we have them they are usually badly hampered for lack of both funds and moral support. We are as obtuse as the Africans as to the economy of interference with disease. If popular agitation over the presence of anterior poliomyelitis could only help to open the eyes of the public to the more disastrous but more familiar sources of untimely injury and death—to our other annual disease plagues—we might even be thankful for its prevalence during the past two months.

PATIENCE IN THE TREATMENT OF POLIOMYELITIS.

Much of our treatment of the weakness and deformity which may result from poliomyelitis fails owing to the lack of proper following up. This is the opinion of Dr. Francis Hernaman-Johnson, who communicates to the *Lancet* for July 29, 1916, the results he obtained in a little girl whom he saw for the first time in 1911. He gives the following details concerning the patient's condition at that time:

> The patient, a girl aged five years, suffered from infantile paralysis of the right lower limb. The attack had occurred at the age of eighteen months. The child was wearing an appliance weighing six pounds, the main feature of which was a heavy steel running up the leg from ankle to waist and secured round the latter by a metal band. The patient progressed by a curious hopping motion, dragging the affected limb behind her, with the foot everted almost to a right angle. The limb had shown no improvement for two years. On examination all the muscles below the knee were found to be completely paralyzed, so that the condition known as "flail ankle" obtained. The thigh and buttock muscles were small and weakly, but they responded fairly well to faradic stimulation. Partial subluxation of the knee joint was also present, partly due to the lack of tone in the biceps and quadriceps femoris, but chiefly depending on the complete failure of the gastrocnemius. The whole limb was shrunken, and showed two and one half inches of relative shortening. It was, moreover, cold and clammy to the touch, with a temperature 2° F., below that of its fellow, a condition judged to be in part due to the weight and rigidity of its supporting apparatus. As is frequently the case in such limbs, sensibility to pain and changes of temperature was greatly diminished, although tactile sensation remained unaffected. A careful electrical investigation led the examiner to conclude that the leg muscles were probably hopeless, but the parents were told that the child could do without external irons and need wear no support of any kind above the middle of the thigh.

A special boot was constructed, weighing only two pounds, in which light steel supports were concealed. Under treatment by electrical stimulation a very rapid increase in size and power occurred in the buttock and thigh muscles. At the end of two months—when the treatment was suspended—there was not, however, any sign of improvement below the knee.

The child has been seen twice yearly until recently and has had about a month's electrical treatment on each occasion. At the end of two years Doctor Hernaman-Johnson was surprised to find that power was beginning to return in the calf muscles and the "relative shortening" had decreased from two and a half to one and a half inch. He took away some of the support from the knee, and a year later removed it all. Early in 1915, four years after the patient was first examined, some amount of control on the ankle joint had been regained, and the affected limb is now only one inch shorter than its fellow. The child now wears an ordinary boot with a little leather stiffening, and an internal raised sole. The curve of the leg has become normal, and the size and density of the bones have increased. In a favorable case, the relative shortening of the limb should grow less year by year, and therefore any boot extension must be altered accordingly.

Doctor Hernaman-Johnson offers three rules which are always to be kept in mind: 1. A muscle which is chronically overstretched cannot recover. It must be relaxed by means of a suitable splint. 2. When such a muscle responds moderately well to Faradism, recovery will be greatly hastened by daily rhythmical electrical stimulation. The relaxed position must, however, be maintained throughout. 3. Exercise, whether voluntary or electrically provoked, must never be carried to the point of fatigue. The contraction of a muscle should be not less vigorous—with the same stimulus—at the end of a sitting than at its beginning. It is better that recovery should be delayed by overcaution than that it should be made impossible by excess of zeal.

ABUSE OF THE SALINE SOLUTION.

There has sprung up an indiscriminate use of saline solution, especially the normal salt solution, both intravenously and by enteroclysis, in the belief that it had extraordinary therapeutic qualities in shock following operations, in nephritis as a flushing medium, and in anemia following severe hemorrhages, in the latter instance to replace the actual amount of fluid lost in the hemorrhage. In the disturbance of the normal inorganic balance of the system by the introduction of sodium chloride solution the kidneys must abandon elimination of organic acids and the toxins to take care of the salt introduced, in order to restore balance. In toxemias, therefore, it may be seen that the introduction of salt solution may be a positive hindrance to elimination by the kidney of the very toxins or acids that the salt solution is intended to help eliminate. In relieving postoperative thirst Trout found that ordinary hydrant water was far more efficacious and that more water was actually absorbed when given by enteroclysis than if salt solution was used by the same method. On the other hand, in true operative shock in which there is vasomotor paralysis, and overfilling of the splanchnic vessels, and an acute dilatation of the right heart, the addition of normal salt solution to the afferent vessels may be of immediate disastrous effect.

In the secondary anemias with low hemoglobin content the addition of large amounts of normal salt solution is often just enough to dilute the blood and reduce the hemoglobin below vital requirements. A patient who is otherwise slowly recovering, and in whom hemoglobin is slowly increasing, is often put beyond the possibility of recovery by this useless reduction of the hemoglobin. The flushing of the kidneys in nephritis with normal salt solution, where the urine is already highly charged with sodium chloride, decreases proper elimination of water and causes the retention edema common in nephritic conditions. Moreover, the addition of an isotonic or of a hypertonic salt solution to blood that is already hypertonic, results in grave evidences of high blood pressure.

McKelvy found that where it was desired to flush the kidneys in toxemias or otherwise, or to reduce acidosis if that seems to be the greatest danger, the use of a ten or fifteen per cent. glucose solution was not irritating to the kidneys, nor toxic or harmful in any way. The kidneys were not taxed to eliminate it nor was there an inorganic disturbance of balance to restore it. In fact, in acidosis this solution acted better than the sodium chloride.

Finally, it is to be remembered that in using this form of hydrotherapeutics, introduction of saline solution into the circulation, directly or indirectly, may embarrass an already overfilled right heart; too much salt solution may overtax an already weakened or otherwise engaged kidney; and it may act to reduce an already insufficient hemoglobin. Thus the use of saline infusions is often contraindicated in conditions of high blood pressure, acidosis, low hemoglobin content, and often in postoperative shock.

SLEEP.

In a recent number of the *New York Times* there was published a pathetic open letter "written by one who tried to play Edison's game of much work and little sleep, and who has lost his health in the process." Doubtless, from an early time the foolishly ambitious have tried to get along with less sleep than nature requires, and the curious public (curious subjectively and objectively) is always more interested in the freakish doings of the few than in the sensible conduct of the average human being. They are little impressed with the miracle of everyday life. Mr. Edison, being a scientist, must needs be a good example of correct sleeping habits, but, alas, when it comes to caring for his body a scientist is often more of a fool than his less learned fellow mortal. We do not know how much sleep Mr. Edison requires or takes, but we are informed that he is far from being in the most enviable state of health. We do know, that most great men have needed more sleep and have taken more than has been credited to them. In one of our standard works on therapeutics the writer states that Napoleon took but four hours of sleep. Had the writer been as careful in his research in this matter as in others he would have found that Napoleon, who was blessed, if ever man was, "with the constitution of an ox," took between six and eight hours of sleep, and though he could go for long intervals without rest, always made up for such loss, on one occasion sleeping for thirty-six hours at a stretch. Benjamin Franklin, who was as thrifty of his time as he dared to be, and who was very robust, limited himself to six hours of repose but not less, and if the history of the robust great were looked into carefully it would be found that they had about as much sleep as the average man, and certainly few of them were foolish enough to try to get along with less than they craved. If one desires a commentary on the woes of sleeplessness he has but to read the autobiography of Herbert Spencer.

It is a greater gift to be able to sleep "at will" and under any circumstances than to do with little sleep. More time is wasted in getting to sleep than in sleeping. On the other hand, there is little doubt that too long sleep, too protracted bodily relaxation, is not best for the human organism, and many of our relaxed young people, with no regular employment and more time than they know how to consume to advantage, would be better for spending less time in bed. A prescription for early rising would do them good. The physician needs as much sleep as the next person, and when he is robbed of it, ought to make it a point to have his nap to make up for it. Only so can he expect to be abundantly awake at his work and to keep going for the allotted span of years of labor.

A SIMPLE DEVICE FOR THE DISINFECTION OF DEEP SINUSES.

When he first had under his care in the Red Cross hospital cases with septic sinuses Dr. F. de Coverley Veale, of Mumbles, England, experienced difficulty in getting any disinfectant into them so as to reach to the deeper parts. He then asked a large Bristol manufacturing concern to make a German silver cannula to fit a hypodermic syringe. This has been a most successful method of washing the sinuses with hydrogen peroxide or any other solution in small quantity, and appears to hasten healing very materially; liquor alantoininæ has also been used in this way with success. The cannula can be bent in any way required, and the blunt end prevents it doing harm to the tissues. Three inches is a convenient length for the cannula, according to the deviser's statement in the *British Medical Journal* for July 8, 1916.

HAY FEVER AND ITS PREVENTION.

This is the season when that troublesome complaint, hay fever, is prevalent. Undoubtedly there are certain persons who have an idiosyncrasy for the affection, and as soon as the time arrives when the pollen is in seed, all the disagreeable symptoms which are the features of the disorder are in full sway. In *Public Health Reports,* July 21, 1916, Dr. W. Scheppergrell writes concerning hay fever. There are many weeds which are responsible for hay fever, and it should be borne in mind that the grasses are also on the hay fever list. It is probable, too, that the majority of weeds which are found in great profusion and the pollen of which is abundant and wind-borne, are the cause of hay fever to some persons. It has been found that in most parts of the United States from one to two per cent. of the population suffer from hay fever at some portion of the year, indicating that its victims may be counted by scores of thousands. Scheppergrell states that the question of susceptibility is complicated, but in this respect does not differ materially from susceptibility in other diseases. Hay fever is common in children, but the reason that it is not more generally detected is because such attacks are usually mistaken for "colds."

With regard to treatment, thus far no method has given satisfactory results. So far as prevention is concerned, the means toward the attainment of this object are much more evident. The first most important step in this direction is the education of the public in the responsibility of pollens of weeds in causing hay fever. When the public realizes that the common weeds are the cause of suffering to many persons who may be living at a considerable distance, it will view these weeds from a new angle and will make use of one of the many ways of destroying them, or at least preventing them from reaching the stage of pollination. Scheppergrell is of the opinion that legislation can accomplish much in the way of prevention of hay fever. In fact, many States have enacted laws to control the growth of weeds with a very large measure of success. Of course, in order that uniform and complete results should follow the enactment of any laws it will be necessary for legislation to be brought forward for the control of hay fever weeds in the various States.

Obituary

JOHN BENJAMIN MURPHY, M. D.,

of Chicago, Ill.

The medical profession has met with a serious loss in the death of John Benjamin Murphy, one of the world's greatest surgeons, who died suddenly on August 11, 1916, at Mackinac Island. Dr. Murphy had been in poor health for many months, suffering from heart disease. He was born in Appleton, Wisconsin, on December 21, 1857. He received his early education in the High School of Appleton and was graduated from Rush Medical College, Chicago, in 1879. After three years of practice he went to Germany, where he studied for two years, and returning to Chicago soon became a leader, especially in abdominal and bone surgery. He was the head of the department of surgery and clinical surgery in Northwestern University Medical School, and had been professor of clinical surgery in the Chicago Post Graduate Medical School since 1895. He was also consulting surgeon to the Cook County and Alexian Brothers hospitals Much of his best work was done as chief surgeon to Mercy Hospital, and it was here that he devised many of his most successful and unusual operations. He was also attending surgeon to the West Side Hospital, and in 1898 became first lieutenant in the Medical Reserve Corps of the United States army.

THE LATE DR. JOHN B. MURPHY.

In 1899, in Chicago, he devised a small metal ball, now known as the Murphy button, for uniting severed intestines, a device which did much to revolutionize methods of intestinal surgery. As early as 1892, in New York, Doctor Murphy had successfully used this button in a case of gangrene of the intestines. In 1898 he advocated the practice of inducing artificial pneumothorax by compression of the affected lungs with nitrogen, a procedure of acknowledged value. His success in grafting cartilage and replacing bone tissue, in the estimation of the laity, was little less than miraculous.

In 1911 he received the honor of election as president of the American Medical Association; in 1902 he received the Lætare medal from the University of Notre Dame, and in 1908 was granted the degree of Master of Science by the University of Sheffield, England. His talents were recognized freely by surgeons abroad as well as in the United States. He was a fellow of the American Surgical Association; life member of the Deutsche Gesellschaft für Chirurgie, Berlin; the Société Chirurgicale, Paris, and many of the leading medical societies of Illinois and the Middle West. When Colonel Roosevelt was shot in Chicago, October, 1912, Dr. Murphy was called to take charge of the case. On June 16, 1916, Dr. Murphy received the collar and cross of the Order of Saint Gregory the Great. In his inaugural address as president of the American Medical Association, in 1911, Dr. Murphy not only advocated the highest standards of medical education, but also expressed himself strongly in favor of popular medical instruction through competent medical contributions to the lay press. He had been a frequent and valued contributor to the NEW YORK MEDICAL JOURNAL.

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News Items

Johns Hopkins Hospital Abandons Twilight Sleep.—After more than a year's use of the twilight sleep method in childbirth, the obstetricians of Johns Hopkins Hospital have discontinued its use. They concluded that the method was too dangerous and the menace to the life of the child too grave. They found that it could be used with safety only under exceptional circumstances and with the most skilful supervision.

A Directory of Health Authorities.—A directory of the State and insular health authorities of the United States has been compiled by the United States Public Health Service which will be of value to all health officers and others interested in public health activities. The pamphlet is Reprint No. 344 from the *Public Health Reports*, and may be obtained from the superintendent of documents, Government Printing Office, Washington, D. C., at five cents a copy.

Personal.—Dr. Albert Warren Ferris, formerly medical expert and superintending director for the Commissioners of the State Reservation at Saratoga Springs, has gone into practice in that city. The commission was abolished and there is no physician now connected with the State control of the mineral springs or bath houses.

Dr. Isham G. Harris, formerly superintendent of the Mohansic State Hospital, has been appointed superintendent of the Brooklyn State Hospital, to succeed Dr. Elbert M. Somers, who resigned recently on account of ill health and severed his connection with the institution on August 1st.

American Public Health Association.—The forty-fourth annual meeting of this association will be held in Cincinnati, October 24th to 27th, under the presidency of Dr. John F. Anderson, of New Brunswick, N. J., formerly assistant surgeon general of the United States Public Health Service. The official headquarters of the association will be at the Hotel Sinton, and the general sessions will be held at the Hotel Gibson. The association is divided into the following sections, each of which has arranged an interesting program: Public health administration, laboratory, sanitary engineering, vital statistics, sociology, and industrial hygiene. A preliminary program of the meeting has been issued which shows that in addition to the reading and discussion of papers on topics relating to special phases of public health work an elaborate program of entertainments has been prepared by the local executive committee, of which Dr. J. H. Landis is chairman, Dr. William H. Peters is secretary and treasurer, and Dr. E. O. Smith a member. For full information regarding the meeting, address the American Public Health Association, 755 Boylston Street, Boston, Mass.

A Symposium on Occupational Diseases.—At a meeting of the American Chemical Society, to be held in New York, September 25th to 30th, the program will include a symposium on occupational diseases which will be presided over by Professor Charles Baskerville, head of the department of chemistry of the College of the City of New York. Among the topics which will be discussed are the chemical trades, prophylaxis in chemical industry, diseases incidental to work in aniline and other coal tar products, cedar lumber, mines, and explosives. There will be a general discussion by leading authorities of the country, among them being Dr. W. Gilman Thompson, of New York, Dr. F. L. Hofman, Dr. J. W. Schereschewsky, G. P. Adamson, H. K. Benson, W. A. Lynott, Alice Hamilton, and J. B. Andrews.

Army Medical Corps Examinations.—The surgeon general of the army announces that preliminary examinations for appointment of first lieutenants in the Army Medical Corps will be held on September 5, 1916, at points to be hereafter designated. Full information concerning these examinations can be procured upon application to the Surgeon General, United States Army, Washington, D. C. The essential requirements to secure an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty-two years of age, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as an intern after graduation. In order to perfect all necessary arrangements for the examinations, applications should be forwarded at once to the Adjutant General of the Army. There are at present over 200 vacancies in the Medical Corps of the Army.

A Special Infantile Paralysis Number of Health News.—Commissioner Hermann M. Biggs, of the New York State Department of Health, has devoted the entire August issue of *Health News* to the subject of infantile paralysis. Dr. Simon Flexner, director of laboratories in the Rockefeller Institute for Medical Research, contributed the leading article, in which he presents a summary of what is known about the disease. The treatment of infantile paralysis, with especial reference to the earlier stages, is taken up by Dr. Robert W. Lovett, of Harvard University and the Children's Hospital of Boston. Doctor Lovett writes at some length on various aspects of the disease and describes the courses of treatment for the acute, convalescent, and chronic stages. Doctor Biggs, in an article regarding the epidemic, notes that the control of the disease becomes most difficult because it is not easy to make an accurate diagnosis. He expresses his appreciation of the support which he has received not alone from the administrative staff of the State Department and the local health officers, but also from private physicians, railroad officials, and the press throughout the State.

The Poliomyleitis Epidemic.—According to the health department, 133 new cases of infantile paralysis were reported in the city of New York on August 16th, with 34 deaths. The total number of cases reported up to that date was 6,653, with 1,497 deaths. Of the total number of cases, 3,480 were treated in hospitals, 2,305 patients receiving treatment in the hospitals of the department, 525 in other city hospitals, 591 in private hospitals, and 59 at Swinburne Island. Up to and including August 2d, a total of 336 cases were reported in New York State, exclusive of New York City. Fifty additional cases outside of New York City were reported to the State Department of Health for the twenty-four hours ending at 5 p. m., August 15th. The immigration laws have been suspended in order to permit the entry of nurses from Canada who have been engaged by the Health Department. September 25th has been set as the earliest date at which the public schools of the city will be opened with the understanding that this date may be further postponed and that two weeks' notice of the opening of the schools will be given by the authorities. Health authorities from thirty-eight States met in Washington on August 17th to exchange views on the disease with the Public Health Service and others who had been invited by Surgeon General Blue to attend this conference.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

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THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Department of Biology, Olivet College.

Thirty-third Communication.

INFLUENZA.

In the absence of any specific treatment for influenza, little else can be done medicinally other than to make the patient less uncomfortable, and to offset adverse symptoms. Usually in this illness certain definite symptoms are present, such as severe headache and lumbar neuralgia, considerable prostration, and bronchitis, and not infrequently, complications of the heart, lungs, and nervous system. Meeting these various symptoms as they arise is the physician's main duty.

The pains of the head and back seem to be due largely to localized congestion of the meninges and neural sheaths, and do not seem amenable to medicines; at present, therefore, we must have recourse to those drugs which either dull the perception of pain, as opium, or interrupt at some point the transmission of pain impulses, as acetphenetidin.

Sometimes the use, at the onset of the disease, of a large dose, 0.5 gram, of Dover's powder, taken with a small dose, 0.06 gram, of acetphenetidin, together with copious libations of a hot innocent drink, like weak tea, will either apparently abort mild cases or else, in severe attacks, carry the patient more comfortably through the earlier myalgic stages. The combination here suggested serves to lessen perception of pain, causes a dilatation of the cutaneous bloodvessels with accompanying augmentation of hidrosis, and to some extent may increase hemic metabolism.

Quinine has been advised for the neuralgic pains, but unless quinine has a selective germicidal action on the influenza bacillus it is difficult to see wherein quinine would alleviate the pain at all. One writer has made this curious statement: "It (quinine) not only serves to reduce the temperature, but also to sustain the vital forces, to control the nervous symptoms, and lessen the tendency to inflammatory reactions." Quinine may be an indifferent antipyretic, but the other statements concerning the alleged value of quinine must be deemed insufficiently considered. Quinine is a protoplasmic poison, it diminishes the number of leucocytes, destroys some of the erythrocytes, produces degenerative changes in both optic and auditory nerves, irritates the alimentary tract and glands, and interferes more or less with cellular metabolism throughout the body. The evidence of pharmacodynamics does not support the use of quinine in influenza.

The prostration, being largely due to accumulating bacteriotoxins, may be relieved to some extent by a flushing of the alimentary tract, and by a washing of the blood stream through drinking liberally of hot beverages or by taking warm saline enemata. One writer advocates the administration of a grain of calomel every three or four hours for a day or more, but the severe purging and marked tenesmus which this would frequently cause, besides the ever present possibility of mercurial poisoning, make such heroic treatment inadvisable. It is not duodenal irritation that is needed, but a clearing of the bowel and the temporary establishment therein of a considerable exosmosis; for this purpose, a saline is of better service than calomel.

The mental depression and occasional sleeplessness are best treated by cool spongings and the ice cap, with complete rest and quiet during the sponging intervals.

Remedies for the treatment of the attendant bronchitis are not satisfactory. Codeine, by lessening the perception of trachial irritation, often reduces the frequency of a too harassing cough. Ammonium chloride, in the form of nascent vapor, may have some helpful influence in promoting ease of coughing, if we accept the assertion that this chloride promotes fluidity of mucous secretion.

For the coryza a recent text states: "Inunctions of animal fats over the forehead and bridge of the nose are useful." One can but wonder why a vegetable fat would not be equally efficient. The massage, by counter irritation, or a possible reflex, might help a little, but any peculiar potency existing in the animal fat simply applied requires explanation. This belief used to be commonly held by mountain grandams, but is rarely promulgated nowadays by college teachers.

The complications are to be met by suitable drugs or measures. Threatened heart failure is to be parried with known cardiac controllers; excessive nervous manifestations may be controlled by the cautious use of opiates, sometimes supplemented by the cord irritant, strychnine. Rheumatoid symptoms indicate need for further stimulation of the several emunctories.

Autoserobacterine.—Michael G. Wohl (*American Journal of the Medical Sciences,* August, 1916) gives the following technic for the preparation of autosensitized vaccines: 1. A pure culture is obtained from the lesion on solid medium. Three ordinary culture tubes are sufficient. 2. To each tube one c. c. of sterile normal salt solution is added. Shake the fluid so as to bring the microorganisms into suspension. To facilitate the washing off of the bacteria use a platinum loop. 3. Transfer the bacterial emulsion into a sterile tube to which sterile glass beads are added to break up the clumps. 4. The bacterial emulsion is standardized by Wright's method of counting the proportion of red corpuscles and bacteria in the unit of equal parts of blood and bacterial emulsion, and proper dilutions are prepared. 5. The vaccines are now sterilized in a water bath at 56° to 58° C. for thirty to forty-five minutes. 6. Blood is obtained from the patient from a prominent vein at the elbow, five to ten c. c., under strict asepsis, placed in a cold place for three hours, and serum pipetted off. 7. Inactivate the serum at 56° C. for half an hour. 8. Add from one to three c. c. of the inactivated serum to vaccine No. 1, and No. 2, if enough serum is obtained, and place in incubator at 37° C. for six hours. For subsequent doses obtain more blood. 9. Culture vaccine to test its sterility and if it is found sterile, administer it hypodermically.

Specific Treatment of Infantile Paralysis.—Abraham Sophian (*Jour. A. M. A.*, Aug. 5, 1916) considers the treatment of the acute stage of infantile paralysis under the following topics: The relief of hydrocephalus; the intraspinal injection of sera; control of special symptoms; general symptomatic treatment; and the orthopedic treatment. In a large number of the cases of this disease in their most acute stages there will be symptoms of cerebral or medullary disturbance which is almost always due chiefly to the presence of hydrocephalus. This is the usual cause of respiratory embarrassment or failure. For this condition the most imperative treatment is the removal of spinal fluid through lumbar puncture. The fluid may safely be removed until the pressure falls to normal and the procedure may be repeated whenever there is a return of symptoms of pressure. It has been shown in the case of other meningeal diseases that the injection into the spinal dura of normal serum provokes a prompt and marked hyperleucocytosis with polynuclear cells greatly predominating. This is not a specific reaction, but one merely due to the introduction of a foreign protein. This hyperleucocytosis should theoretically be of considerable value in promoting recovery in poliomyelitis. A small number of cases have been treated with such injections and the indication seems to be that the injection of normal serum—horse or human—will prove of considerable value. At least the measure is entirely devoid of danger and it should be given a thorough trial before rejection or definite adoption. In a small series of cases serum from convalescent human cases of the disease was injected intraspinally, but the results were apparently no better than those obtained from the use of normal nonimmune serum.

A Plan of Treatment in Infantile Paralysis.—Robert W. Lovett (*Jour. A. M. A.*, Aug. 5, 1916) affirms that during the first stage, which lasts to the disappearance of all tenderness or from one to three months, the essential requirement of treatment is absolute rest and the prevention of deformity. No serum, drug, or proceeding is known to abort the disease or prevent the paralysis. Near the end of this period the immersion of the affected parts in a warm salt bath permits some exercise and is beneficial. The second stage lasts from the end of the first for two or more years, after which the disease may be regarded as having become more or less stationary. In this stage the main consideration is the condition of the muscles, which are far more commonly weakened rather than totally paralyzed. The ambulatory treatment with careful avoidance of fatigue and deformity is best during this period. Braces or splints should be used only while the patient is actually on his feet and their only purpose is to correct deformity and prevent the stretching of greatly weakened muscles. It may be necessary to institute regular methods of reeducation to teach the patient to walk. Combined with the ambulatory treatment, measures designed to influence the muscles favorably should be employed. Massage is helpful if used in moderation, and if it is borne in mind that its value is only local in the improvement of the circulation in the manipulated muscles. It is likely to be harmful if used violently or for too long a time. No form of electrical stimulation seems to be of any value, and much harm has been done by the use of strong currents. The use of local heat in the form of electric light baths or hot ovens is of aid in improving the circulation in the muscles and the conditions for their contraction. The most important and valuable measure of all, however, in this stage is that of muscle training, which should be carried out by an experienced person under the constant guidance of the physician and controlled by careful determinations of the degree of gain in muscular strength. If there is any type of fixed deformity it must be corrected before any treatment is undertaken, in order to secure good results. In any case fatigue and overtreatment by massage or exercise must be most sedulously avoided, which may be accomplished by frequent measurements of the power of the various muscles before and after treatment. The indications for treatment in the third stage are to continue the plan adopted in the second stage, and to resort to some one or more of the suitable operations for the correction of deformity and the improvement of function, such as tendon transplantation, etc.

Treatment of Hay Fever.—P. Bonnier (*Bulletin de l'Académie de médecine,* June 27, 1916) asserts that no neurotic disorder is more readily and promptly curable than hay fever. The affection is one involving the defensive centres of the respiratory passages in the medulla, the sensory fibres originating in the vicinity of these centres projecting the irritation of the latter in the form of intolerable pruriginous impressions in the vertex, eyes, nose, palate, ears, larynx, chin, etc. In the mucous surfaces exposed to the contact of irritating particles, such as train dust, pollen, and odoriferous material, the itching becomes particularly violent and, in its turn, keeps up the central irritation. To check the attack and break up the neurosis, restoration of these centres to their normal type of activity through a forcible physiological impression is all that is required. The point of intranasal itching, often precisely located by the patient, affords direct communication with the centres which are to receive this impression. By testing the sensitiveness of the anterior nasal mucosa with the tip of a fine galvanocautery, without preliminary local anesthesia, a point will easily be found at which the least contact will cause the patient to flinch and induce immediate congestion of the conjunctiva and lacrymation. At this point a slight, hardly perceptible cauterization should be carried out. This startles, without irritating, the centres under treatment, and the effect on the mucosa persists long enough to allow these centres to regain their functional equilibrium. After a perfunctory paroxysm the patient is, in twenty-five per cent. of the cases, at once freed from his ailment. In the remainder, several treatments are required. Persistently rebellious cases are the exception, and the procedure, as a rule, not only checks the hay fever attack in that season, but removes predisposition to the disease, which fails to reappear in the following year. This form of treatment has been applied by the author for twenty years, with unvarying, favorable results.

Corsets versus Backache and Fatigue.—Alice S. Cutler (*Boston Medical and Surgical Journal,* August 3, 1916) urges that more attention be paid to the corsets worn by women, as she finds this to be a matter into which the family physician is not accustomed to inquire. For the past two years she has been experimenting with corsets on patients, nurses, and friends, and has found that much relief may be obtained by wearing front laced corsets, instead of those that lace in the back. They should be put on while the patient is lying on her back with her buttocks supported by a pillow. Her own personal experience is the same as that of over four hundred women, that she does not become fatigued by work so easily and feels better when she wears a front laced corset.

Indications and Contraindications for Pneumothorax.—Clive Riviere (*Lancet,* July 15, 1916) finds that the most strikingly beneficial results are to be obtained from pneumothorax in that group with clinically unilateral pulmonary tuberculosis with advanced lesions, including fibrosis and cavitation, but with little evidence of marked activity. Though clinically unilateral, x ray examination will show marked peribronchial tuberculosis radiating from the hilus. So long, however, as there is no clinical evidence of tuberculosis in the second lung, pneumothorax may be used with great benefit. Even the disease in the better lung usually markedly improves under this treatment. In apical tuberculosis pneumothorax is usually contraindicated unless the process is restricted to one lung or unless the disease in the other lung is extremely early and slight. Further, such cases of early phthisis are the most amenable of all to the other methods of treatment commonly employed. Where there is diabetes, kidney disease, or circulatory complications, pneumothorax is also contraindicated. Unless very far advanced laryngeal tuberculosis is not a contraindication. The occurrence of hemoptysis is almost always an imperative indication for the use of pneumothorax.

Prophylaxis of Cerebrospinal Meningitis, Grippe, Eruptive Fevers, and Mumps by Vincent's Method.—Lefas (*Presse médicale,* June 29, 1916) strongly recommends the measures suggested by Vincent and recently successfully applied by Coulomb in military practice in the prevention of epidemic meningitis, grip, sore throat, etc., i. e., of affections developing in the nasopharynx or oral cavity or in which these parts serve as portal of entry. Six hundred young soldiers were ordered to wash out the mouth and gargle with Lugol's solution or with a five per cent. dilution of Labarraque's solution (Liquor sodæ chlorinatæ, U. S. P.). As a result, the number of cases of angina or pharyngitis markedly diminished, immediately increasing threefold when the procedure was discontinued for a week, and promptly dropping to nil when it was resumed. Meningitis then appearing in epidemic form, the occupants of the rooms in which the disease occurred were isolated and ordered to gargle with dilute hydrogen dioxide solution and practise antiseptic inhalations. No results being thus obtained, more comprehensive measures were taken. The entire force of 600 men was kept in the barracks for four or five days. Gargling and mouth washing with hydrogen dioxide, diluted one in ten, three times a day after meals, was ordered. The tonsils and pharynx of each man were carefully painted with iodized glycerin:

℞ Iodi, ... }
Potassii iodidi, .. } ....āā 10 grams;
Glycerini, ...300 grams.
Fiat solutio.

Inhalation of fumes of the following preparation, slowly and through each nostril, three times a day for two minutes, was likewise practised:

℞ Iodi, ...20 grams;
Guaiacolis, ...2 grams;
Thymolis, ...0.25 gram;
Alcoholis (60 per cent.), ...200 grams.
Misce.

The fumes were inhaled from small cups partly immersed in hot water. Two days after the beginning of these measures, no new cases of meningitis developed, though previously one new case had developed every day. The disease manifesting again later, through infection from the outside, the prophylactic measures were applied in 107 isolated suspects, fifteen of which were meningococcus carriers. After four days of treatment and two subsequent days without treatment meningococci had disappeared from the nasopharyngeal secretions of the carriers, and no additional case of meningitis developed. The measures referred to also caused progressive disappearance, within a few days, of latent rhinitis and rhinopharyngitis to which a large number of the men were subject. Prophylactic application of the procedure, including isolation and local medication for four days, is suggested not only in cerebrospinal meningitis, but in the various eruptive fevers and in mumps.

How Labor May Be Made More Comfortable.—Greer Baughman (*American Journal of Obstetrics,* April, 1916) asserts that the pregnant woman who is doing well has an increase of the thyroid secretion, which renders her more sensitive to pain than the nonpregnant subject. One method of making the patient more comfortable is to gain her perfect confidence, through frequent visits to the office, correction of her minor ailments, and general encouragement. One need not limit one's endeavors, however, to this plan alone. "Twilight sleep" should be suggested only to those women who are extremely nervous and abnormally apprehensive and in whom the resulting delay of two hours is not likely to make a serious difference in the chances of the baby or mother. It should be applied, moreover, only where both the woman and her husband have been enabled to weigh its advantages and disadvantages and have decided that they want it tried. In other cases it is inadvisable to apply any quieting measure save moral suasion until the cervix has begun to thin out well and is about the size of a silver quarter. After an effectual soapsuds enema twenty grains of chloral hydrate in solution may then be given by bowel. Ten or twenty grains more may be given four to six hours later, if indicated. Where chloral is contraindicated because of threatened eclampsia sodium bromide, twenty grains by bowel may be substituted for the chloral. If a further quieting effect is desired, Baughman gives 1/8 grain of morphine. None of these drugs, however, is given within an hour before the baby is born. For the acute pain usually experienced when the head is passing through the cervix a few whiffs of ether or chloroform are given. Chloroform acts more quickly and nauseates less than ether, but is to be avoided where the liver and kidneys are not in good condition. When the head is passing over the perineum Baughman always uses ether or chloroform unless there is absolute contraindication on the part of the mother, and as the baby is about to be born pushes the anesthetic from obstetric to operative anesthesia.

Prophylactic Typhoid Inoculation in Pregnant and Puerperal Women.—Engelhorn (*Berlin. klin. Woch.*, Jan. 31, 1916) reports that seventy pregnant and fifty puerperal women were immunized against typhoid without any ill effects whatever. There was no single instance in which labor was induced by the inoculations, although they were all made in the latter half of pregnancy. The blood from the umbilical vein of the fetus was taken in thirty-seven cases and tested for agglutinins, but it always proved negative, suggesting that the immunity is not transferred to the child in utero.

Real Value of Climate.—C. M. Hendricks (*Southern Medical Journal,* August, 1916) concludes from his study of climate as a therapeutic agent that it is safe to say that the climate is most favorable which presents the meteorological conditions which to a greater degree than before and more constantly permit the patient to lead the necessary outdoor life with ease, safety, and economy of vital expenditure. The accompanying change of scene and surroundings may be expected to act advantageously in an indirect way. In making any proposed change of climate attention must be given to the facilities in the new region for obtaining suitable food, accommodation, care, and medical supervision. If these conditions can be as well met in a better climate as at home the patient should be advised to make the change, but if his financial, social, or domestic circumstances are such that he cannot in a new climate secure proper medical attention, or if his mental attitude is such as to make separation from home inadvisable, he should not be sent away.

Some Notes on the Treatment of Constipation.—Henry A. Rafsky (*Medical Review of Reviews,* August, 1916) divides constipation into atonic and spastic, and maintains that not only must it be determined to which class the case belongs, but that each case must be studied and treated as a distinct clinical entity. Regarding the treatment of atonic constipation such etiological conditions as chronic disease, tumors, and uterine displacements which act through the production of local pressure are not considered. The patient should be induced to go to the toilet at the same hour each day, whether there is any bowel movement or not. A bulky diet that will leave a rather large residue in the intestinal canal is essential, so he recommends bran bread, graham bread, raw and cooked fruits, cabbage, turnips, parsnips, jam, butter, salad oil, etc. Large quantities of fluids should be drunk, at least seven or eight glasses of fluid in the twenty-four hours. In many cases there is an increased digestibility and an almost complete absorption of the cellulose, which leaves a small residue. Carbohydrates and proteins are easily digested and absorbed, fats less so, hence the latter should constitute a large part of the diet. In ascertaining a patient's tolerance for the degree of digestibility and absorption we must keep within the limits of the functions of the stomach. "In trying to cure the bowel do not bring trouble to the stomach." Exercise, massage, and electricity are of value, and so are mechanical supports in some cases. Mild, stimulating cathartics should be used only for brief periods of time. These include senna, cascara, phenolphthalein, and mineral waters. Agar is of value because it increases bulk by taking up water, and must be used in large and increasing doses to obtain results. Mineral oils cannot be used indefinitely. The treatment of spastic constipation is quite different. The aim is to quiet excessive activity, so instead of bulky food we give such as is concentrated and easily digestible, like scraped beef, rice, tapioca, and cooked green vegetables. Good results have been obtained by putting the patient to bed on a milk diet for five or six weeks. Exercise and massage are contraindicated; the value of electricity is questionable. Cathartics should not be given. More can be accomplished with a dose of atropine with morphine than with the most powerful cathartic. The intestines already are overstimulated and need rest.

Chronic Intestinal Stasis from the Viewpoint of the Internist.—Charles D. Aaron (*Buffalo Medical Journal,* August, 1916) says that many cases of chronic intestinal stasis prove after operation to have been nothing but spastic constipation. Treatment is not a matter of plumbing, but of improving the general nutrition and strengthening the muscles of the abdominal walls. Patients who are poorly nourished should be well fed, the diet should be as nutritious as possible and contain a large proportion of fats and oils which form laxative soaps. Sometimes it is necessary to resort to forced feeding. Hydrotherapeutic measures, cold water, half baths, and the Scotch douche on the abdomen, with rubbing and slapping are valuable. Systematic respiratory gymnastics several times a day. The muscles of the body may be stimulated by dry rubbing of the skin with rough towels. Massage is good to strengthen the abdominal muscles. Bandaging the abdomen acts beneficially. All of the patients need iron, which may need to be given by intramuscular medication. The sovereign remedy is atropine, or belladonna. Daily enemata of from half to one pint of olive oil also are useful. Other cases of chronic intestinal stasis are really those of atonic constipation, which needs a different treatment. The diet should be large and bulky. The therapeutic result is to render the feces more voluminous, softer, and more liquid, so as to bring peristalsis into play. Agar is hard to digest, but absorbs and retains moisture, thus permanently increasing its own volume, resists the action of intestinal bacteria as well as that of enzymes, and gives bulk without introducing objectionable products of decomposition. It is not a purgative, but belongs to the diet in intestinal stasis just as do fruits and vegetables rich in cellulose. As it is harmless its use may be continued for months. Petroleum jelly of the best quality seems to act better than Russian mineral oil.

Swimmers' Conjunctivitis.—Harry S. Gradle (*Ophthalmology*, July, 1916) says that the best treatment he has been able to find, and he has tried everything he could think of, is a one per cent. solution of silver nitrate daily, and a ten per cent. solution of argyrol three times a day or more. The silver nitrate seemed most effective when dropped directly into the conjunctival sac, for forcible closure of the lids spreads the caustic into the depths of the transitional folds, the parts most affected, which are not reached by simply brushing the fluid on the everted lids. It must be understood that in these cases there is no involvement of the cornea. or of the deeper structures of the eye; such troubles are not likely to occur in pure cases of swimmers' conjunctivitis.

Septic Wounds.—Kenneth Goadby (*Lancet*, July 15, 1916) has worked out a comprehensive plan of treatment for infected sinuses. It should first be determined whether underlying bone is involved and whether there is sequestrum formation. In either of these cases anaerobic organisms will almost certainly be present if the wound is a military one. An autogenous vaccine, preferably sensitized, should at once be prepared from the sinus flora. If the first injection of such a vaccine produces a constitutional reaction the danger of lighting up the infection through operation is evident, and this procedure should therefore be delayed for at least three weeks or until efficient immunization has been secured. If the patient be immunized prior to operation, the anaerobic organisms may be disregarded as sources of danger, but efficient drainage should be provided. For the anaerobes to become pathogenic it seems requisite that the soil be prepared by the growth of aerobic organisms, especially those of the proteus group. Chronic sinuses which alternately heal and break down should be treated with vaccines preliminary to surgical operations.

Practical Method of Minimizing the Pain of Labor.—H. W. Kostmayer (*New Orleans Medical and Surgical Journal*, August, 1916) advocates the following method: As soon as the pain of the first stage becomes definitely annoying, chloral is given in a ten grain dose, and is repeated in forty-five to sixty minutes, as indicated, as much as three doses being given if necessary. When the character of the pain changes to the bearing down of the second stage, an eighth of a grain of morphine is given hypodermically as soon as this pain is severe enough to warrant it. It is rarely necessary to repeat the morphine, though this may be done safely after an hour or two. If labor is retarded in the least, or if in the judgment of the physician labor might safely be hastened, pituitrin is given hypodermically in graduated doses. As the presenting part begins to dilate the vaginal orifice, ether is given by the drop method at the beginning of each pain, and continued until the pain subsides.

Vesicular Eczema.—P. G. Unna (*Berlin. klin. Woch.*, January 17, 1916) states that the treatment of the infected exudative process present in these cases demands the employment of the most powerful of our drying agents, and that pastes of zinc sulphate or zinc sulphate with chalk are very useful. A new water soluble varnish, called gelanth, has been brought forward; it is composed of tragacanth with superheated gelatin. This forms a most excellent base for medicaments suitable for this form of eczema. Two useful formulas are:

℞	Ichthyolis,	5.0;
	Gelanth,	ad 100.0.

M.

℞	Resorcini, Ichthyolis,	āā 5.0;
	Acidi salicylici,	2.0;
	Gelanth,	q. s. ad 100.0.

M.

Of these the former is the milder and the latter the more active. Both are particularly suitable where it is inconvenient to cover the part with a dressing, since they form dry coverings and remain on the surface for a relatively long time. In the second of the formulas, the gelanth may be replaced by simple ointment when it is to be used on the hairy surfaces.

Treatment of Hemorrhagic Diarrhea.—Moszkowski (*Berlin. klin. Woch.*, Jan. 31, 1916) states that in all varieties of resistant bloody diarrhea, of whatever etiology, the local application of an emulsion of iodoform in acacia will almost invariably give prompt and permanent relief, both from the hemorrhagic diarrhea and from other distressing symptoms such as tenesmus. The emulsion to be used has the following composition:

℞	Iodoform,	80.0;
	Acacia,	100.0;
	Distilled water,	180.0.

A soft colonic tube should be slowly introduced to a distance of fifty centimeters, which can readily be accomplished with a little practice. Through this about fifty c. c. of the emulsion should be injected by means of a glycerin syringe. The majority of patients can retain this injection for two or three hours without discomfort. No preliminary intestinal lavage should be done on account of the irritation which it usually produces. This injection may be repeated daily without fear of intoxication from the iodoform, although the amount injected is about ten grams per day. In a series of cases complete cure followed from one to nine such injections. The medication acts as a sedative and protective by virtue of the acacia, and as a sedative, astringent and antiseptic through the iodoform. The latter constituent seems to promote the healing of the ulcers in a satisfactory manner.

Miscellany from Home and Foreign Journals

Brain Injuries.—B. F. Zimmerman (*American Journal of Surgery,* August, 1916) is convinced that many patients with fracture of the base recover without operative treatment. He is of the opinion that fractures of the base are not entirely hopeless as was formerly taught and he is not one who believes that if the patient gets well he did not have a fracture of the base, however much the symptoms may have indicated it. He is sure that he has seen several such patients recover. The percentage of cures will be greater if a decompression operation is done to relieve, to an extent at least, the threatened anemia of the bulbar centers.

Treatment of Unstable Cartilage of the Knee.—Royal Whitman (*Medical Record,* July 22, 1916) states that this injury is common and that manipulation is frequently necessary at the time of accident in order to replace the cartilage. In persistent instability the cartilage should be removed, because its presence is not essential and when loose it is a foreign body. The operation is done readily, no drainage is necessary, and the knee is kept in a plaster splint for two weeks, after which strapping is used for support. If there is a tendency to valgus, the soles are thickened on the inner side or arch supports are worn. Recovery is usually rapid after operation and is complete in a few weeks.

Conjugal Paresis.—H. H. Drysdale (*Jour. A. M. A.,* July 29, 1916) reports an interesting instance of this condition in which the paresis developed in the husband eighteen years after infection and in the wife about two years later. Inasmuch as the couple were married two years after the husband's infection the interesting question of the incubation period in the wife was raised, but could not be answered. Both cases progressed rapidly after their frank development. The couple had one child, apparently normal, mentally bright, and well developed. The child was eight years old when examined and then showed a positive Wassermann reaction in her blood serum. In the course of the discussion of this paper several other cases of conjugal paresis, and paresis arising in two or more members of the same family, were mentioned.

Use of the Elastometer in the Study of Edema.—A. B. Schwartz (*Archives of Internal Medicine,* March, 1916) calls attention to the superiority of Schade's elastometer in the study of edema over the palpating finger, which not only fails to give an accurate idea of fluctuations in edema, but is at times powerless to detect edema until the body weight has been increased six kgm. thereby (Widal). The measurement of edema with the elastometer is made by noting the extent of depression caused by the sinking of a weighted disk into the skin and subcutaneous tissue. Evidence of loss of tissue elasticity may, with this instrument, be found to persist in patients with nephritis or endocarditis despite the disappearance of other signs of the disease. This clearly indicates the advisability of continued observation in cases of this nature.

Bacteriological Study of Some Stillbirths.—Joseph B. De Lee (*Jour. A. M. A.,* July 29, 1916) reports five cases in which a child was born showing evidences of infection, while the mother remained quite well. In two cases the infant was born alive; in the others it had died before birth. Cultures taken from the child's secretions or blood in each case showed pathogenic organisms; in two there was the pneumococcus and in the others a streptococcus. In these cases the mother's parturient tract suffered lacerations and in one there was a post partum hemorrhage requiring tamponade, but in all the mother remained well and showed no signs of infection. In most cases there had been some mild infection, such as pharyngitis, in the mother shortly preceding labor, but in some the woman was apparently perfectly normal.

Hereditary Rachitis.—Ernst Schloss (*Berlin. klin. Woch.,* Jan. 31, 1916) finds that the soft skull found in about twenty to eighty per cent. of new born infants is merely the result of a delayed ossification which rests upon an insufficient supply of bone forming elements. The underlying cause of this deficiency in ossification cannot yet be determined, but three possible factors may be considered: That it is the natural result of the influences of domestication; that it results from temporary maternal disturbances; or that it is a direct, inherited specific disease. But in the majority of cases it is certain that this deficient ossification is not due to an inherited rachitis. However it is at the least a good foundation upon which rickets may develop and probably accounts for the very early manifestations of this disease in some cases. The condition may properly be regarded as indicating a rachitic disposition, constitution, or diathesis.

The Action of Caucasian Benzin on the Animal Organism.—U. P. Kravkoff (*Roussky Vratch,* April 9, 1916) determined the effect of benzin from various sources on white mice, rabbits, cats, and frogs. He found the action more or less the same regardless of the quality of source. In concentration of 0.0005 to 0.01 gram of benzin to one liter of air no marked effect was noticed even if the animals remained in this atmosphere from twenty-four to forty-eight hours. Doses of 0.02 to 0.03 gram caused slight poisoning. This was more marked in concentration of 0.05 to 0.06 gram, and even then the animal could remain for several hours in this atmosphere, only a few of them dying. Concentrations of 0.1 to 0.3 gram to one liter of air proved invariably lethal. The action seemed to be exerted mainly on the central nervous system, which after a brief stimulation was paralyzed. The cause of death was paralysis of the respiratory centres, the failure of respiration being preceded by marked tetanic convulsions. Locally, irritation of the mucous membranes of the eyes, nose, mouth, and respiratory passages was observed. It was also noticed that after profound poisoning, the animals recovered when brought into the fresh air.

Etiology of Surgical Scarlatina.—John B. Roberts (*Annals of Surgery,* August, 1916) says that several recent etiologic studies have been reported by investigators as holding out hope of the discovery of the organism causing scarlet fever. The latest, so far as he knows, is that of F. B. Mallory and E. M. Medlar of Boston, detailed in the *Journal of Medical Research,* March, 1916. The work was done in the Pathological Laboratory of the Boston City Hospital. This Gram-positive bacillus, which is more decidedly Gram-positive than the diphtheria bacillus, is described and thought by them to be a true bacillus scarlatinæ. The coincident streptococcus infection often complicated the investigation. Malory, years ago, thought the cause of scarlet fever to be protozoan; his interest in the subject continuing all these years seems to add force to the probable accuracy of his present investigation and the value of his opinions.

Nutrition of the Pregnant Woman and the Condition of the Child.—G. F. Darwall Smith (*Lancet,* July 8, 1916) obtained material for this study from the maternity hospitals of London and of Dublin, comprising a total of over 6,000 cases. Many percentage results of special analyses of the material are given, but the general conclusions adequately summarize the results. Primarily a state of average nutrition on the part of the mother is the most favorable of all the conditions. A state of nutrition above the average decidely increases the average weight of the full term infant and increases the proportion of mothers who are able to nurse their babies. Finally, a condition of poor nutrition of the mother at confinement greatly raises the proportion of still births and of premature births, somewhat reduces the average weight of the full term infant, and materially raises the postnatal infantile mortality, but has very little effect on the progress of the infants during the first ten days.

Surgical Lessons of the European War.—A. M. Fauntleroy (*Annals of Surgery,* August, 1916) says that it would seem that the Dakin fluid is the antiseptic of choice among the majority of those who, at one time or another, have had recourse to the antiseptic method of treatment. This antiseptic fluid, which is a 0.5 per cent. concentration of sodium hypochlorite, is made by dissolving 140 grams of dry carbonate of soda in ten litres of sterile water. To this is added 200 grams of chlorinated lime and the mixture is well shaken. After a half hour the supernatent clear fluid is siphoned off into another bottle, through a cotton plug or filter paper, and then forty grams of boric acid are added to the clear filtrate. The solution is neutral to litmus, is non-irritating and is the proper strength for wet dressings and irrigations. The solution should be made fresh every three or four days and the dry stock ingredients should be kept in covered receptacles. It is a significant fact that the Dakin fluid is preferred above all other antiseptics by the majority of medical officers who are bearing the heat and burden of the day at or near the front, while other methods receive support on theoretical grounds from those who are mostly associated with a long distance view of the war situation.

Deep Percussion in Subacute Intraabdominal Disease.—H. Neuhof (*Archives of Diagnosis,* April, 1916) alludes to the value of deep percussion in subacute or largely subsided intraperitoneal affections as residing in the fact that tenderness is elicited when deep palpation may not disclose any specially painful area. It proved useful in the examination of the obese and of those who do not relax their abdominal wall sufficiently for satisfactory palpation. Two forms of deep percussion are used, one the ordinary deep percussion employed in chest examination. A moderate amount of rebound force may be necessary to disclose the painful area. When this fails, or the result is doubtful, the second method is used, which consists in tapping the abdominal wall with a finger of the right hand. The percussion tenderness is almost always found definitely circumscribed in a small area over the diseased organ. Its degree is not necessarily proportionate to the severity of the lesion found at operation, mild, subacute, or subsiding lesions sometimes causing considerable tenderness. The latter is readily obtained when the abdomen is held rigid—an important advantage over deep palpation. In a number of instances, in Neuhof's experience, deep percussion was the only physical procedure leading to correct diagnosis, as subsequently proved at operation.

Diagnosis of Mixed Typhoid and Paratyphoid Infections.—A. Chantemesse and A. Grimberg (*Presse médicale,* June 22, 1916) describe the technic they have elaborated for the detection of intercurrent paratyphoid infection in typhoid fever or of simultaneous typhoid and paratyphoid invasion (see N. Y. MEDICAL JOURNAL for August 5, 1916, page 279). After describing their procedures for the cultivation of the organisms of the typhoid group on bile and for the preliminary rough differentiation of the typhoid and A and B paratyphoid organisms in a patient's blood by noting the effects produced on glucose and on lead acetate paper, the authors take up their recently elaborated technique for the quantitative estimation of these three organisms by a differential agglutination test. A titrated suspension of typhoid or paratyphoid bacilli, sterilized by heating to 56° C., is poured into a series of small conical tubes up to the one c. c. mark. Each c. c. contains one billion of dead bacilli. If now a drop or a fraction of a drop of the patient's serum is added to one of these tubes, at the end of a few hours one can recognize with the naked eye, according to the flakes that have formed, whether agglutination has taken place and what the maximum dilution is at which such agglutination is noticeable. Thus a curve of the agglutinating power of the blood in typhoid fever can readily be plotted by examinations every five days. As the disease reaches the middle of its course or the typhoid agglutination power increases, agglutination power against the A and B paratyphoid organisms appears and progressively increases, typhoid agglutination meanwhile sometimes decreasing. Proper elimination of coagglutinins and cosaturins as disturbing factors requires that the amount of serum shall bear a special relation, varying with its agglutinating power, to the amount of bacillary suspension used in making the tests. Using one drop, or one twentieth c. c., of serum in each test, the number of billions of bacilli to be added to it is determined by multiplying by twenty the denominator of the smallest fraction of a drop of the serum which will show agglutination when added to one c. c. of bacillary suspension, and then dividing the product by 440. Thus the amount of suspension to be added to a serum of which one sixty fourth of a drop will begin to agglutinate one c. c. of the suspension is 1280 divided by 440, or about three billions of bacteria. i. e., three c. c. of the suspension. With a little practice the procedure is readily carried out by the practitioner himself, who is enabled, without a microscope, at all times to gain a much more precise knowledge of the defensive power of the body, as well as of superadded invasion of other bacilli of the typhoid group, than is afforded by blood cultures.

Deformities of the Nasal Septum. Their Correction by an Improved Technic for Submucous Resection.—J. L. Maybaum (*American Journal of Surgery*, August, 1916) summarizes as follows on the foregoing subject. 1. The type of septal deformity and the indications for performing a submucous resection should be thoroughly considered before deciding to operate. 2. Adenoids and narrowing of the nares should receive proper operative attention in order to obtain the fullest benefits from submucous resection. 3. The supine position of the patient, the head slightly elevated, is the ideal position while operating. Shock is eliminated, better access to the floor of the nose is obtained. 4. Under favorable conditions, packing of the nose may be dispensed with after the operation. 5. Postoperative manipulations in the nose should be avoided for a few days, so as to minimize the possibility of infection.

Focal Infection in Relation to Certain Dermatoses.—M. L. Ravitch (*Jour. A. M. A.*, August 5, 1916) considers that the work of Rosenow, now confirmed by others, has opened up a wide field for research and advance in dermatology, especially along the lines of etiology. Many conditions hitherto denoted "idiopathic" on account of ignorance of their etiology have now been definitely placed in the realm of secondary symptoms of focal infection and their treatment made much more satisfactory. Thus the many forms of erythematous eruptions associated with rheumatic disturbances are due to the presence of the infecting organism, which has frequently been isolated from the skin lesions themselves. Other streptococcal infections have been found to underlie many different dermatoses. Herpes zoster has been found to be due to furunculosis in several instances. Septicemia is often associated with such skin manifestations as erythemas, papular, urticarial, hemorrhagic, bullous and herpetic eruptions. Gonorrheal infection is associated with exudative erythema, keratosis and parakeratosis, and recurrent eczemas are often due to gastrointestinal diseases such as ulcers and cancer. Throat and dental infections provide perhaps the commonest sources of many of the hitherto obscure skin disorders, and the latter almost always yield to treatment or disappear spontaneously after cure of the focal infection.

A Method of Treating Cysts of the Breast.—Francis J. Shepherd (*Annals of Surgery*, August, 1916) states that a number of years ago he was asked to assist a surgeon in an operation for the removal of the breast from the wife of a colleague. The case was supposed to be malignant, without any involvement of the axillary glands; the tumor was hard, nodulated, had been noticed for some weeks and appeared to be increasing in size; it was situated in the lower zone of the right breast. The breast was removed and on examination the tumor proved to be a simple cyst containing clear fluid; it was so full of fluid that there was no sensation of fluctuation. This case impressed Shepherd much, and he then suggested to his colleague that if the cyst had been tapped it would have collapsed and there would have been no necessity of removing the breast. After this in any doubtful case he always puts a needle into the growth; if it was cystic the fluid was evacuated and the tumor instantly disappeared, and if it was a solid growth it was apparent. In some cases of scirrhus the resistance and peculiar sensation conveyed enabled him to make a diagnosis. As long as the fluid evacuated from the cyst was clear he had no doubt of its non-malignancy, but if it was bloody fluid then the case was operated upon.

Finger Prints in the Diagnosis of Traumatic Neuritis.—R. Cestan, P. Descomps, and J. Euzière (*Presse médicale*, June 8, 1916) have found that in injuries of the median and ulnar nerves, deviations from the normal finger print, compared with the uninjured side, take place in all but three per cent. of instances. In injuries of the radial nerve they occur in about one half the cases, but are less marked than in the median and ulnar cases. In irritative contractures they are almost constant, but in functional paralysis never occur unless some related organic injury—e. g., an abrasion of the humerus—exists. In making the prints the finger tips are first cleansed carefully with oil of turpentine on a cotton pledget, next thoroughly dried, then at once inked with a roller previously covered evenly with printer's ink. The prints are next made by contact with stiff paper tacked to a board, the application of the finger tips being carried out by the examiner himsel, to secure evenness of pressure and exactly comparable prints. Photographic enlargements may be made by making the original prints on clean glass plates and using them as negatives in the enlargement. The pathological changes met with include white streaks across the prints, due to tissue emaciation; abnormal plainness of the pores and loss of definition of the epidermal ridges, due to secretory and vasomotor disturbances; fragmentation or localized complete obliteration of the ridges. The last is an indication of true trophic disturbance, observed almost exclusively in injuries of the median or ulnar nerve. Apparently there is no definite relationship of the finger print changes to the extent or exact location of the nerve disorder. Systematic finger study is, however, of unquestionable value as a new clinical, diagnostic method in peripheral neuritis. In cases with the most pronounced finger print changes, identification of the individual by means of the prints may be difficult. For this purpose prints from the sound side alone should be taken into account.

Common Sense and Consumption.—John B. Hawes, Jr. (*Boston Medical and Surgical Journal*, July 27, 1916) gives the following rules in making a diagnosis of tuberculosis: Do not make up your mind beforehand that the case is or is not one of tuberculosis. Do not hurry. In cases where the sputum is lacking or negative, two or three examinations of the patient and many examinations of the sputum are often necessary. In some not uncommon cases a positive diagnosis may be made from the history, and constitutional signs and symptoms alone, without signs in the lungs; less often we can safely make a diagnosis on lung signs alone without marked constitutional disturbances. In the vast majority of cases there should be present both signs in the lungs, generally including rales at one time or another, and constitutional signs such as fever, rapid pulse, subnormal temperature, loss of weight and strength. Processes at the apex are considered tuberculous until proved the contrary; processes at the bases are thought nontuberculous until the contrary is proved. A hemorrhage, not including minute streaks or flecks of blood in the sputum, means tuberculosis until the contrary is proved. The x ray gives confirmatory evidence which rarely is of great value in diagnosis when taken by itself. Tuberculin tests are of little value in adults and may do harm. Observations of temperature and pulse, taken at home three or four times daily for three or four days, give evidence of the greatest value. The most important evidence is that obtained from a careful and detailed study of the patient, his family history, habits, surroundings, and occupation. To sum up, the diagnosis of early pulmonary tuberculosis or clinical consumption requires patience, perseverance, boldness, and, above all, common sense. The physician must remember that he is dealing with a human being, and not merely a set of lungs, normal or abnormal.

Differential Diagnosis of Bullous and Vesicular Eruptions in Children.—M. Scholtz (*Lancet-Clinic*, July 15, 1916) lays stress, as a differential feature of eczema, on the marked tendency of the lesions to coalesce, forming irregular patches spreading by continuity. A diffuse, irregular inflammatory base occupying the whole area of individual vesicles is also an important differential point. The vesicles of eczema rupture easily, sometimes spontaneously. Impetigo contagiosa, often unrecognized and treated as eczema, starts as vesicles or bullæ, much larger than eczematous vesicles, flat and even umbilicated, with a narrow surrounding zone of hyperemia. The vesicles become purulent, rupture, and covered with characteristic soft, bulky crusts. Scabies, because of scratching and secondary infection, may be completely disguised by secondary vesicular and pustular eczema. Burrows may be particularly hard to discover in these cases, and the diagnosis should rest chiefly on the situation of the lesion, viz., the webs of the fingers, flexor surfaces of the wrists and arms, mammæ or penis, anterior surface of the chest, abdomen, and inside the thighs. Atypical and strongly developed miliaria (prickly heat) may lead the physician astray. It should be remembered especially that the minute miliaria vesicles, though closely crowded, are always discrete, and though tensely filled, seldom rupture spontaneously, but disappear by absorption and desiccation. Herpes simplex is, as a rule, properly recognized from its sudden appearance at mucocutaneous junctures, cluster like grouping, superficial character, rapid involution, absence of itching, and association with fever or dyspeptic symptoms. Herpes zoster can usually be differentiated by the prodromal neuralgic pains, sudden appearance in crops, supraorbital, cervical, or pectoral, unilateral situation, and closely set clusters of vesicles on acutely inflamed and sharply defined bases. Dermatitis herpetiformis, though often mistaken for eczema or scabies, can readily be differentiated from the former by the herpetic grouping of the vesicles, the discrete character of the lesions and their lack of a tendency to coalesce, by their breaking out intermittently on widely scattered parts of the body, and by the absence of inflammatory reaction, of spontaneous rupture of the vesicles, and of weeping. From scabies the affection is differentiated by the distribution as well as the character of the lesions. Among the bullous eruptions of children, bullous syphilide, pemphigus, bullous impetigo, bullous erythema multiforme, and drug eruptions are especially to be borne in mind.

Contusion of the Hip.—Raymond Grégoire (*Paris médical*, June 17, 1916) calls attention to the fact that whereas in injuries to the shoulder, elbow, wrist, and knee a diagnosis of contusion is rarely made, these joints being so superficial that a sprain, fracture, or hemarthrosis is detected with relative ease, contusion of the hip is still a diagnosis frequently rendered, direct examination of the injured structures being practically impossible. In fact, a definite group of signs has been held to be characteristic of hip contusion, viz., pain in the region of Scarpa's triangle upon motion; apparent shortening of the injured limb, which disappears upon placing the anterior superior iliac spines of the recumbent patient in the same horizontal line, and an incomplete loss of motor function, the limb tending toward external rotation, but being voluntarily maintainable in inward rotation when placed in this position. Rapid disappearance of the pain, motor incapacity, and external rotation has, moreover, been considered indicative of contusion of the hip as against fracture of the femoral neck. Grégoire points out, however, that in true hip contusion, pain and disability may persist for a long period, then suddenly disappear. On the other hand, in many cases apparent contusion of the hip suddenly becomes transformed into a manifest fracture of the neck. The author reports three cases of so called hip contusion which were actually impacted intracapsular fractures and would have remained improperly diagnosed without x ray examination. The complete functional disability held to be a characteristic of fracture is, as a matter of fact, not a constant sign, Kirmisson, Chaput, and others having called attention repeatedly to undoubted fractures of the neck in which motion and even walking were possible for a period after the injury. On the whole, Grégoire is led solemnly to warn against diagnosticating contusion of the hip without having recourse to a carefully conducted x ray examination.

Proceedings of National and Local Societies

AMERICAN GYNECOLOGICAL SOCIETY.

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The President, Dr. J. Wesley Bovee, of Washington, D. C., in the Chair.

(*Continued from page 332.*)

Experimental Syphilis.—Dr. F. W. Baeslack, of Detroit, stated that the causal relationship of Treponema pallidum to lues was established, 1, by the observation of the occurrence of the organisms in the syphilitic lesions incident to the various stages of the disease; also the distribution of Spirochæta pallida in the lesions of acquired and congenital syphilis. 2. The successful inoculation of lower animals from human lesions, thereby producing syphilis experimentally in rabbits, monkeys, and other animals; the methods employed and discussion of the character of the lesions, and the observation of generalized syphilis in experimentally inoculated animals. 3. The growing of Treponema pallidum in culture media free from contamination, the transfer of these cultures through many generations, and the successful inoculation of lower animals with the cultivated organisms; the loss of virulence of the organisms against the lower animals after extended cultivation; and the cultural characteristics and morphology of Spirochæta pallida. 4. Immunological studies, pseudoprimary lesions, and true reinfection, as well as superinfection, as expressed in the lesions in the various stages of syphilis, which did not harmonize with their conception of immunity.

The author spoke of attempts at immunization by means of spirochetal vaccines, and described the occurrence of agglutinins in the serum of animals treated with suspensions of dead spirochetes. He spoke of the absence of immunity as demonstrated by the ability to reinoculate animals which had recovered spontaneously or subsequent to treatment. He pointed out that an altered reactivity of the body was the possible explanation for the occurrence of the lesions peculiar to the various stages of syphilis.

Syphilitic Fever.—Dr. Frederick J. Taussig, of St. Louis, read a paper on this subject in which he summarized as follows: 1. The diagnosis of syphilitic fever could rarely be made with absolute certainty, but they should more often consider it as a possibility and institute antiluetic measures in suitable cases. 2. Secondary syphilitic fever occurred in a mild form in twenty per cent. of patients at the outbreak of the rash, and at times was prolonged and more severe in its course. 3. Late secondary syphilitic fever was occasionally seen in a pronounced form after confinement or in gynecological patients. 4. Tertiary syphilitic fever was practically never due to syphilitic lesions in the female genital tract. It might, however, complicate a gynecological or obstetrical condition, and, owing to the difficulty in locating the site of the tertiary lesion, lead to a wrong diagnosis as to the cause of the fever. All doubtful cases should be subjected to a Wassermann test and, if positive, receive antiluetic treatment. 5. Syphilitic fever was probably due to the reaction of the body to the toxins produced by the spirochete which, under certain circumstances, or in certain individuals, gained an entrance to the circulation.

Clinical Course of Cancer in the Light of Cancer Research.—Dr. Harvey R. Gaylord, director of the State Institute for the Study of Malignant Disease, Buffalo, announced that cancer was not one disease, but a great group of diseases. The various types of sarcoma in chickens caused by filterable viruses had taught them that there were neoplasms with specific agents which determined the character of the tumor. Progress required that cancer of different organs be treated as individual diseases and studied individually. The study of immunity to inoculated cancer threw new light upon the clinical course of the disease. Successful surgery, x ray, and radium treatments all depended upon immunity. Early operation owed its success to the fact that immune reactions in spontaneous cancer were strongest in the early stages of the disease. The effect of chloroform and ether anesthesia and loss of blood from surgical operation was shown to exercise a destructive effect upon immunity.

Cancer of the Uterus and Its Treatment.—Dr. John G. Clark, of Philadelphia, classified cancer under three divisions as regards its treatment: 1, the radically operative; 2, the radical use of the cold cautery, and, 3, the use of radium or mesothorium. Statistics as to surgical results were now upon an accurate basis and demonstrated a higher percentage of cures from the radical abdominal operation than had been achieved by the less radical vaginal and abdominal methods. In rebuttal there might be offered the much higher primary mortality and the greater number of disabling sequelæ from the former over the latter operation. The dangers of the radical operation were great, even in the hands of the expert, and prohibitive when performed by the surgeon of limited experience. Many so called radical operations were mere makeshifts, the patient being subjected to much greater hazards without appreciable gain over simpler methods, by an attempt to execute an operation which fell lamentably short of an ideal standard. As yet the cold cautery was in the proving ground and in rather a procedure which, to be successful, must be radical, and, therefore, was likely to be attended with a high primary mortality as well as serious sequelæ. It must, therefore, show a higher percentage of ultimate cures to make it a worthy competitor of the radical operation.

In the speaker's experience of two years with radium, it had given encouraging promise, first, as a palliative remedy, and, secondly, as a tentatively curative one. It was in no sense a miraculous panacea, for a considerable number of cases were not helped, for the malignant process did not appear to be halted, but might actually be expedited. The sequelæ, however, following its judicious employment were comparatively insignificant compared with the foregoing methods, and, therefore, if the patient was not helped she was, at least, spared the added miseries of unfortunate accidents. Because the radium was not a trustworthy agent in all cases, and because as yet the type of cancer which would be helped could not be forecast, surgical measures must still be invoked, but might be supplemented by radiation.

The dictum of the last few years, "In case of doubt, extirpate the uterus," was now modified, for in all such instances they now applied radium. Thus far in no instance had hysterectomy been performed when radium had acted beneficially, for it did not appear logical that an operation could accomplish anything further. As experience now pointed, it would appear that radioactive agents were to serve as excellent supplementary remedies to surgery, offering better results in the operative cases and a definite hope in the inoperable.

The Extended Operation for Carcinoma of the Uterus.—Dr. Reuben Peterson, of Ann Arbor, presented the following summary and conclusions: 1. Further experience with the radical abdominal operation for cancer of the uterus confirmed the belief that it was an exceedingly dangerous procedure and would always be attended by a high primary mortality. 2. Even if the percentage of operability of cases of cancer of the uterus markedly increased in this country and elsewhere, there would always be borderline cases attended by a high primary mortality. 3. This was true because it was not always possible, even with the greatest care in examination of the patient prior to operation, to estimate the extent of the disease. 4. Errors in judgment meant death from shock if the disease was too far advanced or if there had been failure to complete the radical removal of the cancerous uterus. 5. In spite of a high primary mortality, however, it was the only procedure, with the possible exception of the extended vaginal operation, which held out any reasonable promise of a permanent cure. 6. Primary and end results of the radical operation for cancer of the uterus must be considered together, in order to judge of the good accomplished in a given series of cases. 7. Unless the operations were radical, the end results would be poor, and if they were radical the primary mortality must be high. 8. If the end results were poor, the burden of proof was upon the radical abdominal operator to show why he did not choose a much safer palliative procedure. 9. Since 1912, experience with fourteen ordinary panhysterectomies for cancer of the fundus showed worse primary and end results than in eleven cases previously reported where radical removal was performed. 10. This showing and the results following removal of fundus carcinoma by various methods in the Wertheim clinic, as reported by Weibel, led to the conclusion that, because carcinoma of the fundus was more easily cured than when the cervix was involved, they were not justified in thinking it could be treated any less radically than carcinoma of the cervix. 11. The primary mortality in fifty-nine cases of cancer of the cervix and fundus treated by the radical abdominal operation was 25.4 per cent. 12. The extent of the involvement in cancer of the uterus could only be determined definitely after the abdomen had been opened. If the parametria were not too much involved and the condition of the patient's kidneys, heart and bloodvessels warranted a prolonged and depressing operation, it was justifiable to attempt the radical operation. 13. During the past four years 124 cases of cancer of the uterus had been seen in the university and private clinics. The disease was so far advanced in thirty-six cases that either operation was refused or nothing was done. The cautery method was tried in fifty-eight cases and proved valueless, except as a palliative procedure. 14. In spite of attempts to educate the public regarding cancer, the cases of cancer of the uterus seen during the past four years were more advanced than had formerly been the case. 15. The end results in fifty-one patients operated upon, five or more years ago, were most gratifying. Combining fundus and cervix cases, twenty-seven of the fifty-one patients were alive and well after five years, or 56.2 per cent. of all cases operated in, while 69.2 per cent. of all those surviving the operations were alive after five years. 16. Of forty cases of cancer of the cervix operated in five years or more ago, eighteen of those surviving were alive and well. Thus 47.3 per cent. of the total number remained cured after five years, while sixty-two per cent. of those surviving remained cured. 17. These percentages were obtained by Wertheim's formula where patients dying of intercurrent disease, or those lost track of, were subtracted from the total number of operative cases or from the number surviving. 18. The length of time elapsed since the operations upon the eighteen patients who were alive and well varied from five up to thirteen years. There was every reason to think these patients were permanently cured, although one patient did have a recurrence and died between five and six years after the radical operation. 19. In spite of the high primary mortality, the end results in those surviving the operation encouraged them to continue the procedure in suitable cases.

Heat as a Method of Treatment in Inoperable Uterine Carcinoma.—Dr. James F. Percy, of Galesburg, Illinois, said there were three stages to be recognized in the development of the cautery in the treatment of carcinoma of the uterus: First, where it was used merely to stop hemorrhage and limit offensive discharge; second, in the galvanocautery excision of the cervix uteri developed by the late Dr. John Byrne, of Brooklyn-New York. In this technic a high degree of heat was used, sufficient to cut the tissues; third, in the dissemination of a coagulating degree of heat through the widest possible area of the cancer mass, with no attempt at immediate excision of the parts. The technic of Byrne was not designed for the advanced inoperable cancer patient, the one in which the uterocervical junction was fixed, with extensive malignant and inflammatory infiltration of both broad ligaments and the parametrium. As classified today, Byrne operated only in the first stage of cervical cancer involvement. The speaker stated that his technic brought the practitioner back to the days before Byrne, to the treatment of the otherwise hopeless case, and in addition he stated that his technic opened up new possibilities in the way of further improved results, in the type of case in which Byrne secured his best results.

The author emphasized the point that the stage of operability with his present technic was easily ninety per cent., and he confidently expected that the stage of operability would be without limit in strictly pelvic cancer. He would not have the practitioner believe, however, that the ideal was mere operability. Back of it all was the hope and promise of results never before obtained by any method so far developed in that disease which had always stood as a synonym for incurableness—pelvic cancer.

In conclusion, he reemphasized: 1. The Percy technic, so called, was not a cautery operation. He removed nothing. The tissues following the application of the moderately low degrees of heat were literally coagulated and slowly dissolved. It usually took two weeks for a healthy granulating surface to appear beneath the gradually dissolving mass of inert cancer débris. 2. The operation of Byrne was a high galvanocautery incision of the cervix. There could be but little penetration of heat. Byrne recognized this when he advised that the surface left after the removal of the gross mass be seared over with the cautery knife, in order to get all the heat penetration possible. But Byrne never thought of applying heat to the degree of obtaining penetration sufficient to render movable the fixed tissues in the pelvic basin. If the fixed tissues, malignant and inflammatory, were not made freely movable, as they were normally, the heat penetration had not been sufficient, and, therefore, was ineffective. 3. To coagulate a large mass of uterine cancer required from thirty to sixty minutes; and if the broad ligaments still remained stiff or fixed, an additional ten minutes. 4. In the author's effort to emphasize the importance of avoiding the burning temperatures, he feared that he had led many surgeons to the opposite extreme, and that they were trying to destroy the activity of an inoperable mass of cancer with a temperature so low that days, rather than hours, would be required to make the heat effective. Byrne *fried* the tissues, whereas the author *broiled* or *pasteurized* them. The Byrne technic was based on the use of heat as an acute process; while the author's was not acute, but chronic, both as to time and degree. Heat, more heat, and yet more heat; but heat, not fire; broiling not frying; not roasting, but curdling; pasteurization, not desiccation; coagulation, not carbonization.

In its practical application the whole technic could be summed up in the one statement: Do not carbonize the tissues, for in the degree that this was done, in that degree was heat penetration inhibited; and heat penetration was the vitally essential thing.

High Heat Versus Low Heat in the Treatment of Cancer of the Uterus.—Dr. Herman J. Boldt, of New York, said that he had expressed himself fully on the relative value of high degrees of heat compared with low degrees of heat as a palliative therapeutic agent in the advanced stages of cancer of the uterus in an article published in the *American Journal of Obstetrics and Diseases of Women* for January, 1916, issue, and judging from the communications he had received from physicians who had had experience with the treatment, his position was amply justified. It was also corroborated by another autopsy, in addition to the one he had, by Dr. F. W. Bancroft, of New York. He did not wish to detract from the usefulness of low heat, but it should be reserved principally for a second application, after rapid destruction had been accomplished with high heat, and the charred eschar that was caused by the high heat had been thrown off; and for cases in which the cancer had so far advanced that the proper application of high heat would endanger the bladder or rectum. The danger from secondary hemorrhage was not less with low heat than with high heat. No evidence had been presented that showed the superiority of one method over the other. Heat, properly used, and applied in selected cases, sometimes gave remarkably good palliative effects; but it had been conclusively shown that cancer cells were not destroyed any appreciable distance from the surface of application, certainly not deeper with low heat than with high heat. This was proved by the examination of tissues procured at the autopsies mentioned.

Dr. Charles Mayo, when discussing the paper published in the *American Journal of Obstetrics and Diseases of Women,* asserted that the proof of the deep destruction of low heat was shown in cases that had been operated in in the Mayo clinic, lay in the fact that at the time of cauterization the disease had advanced too far for the patients to be operated upon radically, but later the uterus became mobile and was extirpated, and when these uteri were examined by the pathologist he failed to find malignant disease. This hypothesis was not acceptable to the speaker as valid proof, since the mobility might have become impeded by an inflammatory process which, as the result of the heat treatment, became dried out, as it were, and mobility of the uterus resulted; a result seen also when high heat was used. The inflammatory infiltration might subside, but the carcinomatous infiltration remained. To disprove this it was necessary for the operator, when the abdomen had been opened, to remove a part of the infiltrated area under suspicion in the pelvis a reasonable distance away from the cervix, and have it examined by a competent pathologist. If that showed cancer nests and the uterus became mobile subsequently, so that a radical operation might be done, and the specimen then removed by a radical operation failed to show cancer elements in the parametria, they were in a position to grant the deep destruction of cancer elements by the heat applied, but not until such proof had been shown.

A Study of the Pathology in Its Relation to the Etiology with the End Results of Treatment of Sterility.—Dr. John Osborn Polak, of Brooklyn-New York, gave a personal review of 798 case histories of patients from his private practice, and analyzed the many etiological factors which had entered into sterility. He discussed the individual case based upon an etiological diagnosis, and finally summarized his end results: 1. A very large number of patients with sterility applying for relief had no chance whatever of becoming pregnant, as the pathological condition was such as to make conception impossible. 2. The male was largely responsible for the poor results in treatment. 3. There was a definite chemicopathological factor in conception, at present unexplainable, which was a cause of preventing conception. 4. Operative procedures on the uterus, except amputation of the hypertrophied portion, had but a slight influence in the end results in the treatment of sterility; 5, each case must be individualized and both contracting parties carefully studied before treatment was begun.

Rupture of the Scar Following Cæsarean Section.—Dr. Palmer Findley, of Omaha, gave a survey of the literature on this subject, with a digest of case reports, for the purpose of determining whether or not one Cæsarean section called for another in the event of a subsequent pregnancy, and then drew the following conclusions: 1. A perfectly healed Cæsarean wound might be relied upon to resist the forces of labor, but in view of the fact that the integrity of the wound was an unknown factor in all cases, he was constrained to exercise the utmost caution in the conduct of every case of pregnancy and labor following Cæsarean section. 2. Failure to secure perfect healing was accounted for by departure from the principles of suture proposed by Sanger and by septic infection of the uterine wound. If they were to obtain the uniformly good results in respect to wound healing that were secured in the decade following the introduction of the Sanger method of suture, they must not deviate from these principles. 3. The possible existence of latent gonorrheal infection might defeat the most painstaking efforts to secure perfect wound healing; hence it followed that the healing of a Cæsarean wound was always an uncertain factor. 4. When Cæsarean section had been followed by a fever course, the uterine wound should be regarded as insecure in the event of a subsequent pregnancy, and should call for a repeated Cæsarean section at the onset of labor. 5. Sterilization and hysterectomy should replace conservative Cæsarean section when infection was known to exist. The alternative invited faulty wound healing, if not more disastrous results. 6. Transverse fundal, extraperitoneal, and cervical incisions had not lessened the liability of rupture in subsequent labors, but, on the contrary, had probably increased the hazard. 7. The possibility of rupture of the scar following Cæsarean section did not justify sterilization, but rather called for the exercise of masterly control in the event of a subsequent pregnancy. All such cases should be hospital cases and labor should be anticipated by timely repetition of Cæsarean section at the onset of labor if the uterine wound was known to be defective, or if some cause existed for obstruction to the delivery of the child through the natural passage. Version, high forceps, uterine tampons, hydrostatic bags, and pituitrin should never be employed in the presence of a Cæsarean scar. 8. They might conclude that in view of the evidence, that not more than two per cent. of ruptures occurred in subsequent labors, they were not justified in voicing the slogan, "once Cæsarean section, always Cæsarean section"; neither were they to rely solely upon the integrity of the uterine scar in any case. Furthermore, he concluded that the liability of rupture was a real danger and should stand as an argument against the increasing tendency to widen the scope of elective Cæsarean operations.

A Résumé of Results in the Radium Treatment of 347 Cancers of the Uterus and Vagina.—Dr. Howard A. Kelly and Dr. Curtis F. Burnam, of Baltimore, after seven years' experience, and with full knowledge of similar work in other parts of the world, could now say without hesitation that radium in sufficient quantities greatly enhanced the chance of permanent recovery of patients with uterine and vaginal cancers. In early and good operable cases, radium combined with operation added greatly to the prospect of recovery without recurrence. The most remarkable fact about the radium treatment of uterine and vaginal cancers was that it often cleared up cases which had extended too far locally and had become firmly fixed to the pelvic wall; in other words, in a class of cases which were utterly inoperable. They had had 327 patients, including borderline cases, cancers fixed to the pelvic wall, great massive cancers choking the pelvis, and many with general metastases, where the radium was used only to afford relief; yet over twenty per cent. of this remarkable group had been apparently cured. They did not pause to dwell upon the great alleviation afforded a large number of those who were not cured, but where discharges stopped, pain ceased, and health was built up. Their conclusion then was that radium had come to stay and was a most efficient agent in treating cancers of the uterus and vagina.

X Ray Treatment of Uterine Hemorrhage.—Dr. Robert T. Frank, of New York, said that x ray treatment was indispensable in gynecology, but under strict indications and limitations. The rays worked mainly by destroying ripening ovarian follicles, primordial follicles showing great resistance. When no ripe follicles were present, menstruation ceased. In fibroids there might also be a direct effect on the tumor. Fractional exposure implied frequently repeated treatments of small amount. This took more time, but permitted of finely graded doses. Intensive treatment by use of small multiple fields permitted of rapid attainment of amenorrhea. The rays could be used in all functional hemorrhages —menorrhagia or metrorrhagia—in which expert examination revealed normal pelvic organs, and in which the curettings were free of malignant changes. This saved the uterus of adolescents and women in their sexual ripeness because the bleeding could be "toned down." It also saved women in the preclimacteric age from operation, if they were bad operative risks. The speaker had used x ray in about five per cent. of fibroids. Only forty-five per cent. of fibroids required treatment. Bleeding was most readily checked by raying. In order to permit of the safe employment of x ray, the speaker postulated that no case should be rayed in which a suspicion of carcinoma or sarcoma was entertained, that no complications, such as ovarian or annexal tumors, were present, that no urgent symptoms were present. This limited the treatment to clear cases of uncomplicated fibromyoma. Preference should be given to the rays when extreme psychical unrest or severe cardiac, renal, or pulmonary disease contraindicated operative measures. The expense entailed by raying precluded its use except in well to do patients or in endowed institutions.

(To be concluded.)

Letters to the Editors

EVERYBODY'S BUSINESS IS NOBODY'S.

New York, *August 3, 1916.*

To the Editors:

Experience No. 1.—My wife and five and a half year old daughter, who had been on the south shore of Long Island for a long time before the present epidemic of poliomyelitis started, left there for Westchester County on Monday, July 17th. In order to avoid passing through New York, they motored across Long Island and ferried from Sea Cliff to New Rochelle. The police officer of that place refused to allow them to land and refused to examine the two doctors' certificates with which they were supplied, but he kindly informed them that if they came in a private launch, all would be well, as his instructions were only not to allow children under sixteen years of age to land from the ferry.

Experience No. 2.—On Monday, July 31st, my wife and child came to New York en route for New Hampshire. I obtained the certificate needed from a physician and from the Board of Health and then took the child to the Federal officer at the Grand Central Depot, who gave me another certificate. Every one was most kind and considerate and worked with dispatch; but imagine my surprise when we boarded the train and were not even asked for a single certificate.

I do not care to comment. A. M. H., M. D.

AUTOSERUM IN THE TREATMENT OF ANTERIOR POLIOMYELITIS.

New York, *August 13, 1916.*

To the Editors:

Inasmuch as serum of healthy adults is being experimentally used in the present epidemic of anterior poliomyelitis, I venture to suggest the use of autoserum instead. The dose of the autoserum may range from twenty to forty c. c., administered intravenously. Autoserum has proved to be of value in septic endocarditis, chorea, pneumonia, and typhoid fever. It may prove of value in infantile paralysis. In the employment of autoserum, the patient need be neither a lender nor a borrower.

Robert Abrahams, M. D.

257 West Eighty-eighth Street.

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

The Treatment of Infantile Paralysis. By Robert W. Lovett, M. D., Boston, John B. and Buckminster Brown Professor of Orthopedic Surgery, Harvard Medical School; Surgeon to the Children's Hospital, Boston, etc. With 113 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. ix-163.

This little volume is both timely and valuable. The author, who has had considerable experience in the treatment of infantile paralysis, has managed to compress within the compass of 160 pages all that the practitioner needs on this subject. In the first chapter there is a concise statement of what is known of the pathology, symptoms, diagnosis, mortality, and prognosis of the disease. The remainder of the book is concerned with the treatment, and this is considered at some length. During the acute phase of the disease, the main object of the treatment is to limit the destructive process; during the convalescent phase, the restoration of muscular power and the prevention of deformity are the main desiderata; in the chronic phase, the treatment is chiefly operative. The author only includes in the book what has been proved to be of value, and he ignores mere theories. Thus drug and serum treatment occupy only one page, and are summarized in the author's statement that "we have no knowledge at present of any drug or serum or means of treatment which will protect from infection, abort the attack, or prevent the paralysis." Rest, ambulatory treatment, braces, balance, prevention of deformity, restoration of nerve and muscle power, massage, heat, electricity, and muscle training are all discussed in the light of the author's own experience. Operative treatment is described in some detail, and occupies the greater part of the book. There is a short, but important, chapter on muscle training, and another on the spring balance muscle test. The book is in every way admirable, and is a splendid example of what an able author can accomplish in a small space; it will probably be welcomed by every physician living in or near the scene of the present epidemic; and it stands in pleasing contrast to the hysterical and irresponsible utterances of many would-be guides.

Sex Problems of Man in Health and Disease. A Popular Study in Sex Knowledge. By Moses Scholtz, M. D., Chief of Clinic and Clinical Instructor in Dermatology and Syphology, Medical Department of the University of Cincinnati, etc. Cincinnati: Stewart & Kidd Company, 1916. Pp. 168. (Price, $1.)

While the wages of sin is death, the lot of the prostitute, in this country at least, does not seem to develop logically from her transgression; she becomes the prey of grafting politicians, of the lower sort of police officer, of pimps and similar ornaments of society, which gives some idea of the amount of her earnings. Apart from this error of attributing directly to her "sin," the unhappy condition of the professional prostitute, Doctor Scholtz's little book is an excellent one. It is almost incredible, and makes us shudder to contemplate the vast ignorance of the simplest facts of sexual physiology that pervades the laity and renders necessary such books as this. Gonorrhea is still a joke among young men, a sort of assumption of the *toga virilis,* in spite of what we now know of the countless laparotomies among young brides directly due to the terrible disease. Gonorrhea seems to be more largely responsible for childlessness than contraceptive methods, against which there is such an outcry. We think this book is a trifle old fashioned in its view of masturbation, which is notoriously common among the lower animals in the absence of a mate. The damage done to a young man must be largely psychic and due to pernicious and lying quack literature; abstinence will quickly cure the average case of neurasthenia supposedly due to the habit. There is a much wanted warning against the clandestine prostitute, who seeks adventure for pocket money, good dinners, or the theatre. The description of, and indicated treatment for venereal disease are very well done by Doctor Scholtz, and the whole style and viewpoint of the book are excellent. Perhaps it might be better in the smaller towns for the physician or druggist to handle a book of this kind rather than the regular bookseller, of whom many sufferers might feel some diffidence in asking for it.

A Manual of Practical Laboratory Diagnosis. By Lewis Webb Hill, M. D., Graduate Assistant, Children's Hospital, Boston. With 11 Figures and 8 Plates—4 in Colors. Boston: W. M. Leonard, 1916. Pp. vii-179.

The author and publisher of this little volume are to be congratulated on having broken away from the modern fashion of trying to compress within a single volume all the tests which have ever been employed. In this little book will be found a few tests, well chosen, and all of them practical for the average medical man. Tests and methods which are not of ordinary clinical application, or which can be performed only in a well appointed laboratory by an expert worker, are omitted. There must be many physicians who have been waiting for just such a book as this.

Examination of the Urine and Other Clinical Side Room Methods. By Andrew Fergus Hewat, M. B., Ch. B., M. R. C. P., Ed., Tutor in Clinical Medicine, University of Edinburgh; Lecturer Edinburgh Post-Graduate Vacation Course. Fifth Edition. New York: Paul B. Hoeber. Pp. 212. (Price, $1.)

Of about vest pocket size, this manual contains the essentials of uranalysis, also of examination of the blood, sputum, pus, gastric contents, and feces. Space is saved by not dwelling upon the significance of the findings, which can be looked up elsewhere. The student can save an immense amount of time and labor by providing himself with this book, which we commend cordially.

Interclinical Notes

Dr. William Brady, in the August *Nurse,* insists that the latest fashionable disease is sinusitis—one of our most ghastly hybrid neologisms, likely to make poor Achilles Rose turn in his grave. Dr. John B. Huber boldly attacks the venereal diseases; he uses the uncommon form, *innocentium,* in the well known phrase, *syphilis insontium.* Dr. Anne E. Perkins contributes a useful paper on dangerous popular fallacies, such as salves for wounds, the milk of one cow, mother's marks, red flannel, electric belts, uric acid in the system, etc. Dr. Frederick C. Warnshuis avails himself of our curious use of some words in writing on "female catheterization." There are several valuable articles by trained nurses and a really good short story, What the Filipino Started, by Jane K. Polk. The illustrations, as usual, are attractive and well done.

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A picture in *Leslie's* for August 3d shows German prisoners having their wounds bound up by their British captors. We suppose that a prisoner under such circumstances permits himself to draw a long breath of relief, even if he is careful to let no one see him in the act. To us, such a dénouement will always seem a *reductio ad absurdum* of a bloody campaign; the effect is inevitably one of anticlimax.

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The *Survey* for July 22d bears on the cover a picture of the bas relief recently presented to the Women's Medical College of Pennsylvania by Dr. Rosalie Slaughter Morton, of New York. A woman sculptor is responsible for the elaborate work, Clara Hill, pupil of Augustus St. Gaudens. The central figure is a woman physician, garbed in academic gown and mortarboard.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 9, 1916:

Bean, W. S., Jr., Assistant Surgeon. Designated as a member of coast guard retiring board at Boston, Mass., vice Passed Assistant Surgeon R. A. Kearny, relieved.

Billings, W. D., Surgeon. Granted twenty-two days' leave of absence from August 22, 1916.

Blount, B. B., Acting Assistant Surgeon. Granted two days' leave of absence from August 6, 1916.

Grimm, R. M., Passed Assistant Surgeon. Directed to proceed to Columbia, S. C., Milledgeville, Ga., and Jackson, Miss., for observation as to incidence or recurrence of pellagra.

Grubbs, S. B., Surgeon. Granted five days' leave of absence from July 30, 1916, under paragraph 193, Service Regulations.

Hurley, J. R., Passed Assistant Surgeon. Directed to proceed to New York for duty in the prevention of interstate spread of poliomyelitis.

Jones, W. M., Assistant Surgeon. Granted one month's leave of absence from August 20, 1916.

Kempf, G. A., Assistant Surgeon. Directed to proceed to New York for duty in the investigation and suppression of poliomyelitis.

Laughlin, J. B., Assistant Surgeon. Directed to proceed to New York for duty in the prevention of interstate spread of poliomyelitis.

McKay, S. R., Field Investigator. Directed to proceed to Tuscaloosa, Ala., for duty in studies of rural sanitation in Tuscaloosa County.

Marshall, Edward R., Passed Assistant Surgeon. Granted fourteen days' leave of absence from August 10, 1916.

Mathewson, H. S., Surgeon. Directed to take charge of the Marine Hospital, Portland, Me., during the absence of Senior Surgeon P. C. Kalloch.

Miller, K. E., Assistant Surgeon. Directed to proceed to Toledo, Ill., to assume charge of studies of rural sanitation in Cumberland County.

Mitzmain, M. B., Technical Assistant. Directed to proceed to New York for duty in the investigation and suppression of poliomyelitis.

Scott, J. T., Acting Assistant Surgeon. Granted two days' leave of absence, June 1 and 2, 1916.

Slaughter, W. H., Assistant Surgeon. Directed to proceed to Calhoun, Gordon County, to investigate possible infection of public water supply.

Stimson, A. M., Surgeon. Bureau letter dated July 3, 1916, granting one month's leave of absence from July 6, 1916, amended to grant twenty-six days' leave from July 6th.

Weldon, L. O., Assistant Surgeon. Bureau letter dated July 25, 1916, granting three weeks' leave of absence from August 1st, revoked.

Wheeler, G. A., Assistant Surgeon. Directed to proceed to cotton mills villages in counties of Greenville, Laurens, and Union, S. C., to make epidemiologic studies of pellagra in connection with present investigation.

White, J. H., Senior Surgeon. Granted one day's leave of absence en route to station, July 30, 1916.

Witte, W. C., Assistant Surgeon. Directed to proceed to Toledo, Ill., for duty in studies of rural sanitation in Cumberland County.

Young, G. B., Surgeon. Directed to proceed to Kansas City, Mo., to investigate public health organization and administration.

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Births, Marriages, and Deaths

Born.

Grushlaw.—In Scranton, Pa., on Saturday, August 5th, to Dr. and Mrs. Isaac Grushlaw, a daughter.

Married.

Crispell-Schneider.—In Poughkeepsie, N. Y., on Wednesday, August 2nd, Dr. Clifford A. Crispell and Miss Georgis Schneider.

Furlong-Mauro.—In Gloversville, N. Y., on Wednesday, August 2nd, Dr. Frank C. Furlong, of Poughkeepsie, N. Y., and Miss Carmela Maria Mauro.

Died.

Baum.—In Syracuse, Pa., on Sunday, August 6th, Dr. Henry Baum, aged fifty-seven years.

Blessing.—In Sacandaga, N. Y., on Sunday, August 6th, Dr. Adam J. Blessing, of Albany, aged fifty-two years.

Buecking.—In Chicago, Ill., on Monday, July 31st, Dr. Edward F. Buecking, aged forty-eight years.

Charlton.—In Indianapolis, Ind., on Saturday, July 29th, Dr. Frederick R. Charlton, aged forty-three years.

Cheney.—In Bremen, Ga., on Monday, July 31st, Dr. I. N. Cheney, formerly of Carrollton, Ga., aged ninety years.

Cox.—In New York, on Thursday, August 3rd, Dr. Rowland Cox, of Paterson, N. J., aged forty-five years.

Fairbanks.—In Kansas City, Kan., on Saturday, July 22nd, Dr. William F. Fairbanks, aged fifty-six years.

Field.—In Indianapolis, Ind., on Monday, August 7th, Dr. Martin H. Field, aged eighty-one years.

Hickson.—In San Francisco, Cal., on Monday, July 31st, Dr. E. B. Hickson, formerly of Long Beach, Cal.

Holt.—In Chicago, Ill., on Wednesday, August 2nd, Dr. Frank Holt, aged forty-seven years.

Lackey.—In Nashville, Tenn., on Wednesday, July 26th, Dr. James H. Lackey, aged sixty-eight years.

Landis.—In Memphis, Tenn., on Friday, July 28th, Dr. Henry Z. Landis, aged sixty-four years.

Murphy.—In Mackinac Island, Mich., on Friday, August 11, Dr. John B. Murphy, of Chicago, Ill., aged fifty-nine years.

Perry.—In New York, on Monday, July 31st, Dr. Ellis B. Perry, formerly of New Bedford, Mass., aged sixty-eight years.

Snyder.—In State Line, Wis., on Sunday, August 6th, Dr. Omer C. Snyder, of Chicago, Ill.

Spenzer.—In Cleveland, Ohio, on Tuesday, August 1st, Dr. Eugene A. Spenzer, aged forty-seven years.

Sullivan.—In Bridgeport, Conn., on Wednesday, August 2nd, Dr. James L. Sullivan, aged forty-three years.

Tifft.—In New Rochelle, N. Y., on Sunday, August 6th, Dr. Edwin R. Tifft.

Webster.—In Philadelphia, Pa., on Wednesday, August 9th, Dr. John B. Webster.

Wise.—In Los Angeles, Cal., on Monday, July 31st, Dr Kenneth Wise.

Yeager.—In Philadelphia, Pa., on Friday, August 4th, Dr. William H. Yeager, aged forty-two years.

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Original Communications

THE SUBSTITUTE FEEDING OF INFANTS.*

An Address on Its Principles and the Changes Seen During the Past Twenty-five Years.

By J. P. Crozer Griffith, M. D.,
Philadelphia,
Professor of Pedriatics, University of Pennsylvania.

No subject seems to me to offer greater possibilities of interest than the old and somewhat worn topic of infant feeding. Old it is, it is true, yet ever changing and ever new; a new phœnix of advance rising from the ashes of older consumed and abandoned ideas. Never to be completely mastered, because, whatever we may do, we are giving the infant a diet which Nature did not intend that it should have.

The fact that it is now twenty-five years since I assumed the chair of diseases of children at the University of Pennsylvania, brings before me in retrospect some of the changes and advances in the methods of feeding infants which the profession has experienced since that time. I have thought it might be of service to review briefly some of these. The amount of literature upon the subject is vast, and a consideration of all of it would fill a volume. I shall limit myself to an attempted consideration of some of the more important and practical features.

Decidedly more than twenty-five years ago the belief arose that the contamination of milk by bacterial germs was a fertile cause of digestive disturbance in early life. Scalding of the milk had long been done by the laity, although the reason was not well understood. Sterilization, continued for some time at the temperature of boiling water, had been urged and was in vogue. Pasteurization, or destruction of germs at a lower temperature, had come into prominence. These all were intended to destroy bacteria already present. They did not make bad milk good, so far as the existence of the harmful toxins produced was concerned. They merely kept it from growing worse. The first serious effort, so far as I know, toward the production on a large scale of milk bacterially clean was made by Doctor Coit, of Newark. The movement has now spread to a wonderful extent throughout the United States. In dairies supervised by medical men, with frequent examinations by chemists, bacteriologists, and veterinarians, every care is taken to produce milk which contains a negligible number of bacteria, and which is of uniform strength in its various elements. It is now no longer necessary in any of the larger cities to make use of milk which is bacterially unclean, although it sells, it is true, at an advanced price. But the movement has had more far reaching results, in that it has created a tendency toward increased care in the production of the average market milk.

At about the same time, or very soon after, came the development of the so called "percentage method" of infant feeding, advocated by Doctor Rotch; and simultaneously the dictum urged by him and others that it was the protein of the milk, especially the casein, which was the element most difficult of digestion by the human infant. These are absolutely distinct subjects and will be considered separately. Regarding the first of these, I may say that it was almost immediately recognized in this country as an enormous advance in scientific infant feeding; and even in Europe, while it did not nominally obtain this recognition, the principles underlying it practically did so, as is shown by the fact that all the very numerous special feeding mixtures devised and recommended by various foreign pediatrists were and still are constructed on a percentage composition basis.

As has been very well expressed by others, the percentage method is not a method of feeding, but a method of thinking. I would point out that we do not feed a child percentages, but fat, protein, and carbohydrate. If the food does not agree, the fault lies not with the method, but with the amounts of the food elements which we have wrongly selected The percentage method makes for accuracy to a degree which is impossible without it. No man can construct varying mixtures of milk, cream, water, sugar, and the like, without a tremendous handicap which only his special experience can overcome, unless he realizes what he is really doing in the combining of the *elements* of which the milk and cream are composed. Yet how difficult it is, even after all these years, for truth to penetrate the unenlightened mind, is shown by a recent article in one of the medical journals of this country, in which the writer criticised the percentage method as responsible for the feeding of high fats and low proteins, as had been recommended by Doctor Rotch and others. One would think it was easy to grasp the fact that

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*Address delivered before a Joint Meeting of the Mifflin, Juniata. and Huntingdon County Medical Societies, of Pennsylvania, May 4, 1916.

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the percentage method does not recommend *any* fixed amounts of fat or protein, high or low. It leaves that to us. It is simply an accurate way of thinking.

Much has been said about the percentage method being complicated. There is, in fact, nothing complicated about it. Let me give an instance of its simplicity. I will refer also very briefly to the manner of its employment and to its advantages. Milk is composed chiefly of three elements—fat, carbohydrate, and protein—dissolved or suspended in water. There are, of course, other elements of great importance, such as the salts, and the ferments and allied bodies. So, too, the proteins consist of more than one sort; and this is a matter of serious consideration. In the limited space at my disposal I am obliged to ignore these facts, as well as some other very important matters which recent investigations have brought into prominence. In our calculations, we consider for the most part only the three mentioned. We usually estimate the composition of average cow's milk as fat, 3.5 to 4.5 per cent., carbohydrate (in this case milk sugar), 4.5 per cent., and protein, 3.5 to four per cent. A long series of analyses made for the Milk Commission of the Philadelphia Pediatric Society gave the protein as averaging about 3.60 per cent. When we come to dilute the milk in a way to make it suitable for use for an infant, there is but little resulting error if we assume that each of the three elements is present in whole milk in the proportion of four per cent. It is not absolute accuracy of original percentages which we so much desire, as accuracy in modification. Now the whole plan of the percentage method may be made simple if we merely think of whole milk as containing fat, four per cent., sugar, four per cent., and protein, four per cent. We think of a mixture of ten ounces of milk and ten ounces of water as consisting, not of half milk and half water, but of fat, two per cent., sugar, two per cent., and protein, two per cent.; of one which has five ounces of milk and fifteen ounces of water, i. e., one quarter milk, not as quarter strength milk, but as consisting of fat, one per cent., sugar, one per cent., and protein, one per cent. That is all there is to it, and it is surely not very difficult. Now suppose we feel that one of these mixtures is too weak—as it readily may be—or that we do not have the quantities of one particular element which we wish to have; the percentage method is at hand to make us capable of mingling the elements desired in an exact manner. In our twenty ounces of mixture we determine, for instance, that we should like to have six per cent. of sugar instead of the one per cent. which the quarter dilution would give us. All we need to do is to add five per cent. of sugar, viz., five per cent. of the twenty ounces of mixture, which, of course, gives us one ounce of sugar to be added. If we fear an infant can stand no more fat or sugar, but wish to make the one per cent. protein of our quarter whole milk mixture stronger, we can do it very simply by adding skimmed milk to the mixture; for if we take the bottom eight ounces of a quart jar of milk, after standing six to eight hours, the amount of fat in it can be readily ignored. Thus if in our twenty ounces of mixture, five ounces, i. e., one quarter, of which is milk, and which, therefore, contains one per cent. of protein, we wish to make the protein two per cent., all we need do is to add five ounces of skimmed milk in place of five ounces of the water we should otherwise use. On the other hand, if we wish to increase the percentage of fat, we merely have to use a milk which is richer in fat than whole milk is. For instance, the upper twenty ounces of the quart contains approximately six per cent. of fat and four per cent. of protein. By using ten ounces of this and ten ounces of water, we have a mixture consisting of three per cent. of fat and two per cent. of protein; or if we use five ounces of this top twenty, and fifteen of water, we have one quarter of six per cent. and four per cent., respectively, i. e., 1.5 per cent. of fat and one per cent. of protein. This is certainly easy. It is no more difficult for the physician or for the mother to dilute the top twenty ounces of a quart, than it is to dilute the whole quart. If we glance at the accompanying table, which is, of course, a working table and only approximately accurate, we shall see that we do not need to employ the top twenty ounces necessarily, but can use other amounts of top milk combined with bottom milk, and can produce in different ways a large variety of combinations. For instance, to prepare this same formula containing three per cent. of fat and two per cent. of protein, we could dip off the top eight ounces of the quart, which contains twelve per cent. of fat and four per cent. of protein, and then use five ounces of this, i. e., one quarter in a twenty ounce mixture, which would, of course, cut down the proportions to three per cent. of fat and one per cent. of protein, i. e., one quarter of the original percentages present. Then, inasmuch as we wish to obtain two per cent. of protein in our mixture, all that is necessary is to add five ounces of the bottom eight ounces of the quart, which would add the needed one per cent. to the mixture.

TOP AND BOTTOM MILK MIXTURES.

	Fat percentage.	Protein and sugar percentage.
Upper 4 ounces	20.	4.
Upper 6 ounces	16.	4.
Upper 8 ounces	12.	4.
Upper 10 ounces	10.	4.
Upper 15 ounces	8.	4.
Upper 20 ounces	6.	4.
Upper 24 ounces	5.	4.
Whole milk	4.	4.
Lower 30 ounces	3.	4.
Lower 28 ounces	2.	4.
Lower 24 ounces	1.	4.
Lower 16 ounces	0.5	4.
Lower 8 ounces	0.2	4.

Whatever milk we use—whole milk, skimmed milk, top milk—it is to be noted that the proportion of protein is always the same as that of the sugar. If this formula gives us two per cent. of protein, it gives also two per cent. of sugar, and we can now increase the proportion of sugar by adding that in any amount that we desire. The percentage method does not mean that we are compelled to employ cream of standard strength, top milk, skimmed milk, or whole milk. We can use any one of these which is simplest and gives us the percentages which suit the case. All that we do is to determine what percentages our patient needs, and then choose the strength milk we desire and dilute it.

As I said, that is all there is to it. It does not take long to say, and any one with a common school education can understand it; once we have learned to think in percentages—and it is very easy—we shall never be able to think in any other way—and never want to. No matter if we are giving the baby a mixture of half milk and half water, we shall subconsciously realize that we are feeding approximately two per cent. fat and two per cent. protein.

Going back to the other matter to which I referred—the early teaching of Doctor Rotch and others of us regarding the supposed danger of a high protein percentage—the passing of time soon showed that this was to an extent an error. A number of us working independently were soon convinced that the *fat* of the food was one of the most difficult elements for the infant to digest. I remember publishing a paper upon this subject with a series of cases at about the same time that articles in the journals appeared from the pens of other teachers. The general opinion everywhere, here and abroad, is now in support of this view; and my own experience is, that by far the majority of cases of obstinate indigestion in infancy arise from the early use of artificial food too rich in fat.

Another change in our methods of feeding resulted from the recognition of the fact that the closest approximation we can make to the composition of human milk does not necessarily constitute the best artificial food for the infant. Our efforts at one period were directed to preparing a *humanized milk*—a milk mixture, the percentages of which should simulate those of human milk. We now realize that the differences which exist in the chemical composition of the various ingredients of cow's milk and human milk respectively, make the satisfactory accomplishment of this an impossibility. Few infants, in my experience, will tolerate a fat percentage in artificial food as high as that existing in human milk. This depends upon the difference in the chemical character of the fats. We have gone back, too, to the recognition of the value of a starchy addition to the food in many instances, although at one time we held that starch must not be used, because it was not one of the ingredients of human milk.

With the knowledge of the difficulty of the digestion of fat arose increased efforts to prepare a nutriment in which something else could entirely or in part take its place. Of importance in this direction was the advocacy of the so called malt soup, which, it is true, dated back to Liebig, but which was brought into prominence, as far as infant feeding was concerned, especially by Keller. Here it was found that the addition of a large percentage of carbohydrate could replace the fat to a considerable extent, and that a child would grow upon this, who had not thriven upon ordinary milk mixtures. For a reason not yet clear, it was found necessary, however, that the carbohydrates be not entirely in a soluble form, i. e., consist of sugar. A certain amount of starch was required. It was for this reason that the malt soup preparation was more efficacious and better tolerated than when merely a large amount of some sort of sugar was added to the milk mixture to make up the deficiency in the percentage of fat. The malt soup preparation may be made in various ways. Keller, using it especially in cases of difficult digestion of fat, employed one third milk and two thirds water. That is to say, he cut down both the fat and the protein percentages to about one and one third. He then made use of an extract of malt to which potassium carbonate had been added in the proportions of seven grains to the ounce, the object of this being, first, to inhibit any remaining diastatic action of the malt extract, although it was supposed to be nondiastatic; and, second, to prevent the development of an acidosis from any difficulty in the utilization by the infant of the fat still in the mixture. The simplest way to prepare malt soup is to employ one of the malt soup extracts on the market, which already have the potassium carbonate added. Following the formula for one third milk in the food, we prepare the two following mixtures: 1. Two and one half fluid ounces of malt soup extract are added to twenty-two ounces of warm water. 2. One and three quarter ounces of wheat flour (six and one half level tablespoonfuls) are added to eleven ounces of milk, stirred thoroughly, and strained through a sieve. These two mixtures are now added one to the other and boiled for a few minutes, after which the food is put into separate bottles, corked, and kept cold until needed. This gives a food containing approximately fat, 1.5 per cent., carbohydrate, ten per cent., and protein, two per cent. We notice that the carbohydrate consists partly of soluble carbohydrate in the form of maltose, dextrin, and the like; and partly of insoluble carbohydrate in the form of wheat flour. The presence of both forms of carbohydrate is considered by Keller to be imperative; and in fact, as I have said, experience seems to show that this is true. Of course, the proportions may be varied to suit the case. An increase of the milk gives larger percentages of fat and protein, while if the high carbohydrate produces diarrhea or other symptoms of indigestion, the proportions of malt soup extract and of wheat flour can be cut down. I wish to say that my experience with malt soup has extended over a good many years, and that I have found this diet extremely satisfactory in suitable cases. The high carbohydrate percentage appears to replace the missing fat to a large extent, and is, as a rule, well tolerated; and I have repeatedly had infants thrive who had done badly on all other preparations which had been tried.

In place of using the malt soup extract, we may employ any one of the good syrupy diastatic malt extracts, but it is then necessary to add the potassium carbonate, and also to boil the extract in order to destroy its diastatic properties. It will be understood that we do not desire to dextrinize the flour, but to have it remain in the food in the form of unconverted starch.

Another very successful method of feeding, which does away almost entirely with the fat, is the employment of buttermilk. This had long been in vogue, especially among the country people of Holland, but was brought into increasing prominence by Baginski and others. Buttermilk alone is rich in protein, has a reduced amount of milk sugar, and very little fat. It is, in reality, not as strong as skimmed milk, and could not alone properly nourish an infant for any length of time. To make up for the ingredients lacking, flour and cane sugar (saccharose) are commonly added in proper proportions. The method of preparation of the buttermilk mixture, as usually employed, is as follows: Milk, best previously pasteurized or sterilized, has added to it a good liquid culture of the Bulgarian bacillus, of which there are several on the market. In from eighteen to twenty-four hours the acidulation is sufficiently advanced. It should now be stirred very thoroughly, if the milk used was skimmed milk; or churned and the butter removed, if whole milk was employed. Three level teaspoonfuls of wheat flour are then rubbed up with a few ounces of buttermilk and boiled for fifteen or twenty minutes; and, while still hot, fifteen level teaspoonfuls of cane sugar are added to this, and then the balance of a quart of buttermilk. The buttermilk mixture contains about, fat, 0.5 per cent., carbohydrate, 10.25 per cent., and protein, three to 3.5 per cent. In obstinate cases of gastrointestinal indigestion this buttermilk mixture has perhaps been of more service to me than any other one form of diet. Of course, as with the malt soup, the food must be selected to suit the case. It is adapted for infants who can well tolerate protein but fat not at all, and by whom milk sugar is also not well borne.

The employment of buttermilk showed physicians that infants could readily assimilate a high percentage of protein. This led naturally to the production of other mixtures in which the protein was in large amount, and to the construction of such foods as the casein milk of Finkelstein and Meyer. Certain other truths were at this time dawning upon the pediatric profession. Prominent here was the suspicion that it might not be the casein or the fat which was the chief disturbing element in many instances, but the whey proteids, salts, or sugar; and Finkelstein, in his first efforts, tried to eliminate to a large extent all three of these. Later it was found that sugar in some form was a requisite if the child was to gain in weight. A corollary of this was the other idea which is coming into increasing prominence, namely, that there is a synergy, so to speak, of the different elements of the food; that a certain one may be tolerated, or not when another is removed, or when something else is added. Thus in the casein milk, the fat may be found well borne, if the salts and whey proteids are reduced, and if lactose, too, is diminished or replaced by cane sugar or a dextrin maltose preparation. So, too, in the malt soup food, fat often can be tolerated if a high carbohydrate percentage is added. Again, in other conditions the presence of a large amount of carbohydrate is found to aid in the assimilation of the protein. We are only at the beginning of all that we hope to learn in this direction. Much is as yet far from being clear.

With regard to the casein milk of Finkelstein's formula, and of the various modifications of this which have been proposed; the testimony in their favor is so positive and widespread that there seems no doubt about their value. I have certainly found them of service in many instances. Yet it is only fair to say that they are difficult of preparation, especially the Finkelstein formula, and that they are often distasteful to the infant. On account of this difficulty in preparation, except by one who has had experience and training in doing it, I shall give no description of the methods employed to make the original casein milk, and content myself with reference solely to the modification proposed by Hoobler. This consists simply in the addition of a casein flour to diluted buttermilk. This increases the amount of protein, especially the casein, decidedly, while the fat is absent, the sugar low, and the whey reduced. His formula consists of casein flour, ten grams, water, one pint, buttermilk, one pint. This gives a food consisting of fat, 0.25 per cent., carbohydrate, two per cent., protein, 2.8 per cent., and with the whey reduced one half. By using soured milk made from whole milk, or by adding cane sugar or a dextrinmaltose preparation, the fat or the carbohydrate percentage respectively can be varied at will. We have used various modifications of the original formula at the Children's Hospital of Philadelphia with considerable success.

One advance in infant feeding which may be spoken of here, for the emphasis upon which we are largely indebted to Finkelstein, is that it may be not so much the action of bacteria imbibed with the milk, or present in the intestinal canal, which may be the harmful agent, but a chemical change in the food in the intestine, or faulty metabolism in the tissues, which is the chief element in the production of symptoms. Finkelstein goes so far as almost to deny to the bacteria any harmful action in the majority of instances. There is certainly a great truth contained in these views. Many of us, however, find it impossible to accept them in their entirety, and believe that bacterial action is of great importance in many cases.

Finally, I must refer to two ideas sometimes called "new," which have arisen with regard to infant feeding in the last few years. The first of these is the so-called "caloric method," which, of course, is not new. This has its very distinct uses. It is serviceable, at least in theory, for determining whether or not an infant is receiving in its food sufficient heat units to enable it to thrive. But as a method of feeding, pure and simple, it is not in itself sufficient, and probably never was intended to be. Contrasts have been drawn between the percentage and the caloric methods. No one who really understands the relationship can do this. They are not methods of feeding, but methods of calculation. Certainly any one who wishes to make the number of calories contained in the food the basis for his infant feeding, must necessarily understand the calculation of the percentages of the separate ingredients which the food contains. Otherwise he cannot, of course, calculate the calories present. An objection of moment is that the passing of time has shown us that we do not yet know how many calories per kilogram or per pound of body weight an infant really requires. Not only is there a discrepancy in the statements of investigators as regards normal infants, but it has been clearly demonstrated that it is more the body surface than the weight which determines the need; and, further, that this varies in accordance with the activity of the child, whether awake or asleep, vigorous or weakly, and the like. Another and greater objection is that it by no means follows that one element can be substituted for another indiscriminately merely because the heat units produced in this way are the same. Naturally those physicians of experience, who have most considered and most strongly urged the importance of the caloric method, realize this full well. The trouble is that, in the hands of others, the diet may be based on calories alone, and the method became a menace rather than an aid. Of course, I have nothing whatever to say against the calculation of the caloric value of the food. I use it myself and I try to teach it to my students. It is important merely to recognize its proper place in infant feeding. The estimation of the number of calories present in the food is made very simple by the following formula, published by Fraley, which is briefly: Twice the fat percentage plus the sugar percentage plus the protein percentage, multiplied by one and one quarter time the total quantity of the food for the day, gives the number of calories present in this. Condensed it reads:

$$(2\,\mathrm{F.}+\mathrm{S.}+\mathrm{P.})\times 1\tfrac{1}{4}\,\mathrm{Q.}=\mathrm{Total\ C.}$$

The other "new" idea is the so called feeding with "simple dilutions"; meaning a dilution of whole milk with varying amounts of water, according to the case, and with the addition of sugar. Heubner, in studying the caloric needs of infants and in elaborating the "caloric method," made use of simple dilutions in this way; on the ground that the fat, being often difficult to digest, could well be replaced to a certain extent by sugar. It is very probable that this method, as advocated by him, was the basis upon which the present distorted conception is founded; this being, of course, a very different thing from the teachings upon which it is supposed to be based. The method is urged as an easy one, to be recommended chiefly because it does away with all calculations of percentages. But it is to be remembered that, as employed by Heubner and others of his calibre, a careful calculation was made of the percentages of the various milk ingredients present, and then a further calculation of the caloric values of these, and their relationship to the caloric needs of the child. There is nothing easy about this, if you wish to avoid calculations. Those who go about it in the manner we now see recommended, and who are merely looking for something easy, are by no means following the method advocated by Heubner. They have dropped their pilot, have lost their bearings, and are out of the course. There is not, and cannot be any easy method of infant feeding, except at the human breast; and even this is by no means always a successful one, as we all very well know. The "simple dilution" method as recommended by many for the reasons assigned, is only one for the lazy doctor who is trying to avoid thinking. I have a strong sentiment that the man who is not willing to take *any* amount of trouble to prepare the best possible food for an infant, had better delegate the business to some one else.

Of course, there can be no possible objection to simple dilutions. We all use them under certain circumstances, and it is certainly proper to make a food mixture in as simple a way as we can. We are at liberty to make use of well selected milk mixtures of any sort, made in any way, so long as we realize that the different milk elements can by no means be used interchangeably because they have like caloric values, and so long as we have accustomed ourselves to think in percentages, and do so think. Just so soon, for instance, as we use skimmed milk as one of the additions to our simple dilution of whole milk with water, we are in fact thinking in percentages, and are using a percentage method. Our mental process has been that we do not wish to increase the fat strength of the food; that skimmed milk contains a negligible percentage of fat; and that consequently by selecting it to form a part of the diluent, we may increase the percentage of protein and sugar without altering materially the percentage of the fat. So, too, the man who gives an infant one part of milk and three parts of water and realizes at once and involuntarily that he is feeding approximately one per cent. of fat, one per cent. of sugar, and one per cent. of protein, is feeding by percentages, and is now capable of making any mixture he may desire.

Now what mixture *is* to be desired? What will a study of the direct effect upon the infant's digestion teach us as to the changes in the food which should be made? Many things could be said in this connection, but I must limit myself to just a few practical points.

A baby unfortunately deprived very early of its mother's milk should by preference be supplied with a wet nurse. Of the superiority of human milk and of the five times greater chance of living which the breast fed baby possesses, there is no need to argue. It has been proved beyond question. If the mother's milk is merely insufficient, the baby should be allowed to get what it can, and the balance of the food should be prepared artificially. Meanwhile, every effort should be made to increase the maternal supply. If the mother's milk seems to disagree, there should be great delay in abandoning breast feeding. It often happens that after the colostrum period is well over, and the mother has become strong enough to resume her ordinary methods of life, the milk will be found digestible.

When preparing the substitute feeding for the very young infant, all the percentages should at first be low, and this applies especially to the fat. A fat percentage of one is ample, and even this is sometimes too strong. The sugar should be five per cent., the protein one per cent. Milk sugar should be tried at first, if the child is perfectly healthy; and if this is found not to agree, cane sugar or a dextrin maltose mixture may be used instead. The first effort should be to have the food agree; *not* to produce increase in weight. After the first formula is found to be well digested, the food can readily be increased to fat, 1.5 per cent., sugar, six per cent., and protein, one or 1.5 per cent. Looking again at the table of the strengths of different parts of top and bottom milk, we readily see that if 1.5 per cent. of fat and one per cent. of protein are to be used, the food can be prepared by mixing five ounces of the top twenty ounces of a quart with fifteen ounces of water, and adding sufficient sugar, since one quarter of six per cent. is 1.5 per cent., and one quarter of four per cent. is one per cent. If 1.5 per cent. of fat and of protein is selected, we may mix seven and one half ounces of whole milk, i e., three eighths of twenty ounces, with enough water to make twenty ounces, since 1.5 per cent. is three eighths of the four per cent. of protein and of fat contained in whole milk. Of the other ways by which the same results can be obtained, as by using both top milk and bottom milk in the same formula, I cannot take time to speak further; a little study of the table will readily show many different combinations.

Further increase in the strength of the formula will depend upon the digestion and upon the weight. No change should be made while both are in good condition. When the weight ceases to increase properly, the formula may be increased to fat, two per cent., and protein, 1.5 per cent.; and later to fat, three per cent., sugar, six per cent., and protein, 1.5 per cent., two per cent., or three per cent., provided that the baby shows a tolerance for this quantity of fat. When shall we increase the strength of the food beyond these figures? There is no rule for this. It will probably be necessary to use a stronger milk mixture as time passes; for although human milk does not increase in strength as the baby grows older, in the case of substitute feeding we are employing a diet which the child cannot utilize to the same degree, and persisting with a weak mixture necessitates giving a food which would be unduly great in bulk. What I desire especially to emphasize in this connection is that the age of the child is *in no way* to be our guide; but only the tolerance and the demands as shown by the state of the digestion and by a faithful use of the scales. I have many times seen much harm result from a too faithful following of published tables of the strength of food supposed to be required for the different months of life.

When the necessity for a substitute food first arises farther along in infancy, the same method is to be followed to a certain extent. The first formula should be very weak, although, of course, the child will not be satisfied with it or gain upon it. As soon as it is found to agree, it may be rapidly, but step by step, increased until the percentages are found to be sufficient.

So much for babies in health. What shall we do with artificially fed infants who exhibit symptoms of digestive disturbance? Some general rules may be given as a guide. Should vomiting or diarrhea develop acutely, all milk is to be stopped at once for twelve or more hours, and a purgative given. The child may be fed with plain water, weak barley water, or some other similarly harmless substance. If the condition has been hitherto constantly good, we should now work back in the course of a day or two to the previous diet. It is not necessary to make the delay very long. It is a mistake, also, to be too ready to change a formula which on the whole has been found previously to be fairly satisfactory. The frying pan and the fire are to be borne in mind in this connection.

Should the digestive disturbance be of a more chronic nature, and the child evidently not doing well, a change, of course, is needed. A wetnurse is the best remedy possible. If one cannot be obtained, there are certain pointers which show the way to the modifications of the diet which should be made. Excessive vomiting is usually due, so far as the nature of the diet is concerned, either to too much fat or too much sugar, and much more frequently the former. Either may produce sour vomiting, but the fat is first to be suspected. After a preliminary starvation and purgation, we reduce the fat of the diet greatly for a time. Here buttermilk or diluted skimmed milk is often very serviceable; and later the buttermilk mixture, with the addition of sugar and wheat flour as described. It is, however, not to be forgotten that very frequently vomiting may be brought about by other causes than the nature of the food. The child may, perhaps, be fed too often or too large a quantity, or the vomiting may be due to excitement even of mild degree, moving the body after feeding, habit, or some organic disease of the stomach, such as a chronic gastritis or pyloric stenosis.

The condition of the stools may be an indication for a change in the food. The mere occurrence of white, crumbling, or salvelike stools, is not of itself a reason for this change; and certainly not if the child is thriving. If change is really indicated, these soap stools, as they are called, depending, as they do, upon an excess of fat, may be altered by reducing the fat, or sometimes by increasing the carbohydrate in the food. Frequently malt soup or the buttermilk mixture is serviceable here, and under its use the soap often disappears, and the stools become light brown, smooth, and homogeneous. Large or small, scattered, soft, white lumps in a diarrheal stool indicate the presence of an excess of free fat. These lumps are not composed of casein, as formerly supposed; casein lumps being hard and often of a yellowish white tint. In the way of treatment, reduce the fat or increase the carbohydrate. For this purpose an ordinary milk mixture may be made which contains the ingredients in this altered relationship, or malt soup or buttermilk mixture may be employed. If the increase of the carbohydrates makes the liquid character of the stools worse, as sometimes happens, casein milk may often be given with great success. Alkaline stools, with an offensive putrefactive odor, indicate abnormal decomposition of the protein. The odor is readily recognized, and that they are alkaline can easily be determined by the use of a piece of litmus paper. Often the increase of the carbohydrates will relieve this difficulty, or giving living lactic acid microorganisms may overcome the excessive action of the proteolytic bacteria. Very acid, diarrheal stools, which irritate the buttocks and are often fermented in appearance, indicate an intolerance for carbohydrate. Abandoning milk sugar and the employment of white sugar or of a dextrin maltose preparation may relieve. If not, the total amount of sugar should be reduced Casein milk may be of service here, inasmuch as the sugar content is low, and that of the milk sugar especially so.

There are other far more serious conditions than those referred to, one of them, for instance, that in which, with or without serious vomiting or diarrhea, the child constantly wastes. It has reached the state of alimentary decomposition described by Finkelstein. This subject is too large for me to enter upon here. Usually nothing but the employment of human milk offers any hope of saving these children.

1810 Spruce Street.

THE PHYSIOLOGICAL AND TOXIC ACTIONS OF FORMALDEHYDE.*

With a Report of Three Cases of Poisoning by Formalin.

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The aldehydes are formed by dehydrogenization of alcohols, generally by oxidation, and perhaps it is well to say that they are neutral in reaction and occupy a position midway between the alcohols and acids.

Methyl aldehyde, or formaldehyde, results from passing vapor over hot platinum or copper wire; to illustrate, $CH_3HO+O=HCHO+H_2O$.

The formaldehyde vapor is used for disinfecting rooms, but is less potent than sulphurous acid and inferior in some other respects. Its affinity for water makes it an escharotic in heavy solutions. It does not injure any fabric. However, our familiarity with formaldehyde as an antiseptic or disinfectant is perhaps generally in form of a solution which is known as formalin. This is a thirty-seven per cent. solution in water.

From the fact that it is used in several forms as a therapeutic agent it will be apropos to digress long enough to consider its physiological action in the body. The very recent publication of Mathews on physiological chemistry says that it will be recalled from the discussion of the Sorensen titration method that formaldehyde unites with amino groups to form methylene derivatives. By reduction these methylene amines can be changed to methyl amines. This seems the probable method of their formation.

It has been shown that formaldehyde is an intermediary product of metabolism in animals, but in the decomposition of the carbohydrates it is not impossible that small quantities may arise and that this formaldehyde is the source of the methylation. But this view can have no solid basis until the presence of formaldehyde in animal tissues is unequivocally established. Attention naturally turns to the two organs of the body most concerned in carbohydrate metabolism, the liver, where the carbohydrates may be formed from the proteins and stored, and the muscles, the tissues in which carbohydrate is torn to pieces and the fragments are burned for the production of muscle energy. Doctor Mathews thinks it is likely in the muscles and speaks of glycocoll which is found in large amounts in the muscles, not methylated. Formaldehyde is itself very toxic, and possibly glycocoll, which in other instances is a means of making toxic substances harmless, may also thus function in the muscles, forming sarcosine. Its possible physiological action in the body is too interesting to be left unsaid. However, the fact that it is used commercially with hardly a thought of its being harmful, is the basis for our consideration of three cases of poisoning by its use, one of which was with suicidal intent. Elsewhere we find this reference to the toxicity of formaline. On June 4, 1904, Dr. L. A. Levison, of Toledo, Ohio, reported in the *Journal A. M. A.* a fatal case in which a man took an unknown quantity of formalin, estimated, however, at two or three ounces. In 1910, in the same journal, two cases were reported; one took 100 c.c. of formalin and the other, a child, was in a serious condition as a result of inhalation of the fumes. Both recovered.

The following cases occurred during my service at the City Hospital, and careful notes were kept by Dr. Robert Moore, senior interne. Our patient seemed virtually moribund and apparently with no possibility for recovery, so that some parts of this report have the semblance of a romance. Doctor Moore not only performed the duties of interne, but those of nurse as well, and did not leave the patient for more than one hour at a time for seventy-two hours, although the regular ward nurse was in attendance. The details are as follows:

Case I. G. M., aged forty-three years, married, white, laborer. Family history, negative. Personal history: Had always been strong and healthy, never seriously sick before the present period; no operations or injuries. From my observation I estimated his weight at about 225 pounds and his height at five feet ten inches. Present condition: On March 3rd, was one of two watchers in a room where there was a corpse, and early in the morning he found an amber glass bottle which had been left by an undertaker, and drank an ounce and a half of its contents, which turned out to be formalin. His associate noticed the effect and drank a much smaller quantity. One hour later, patient was admitted to the hospital.

Examination. Patient well nourished, cyanotic and cold. Small amount of vomitus, which was thin and brown. Mucous membranes of mouth and throat dry and white in color. Temperature, 97° F.; pulse, 60, weak and irregular. Respiration, 20.

Treatment. A quart of milk was given by the stomach tube after it had been thoroughly washed by aromatic spirit of ammonia diluted, which is supposed to be the only antidote for formaldehyde. Patient was sent to ward and received a hot pack and twenty-five minims of aromatic spirit of ammonia per os, also a soapsuds enema. At 9 o'clock, when the regular bedside clinic was held, no pulse could be detected, and in the rectum the thermometer gave no register of temperature. All portions of the body were cyanotic, and the appearance of the skin reminded me of a patient with argyrosis whom I had attended at the Flower Mission Hospital. The respiration was shallow, temperature 96° F., and there was a systolic murmur transmitted to midaxillary space. Hypodermically, strychnine sulphate grain 1/30 was given. Bowels moved freely and patient vomited at intervals. Vomiting continued, with some blood in the vomitus. Two hours later, patient's temperature would not register per rectum. Twelve minims of digitalone was given. No record could be obtained of the pulse and temperature, and the respiration suggested the Cheyne-Stokes type, but the temperature and the pulse did not correspond with it. At 2 p. m. two grains of sparteine sulphate was given, also at intervals, but improvement was hardly perceptible and the betterment of conditions was not marked until 9 p. m. Dry heat was supplied constantly. On the second day, the patient rested fairly well, pulse weak and irregular, respiration slow and shallow, temperature 97° F. Cyanosis continued. The feet and hands were dark blue, also the mucous membranes, but other portions of the body were reddish and mottled. March 5th, some nausea and emesis, of light brown material, some blood.

Patient rational, but had previously been semiconscious and then dull and stupid. Liquor ammonii acetatis was given each four hours and half, an ounce of milk of magnesia every three hours. The patient rested well the third night and accepted medication by the mouth. On the fourth day, the patient took nourishment, and while the heart murmur had disappeared, there was still marked cyanosis. Patient complained of sore throat and articulated with difficulty and then in a hoarse whisper. There was evidently edema of the glottis. Patient left on evening of fourth day without permission and, I have been told, made a good recovery.

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*Read before the Indianapolis Medical Society, May 9, 1916.

CASE II. This patient was the associate of the patient described in Case I, and took half an ounce of formalin. Very little cyanosis, and symptoms not well marked, except dry and sore throat and emesis. By stomach tube, stomach was washed with milk of magnesia, then dilute ammonia water, and later a quart of milk and two ounces of milk of magnesia were put in the stomach. Patient recovered without further treatment.

CASE III. Miss S., practical nurse, aged forty years, single, white. Said she was weary of life. History of no consequence to this report, unless it be that there was a pathological connection between an infantile uterus and hysteria with melancholia. Patient was admitted to the City Hospital, September 12th, suffering from the effects of formalin which had been taken with suicidal intent. She had taken four ounces forty-five minutes before admittance to the hospital. Patient was cyanotic, temperature 96° F., respiration shallow, pulse 116, weak, rapid, and irregular. Stomach was lavaged and dilute ammonia water given, then one thirtieth grain of sulphate of strychnine hypodermically, every four hours. To relieve pain, a fourth of a grain of morphine was given one hour later. Improvement was rapid; the second and third day the urine contained albumin and sugar, which was not present on the fourth day. On account of a large amount of food in the stomach and prompt emergency treatment, recovery was gradual, with no pronounced untoward symptoms. Vomiting was easily controlled by oxalate of cerium and subgallate of bismuth, every four hours. Milk of magnesia and milk diet were included in the treatment. Dr. Joseph Wier, the interne, made note of these nervous phenomena: "Patient seemed depressed most of the time, but at other times talked freely and rapid, sometimes without reason like a neurasthenic." Before taking the formalin the patient nursed a woman who had inserted a bichloride tablet in the vagina after a debauch which had resulted in death. The depression was present afterward and she seemed to have fear of impending death and insisted that there was an unknown power urging her to put an end to her life. These symptoms, of course, did not bear any relationship to formalin poisoning, but had another pathological source; they might, however, be taken into consideration in arguing concerning the cause of the attempt at suicide.

633 OCCIDENTAL BUILDING.

FEVER, A PART OF THE SYNDROME OF TOXEMIA.

Vasoconstriction of the Superficial Vessels an Important Factor in Its Production.

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In attempting to classify the symptoms of tuberculosis I was led to suggest that those belonging to the toxic group were, for the most part, an expression of general discharge through the sympathetic nervous system, and that they were caused by the action of toxins upon the central nerve cells. In this manner I accounted for the rapid heart's action, lack of appetite, coated tongue, deficient secretion on the part of the stomach and other glands of the intestinal tract, particularly the liver and pancreas; and for the deficiency in motility on the part of the stomach and intestinal tract resulting in slow digestion and constipation, which are commonly found as a part of the clinical expression of toxemia. I accounted for the symptoms of malaise, lack of endurance, and nervous irritability, as being parts of this same picture. I could not account at that time for fever.

Further study has led me to believe that fever too belongs to this same group; and, instead of being considered an entity, should be considered as one of the symptoms of toxemia. I do not believe that fever itself is an important factor in the production of these symptoms; but I believe it has a common etiology with them, and is a part of the general syndrome.

In order to understand the theory which I wish to advance it is necessary to review the physiology of heat regulation in the body.

Heat production depends upon the intake of food and cellular activity. The chief source of heat production of the body is muscular action. The large glands, particularly the liver, also produce large quantities of heat; but every cellular activity, except that of nerve action, has been shown to be accompanied by heat production.

The loss of heat takes place mainly through the skin, although the loss through the respiratory system is not inconsiderable. Heat is also lost by warming food and air, and some is eliminated in the urine and feces. The body temperature is also influenced by the medium in which the individual exists. If the temperature of the medium is higher than that of the body, it stimulates greater dissipation of heat, if it is lower than that of the body it stimulates greater retention of heat. In spite of all these variations, a definite equilibrium of body temperature is maintained during health. This body temperature is not the same at all times of the day, but varies with the activities of the individual. There is a daily variation of about one degree or one and a half degree, which is considered to be within normal limits. In the early morning, after the patient has been at rest during the night, his metabolic activities reach their lowest state and the temperature becomes low. At this time a temperature of 97.2° or 97.4° F. is normal. Later in the day, usually in the afternoon, when the activities of the day have reached their maximum, a temperature of 98.4° or 98.6° is attained. This natural diurnal variation of one or one and a half degree is considered normal.

The mechanism of control is so perfect that if there is an increased production of heat within the body, there is a quick response on the part of the channels of elimination, so that compensation is attained. The chief way in which compensation is reached is through elimination by the skin and the respiratory tract; consequently a greater pulmonary ventilation occurs and dilatation of the bloodvessels of the skin takes place. If, on the other hand, there is a deficiency of heat production within the body, pulmonary ventilation is lessened, the superficial bloodvessels contract, the muscles are called into action, and a greater amount of heat is produced. Shivering and chill are muscular contractions which result in increased heat production. Sometimes this greater demand for heat is met by other metabolic activities; and, if the demand is prolonged, it is met by a greater intake of food.

Departures from the normal maximum and minimum temperatures are sometimes met, of both pathological and physiological origin. When large quantities of food have been consumed we have sometimes a physiological rise of temperature, amounting usually, however, to not more than a few tenths of a degree. When excessive muscular exercise is engaged in, such as occurs in a game of tennis, or in other severe muscular exertion, the temperature will rise, sometimes to 102° and 103°. This physiological rise of temperature is quickly followed by increased respiratory effort, dilatation of the capillaries of the skin, sweating, and a restoration of the normal heat equilibrium. It is not accompanied by symptoms other than those which occur from a feeling of excessive warmth. A pathological rise of temperature, on the other hand, is different, and when it occurs the normal is not so quickly restored. It is accompanied by other symptoms which, when taken together, we recognize as the syndrome of toxemia. The syndrome differs in acute and chronic infections, and also according to the severity of the toxemia. The syndrome seems to be due to central action upon the nerve cells.

The symptoms of toxemia, as I have studied them in tuberculosis, would be the same for all infectious diseases and all experimental toxemias, differing only in degree, as the disease is acute or chronic, or as the toxemia is slight or severe. They are as follows: Malaise, lack of endurance, loss of strength, nervous instability, headache, general aching, lack of appetite, digestive disturbances, loss of weight, rapid heart action, night sweats, fever, and anemia.

When toxemia is very severe, on the other hand, producing collapse, there result: Vasodilatation (vasomotor paralysis); sweating; and subnormal temperature.

This study leads me to suggest that fever, like the other symptoms of the syndrome, is due to sympathetic stimulation, as I shall attempt to explain.

Pyrexia may be caused, as seen from the physiological facts mentioned above, either by increased heat production or interference with heat elimination. That the chemical action which takes place within the body as a result of increased metabolic change on the parenteral introduction of bacterial protein into the body or through infection, should be accompanied by the amount of heat production required to raise the body temperature to the heights where we find it in cases of the ordinary infections, seems decidedly questionable. This seems all the more improbable if the heat dissipating mechanism is not interfered with; because such physiological rises as accompany severe muscular exercise are quickly relieved by increased pulmonary ventilation and dilatation of the skin vessels causing a temporary increase in heat loss.

If we further study the phenomena which accompany toxemia, we shall see that there is an indication of interference with heat elimination. During the early hours when fever is coming on we find vasoconstriction in the superficial tissues and a tendency to chill. Vasoconstriction is further shown by such experiments as those reported by Jona,[1] in which he noted that after the injection of protein into a rabbit, vasomotor disturbance was manifested by constriction of the vessels of the rabbit's ear. Thus we are led to believe, both from our clinical observation and experimental study, that vasomotor constriction of the bloodvessels of the skin is an effect of toxemia; and, from this, we can account for the rise in temperature, even without a great amount of chemical change within the body. That there is some increase in heat production is unquestionable, but that there is a sufficient amount to cause the rises which we often see following the injection of an infinitesimal amount of protein seems improbable. For every degree of rise in temperature a ten per cent. increase in body heat is required. I have seen a rise of 4.5° follow two mgs. of old tuberculin. It does not seem possible that such a dose could stimulate the production of an amount of heat equal to forty-five per cent. of that of the normal body; it seems far more probable that an interference with heat dissipation is the important factor.

We are further led to suspect this action from the fact that toxins and adrenine act in the same way. Adrenine will produce a general vasomotor constriction when injected into the blood stream in extremely small doses. It will also cause increase in body temperature.

It has been shown by Vaughan, experimentally, that raised temperatures simulating the various types met with in clinical medicine may be produced by injections of foreign protein, the type of temperature depending upon the method of dosing. One single injection is followed by a rise and a fall to normal. A continuous series of injections is followed by a continuous type of fever. This can also be altered so as to give either the remittent or sustained type. The explanation would be that the toxic action of the protein expending itself upon the sympathetic nervous system produces stimulation of the vasomotors of the skin, and then, as soon as the protein is destroyed, the vessels return to normal; with a resulting equilibrium in heat production and heat elimination. When repeated doses of protein are given at frequent intervals, the stimulation of the sympathetics is continuous; a constant vasomotor stimulation results; and hyperpyrexia is continuous.

In this way we can also account for the fever which follows various depressive emotional states. We have all seen a rise of temperature follow discontentment, worry, anxiety, discouragement, fear, and other similar states; but we have heretofore been unable to explain them. Recent physiological investigations show that the action of such depressing emotions is manifested upon the sympathetic nervous system. Along with other manifestations we find that of vasomotor stimulation, interfering with heat dissipation. That this is the probable explanation, is also evidenced from the physiological fact that nervous discharge is not accompanied by heat production, consequently, disturbances in heat elimination, rather than heat production, must be the important factor in the production of fever.

We have been inclined, particularly in chronic fevers, to consider that there is some disturbance of the heat centre. A heat centre has not been proved to exist; in fact, there is considerable doubt whether such a thing would be consistent with the great number of agencies which are present in the organism to produce heat and cause its loss. Bechtrew[2] and Starling[3] both express considerable doubt on this point, and say that it is nothing more than an assumption.

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[1] J. L. JONA: A Contribution to the Experimental Study of Fever, *Journal of Hygiene*, xv, 2, 1916.

This theory of the action of fever greatly simplifies our symptomatology in infectious diseases. It shows that fever is not an entity and that we should not characterize periods of activity in infections as the "fever stage".

Fever is only one symptom of the general syndrome of toxemia; and, like the other symptoms, is due to the action of the toxins upon the nervous system. It arises largely from constriction of the superficial vessels interfering with heat dissipation. Its production is a part of a general sympathetic stimulation. The collapse which results from excessive toxic action is due to a vasodilatation, a temporary or permanent, vasomotor paralysis, and is accompanied by perspiration, rapid dissipation of heat, and subnormal temperature.

TYPHOID FEVER.

Two Unusual Cases.

By I. L. Nascher, M. D.,
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The following cases are reported because they possess unusual features. The first was irregular in its onset and course; the other was peculiar throughout and taken with the remarkable findings upon autopsy may be unique.

Case I. Mrs. E. N., aged forty-nine years, weight 270 pounds, a heavy eater, with three or four stools a day. On the night of July 28th, she had a chill, followed by fever, headache, diarrhea, nausea, cough, but no expectoration. She said she had been feeling bad, not exactly sick, but not as bright and active as usual for two weeks, but this malaise she ascribed to the heat; now she felt sick all over. A few hours after the initial chill she had a temperature of 104.6° F., pulse 120, respiration 30. The respirations were shallow, face flushed, eyes injected. It resembled the onset of lobar pneumonia. She complained of pain all over, head, chest, back, abdomen, limbs, wherever I touched her or questioned her about. Owing to a thick layer of fat it was impossible to get physical signs of pulmonary trouble, and for the same reason it was impossible to reach the spleen at any time during the disease. As in all these very obese cases, the ordinary diagnostic measures and methods were of little use and we had to depend upon the history and instrumental measures. In this case the abdomen was not distended, and there was no marked tenderness aside from the general discomfort which she described as pain, except along the scar of an old operation for hernia and lipectomy. She had several stools on the 29th, but this was not unusual, and as there was no other symptom which would lead to a diagnosis of typhoid fever, and there were symptoms which would indicate a lobar pneumonia, this provisional diagnosis was made. Under quinine and phenacetine the temperature dropped to 102.6° F., in forty-eight hours, but neither bismuth subcarbonate or subgallate, opium or tannalbin had the slightest effect upon the diarrhea. The temperature was irregular during the first five days, ranging from between 102.6° and 104.6° F., dropping after the administration of the antipyretic and rising again in a few hours. The absence of pain in the chest, the subsidence of the cough, the absence of expectoration, and the persistence of the diarrhea, which toward the end of the week became watery, led to the suspicion of typhoid. There was dulled intellect, which was ascribed to the opium, but this persisted for three weeks. The headache had disappeared after the first day. On the sixth day a Widal and a diazo were both negative, and on the following day an expert diagnostician gave the guarded diagnosis, gastrointestinal intoxication, possibly typhoid. The stools were beginning to have a fetid odor; they were liquid with soft yellowish lumps, small in quantity, but passing eight to ten times a day. From this time on the case was treated as one of typhoid. On the sixteenth day another Widal gave an incomplete agglutination and diazo again negative. Although textbooks say there is no eruption after the fourteenth day, in this case the typical typhoid spots first appeared during the third week, were first seen upon the arms, and two days later appeared upon the abdomen. Delirium occurred on the twentieth day and for a few days thereafter. There was little abdominal distention at any time; the greenish, pea soup diarrhea appeared about the end of the second week and continued for ten days, and the severe typhoid state began with delirium and lasted about a week before there were signs of improvement. The mind cleared up rapidly, appetite returned in a few days, but strength returned slowly. The patient went out on September 1st, and for several days thereafter, but on September 7th there was a mild relapse lasting two weeks.

On September 5th, the nurse and the patient's son, aged seventeen years, showed the initial symptoms, and on September 12th a daughter was taken ill. There were no unusual features in the cases of the son and the nurse, and they recovered.

Case II. H. N., daughter of foregoing patient, aged thirteen years, weight 170 pounds, looked like a girl of eighteen. Received a dose of typhoid vaccine for immunization on September 8th, which produced no reaction. On September 12th, she complained of headache and chills, had a vomiting spell, and went to bed. The disease had a fairly typical course; the highest temperature was reached on the 23rd (104.6° F.), reached normal on September 29th, and a few days later the girl was allowed to leave the bed and see visitors. During the illness a Widal and a diazo were positive. On the evening of October 10th, after seeing several friends, she said she did not feel well, but there was little change in temperature or pulse rate until the 12th. At 4 p. m. of the 12th, the temperature was 99.4° F., pulse rate was 93, respiration 20. At midnight of the 13th, the temperature was 102° F.; the pulse rose to 145 on the morning of the 14th, and to 160 at noon on the 15th; respiration rose to 30 at 4 p. m. of the 15th, and to 48 four hours later. On the 15th, Dr. Robert Abrahams was called in consultation and found areas of percussion dullness and other signs of pulmonary involvement, although there had been no chill, cough, pain, expectoration, dypsnea, nor any of the usual symptoms of pneumonia. On the evening of this day the heart sounds were weak and irregular, respiration sometimes deep and full, at other times shallow; the abdomen was distended, but there was no tenderness. The face was pale, expression dull, and the patient was very restless. The stools, which had been normal for a few days, again became thin, small, and frequent. Widal and diazo positive.

From this date, October 15th, to the date of death, December 12th, a brief résumé of the progress of the disease each week will be given. It should be noted in the figures that there is no relationship between temperature, pulse, and respiration, that frequently one would rise and the others fall, or there was marked rise or fall in one and no corresponding rise or fall in the others. The rate of respiration, when sleeping, was from 8 to 15 less than when awake, but when her attention was attracted and she found that the rate of breathing was observed, she breathed more slowly. On one occasion, when counting the respirations by placing the hand upon the chest, the rate was 28, and a few minutes later when it was taken unobserved it was 44. The pulse rate was always lower during sleep and very slight causes sufficed to raise it from 5 to 15 beats a minute. There was frequently a marked rise or fall in temperature, pulse, or respiration, without any apparent cause.

First week, October 15th to 21st. The temperature range was 102.4° to 105° F., the latter reached on October 19th, at 12 and 4 p. m. Pulse range 120 to 164, the extremes occuring within ninety minutes on the morning of the 20th. Respiration ranged between 38 and 60. The particular features were the restlessness with occasional delirium, frequent abdominal distention relieved by colon irrigations and turpentine enemata, the return fluid being always thin, yellow, without odor; a persistent weak pulse notwithstanding heroic doses of the ordinary heart stimulants. The area of percussion dullness over the lungs had increased during the week, the respiration was occasionally labored, there were two short periods of cyanosis, but the usual symptoms of pneumonia were absent.

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[2] *Die Funktionen der Nerven*, 1908.

[3] *Principles of Human Physiology*, 1915.

Second week, October 22nd to 28th. Temperature range 101.8° to 104.2° F,; pulse, 102 to 158; respiration, 40 to 54. On October 23rd the pulse rate was at midnight 128; at 4 a. m., 102, and at 8 a. m. 130. During this week the symptoms were mainly cerebral and intestinal. She was always restless, occasionally delirious, passed stool and urine unconsciously. Abdominal distention was frequent, requiring colonic irrigation, turpentine enemata, and stupes.

The return was always a thin, yellow fluid, much flatus, and occasionally some semiformed feces. On October 25th patient expectorated some dark brown sputum, but had no other pulmonary symptoms. Percussion was not quite as dull at the end of the week and apparently diminishing in area. The patient complained once of pain in the heart and several times of distress in the abdomen when distended. On the afternoon of the twenty-fifth her face was flushed for several hours.

Third week, October 29th to November 4th, temperature range 101° to 104° F.; pulse, 124 to 168; respiration, 34 to 56. On November 2nd there was a sharp drop in respiratory rate from 54 to 34 in eight hours, and a fluctuation in the temperature rate of three and a half degrees in a few hours. During this week the cerebral and intestinal symptoms continued, but gastric symptoms became pronounced. There was frequent nausea, occasional vomiting, an erratic appetite. Respiration was frequently labored, generally shallow, an occasional cough, but no expectoration. On the morning of November 3rd the respiration was labored and about 3 a. m. there was a spasmodic fit of coughing followed by the expectoration of some white mucus. Later I found some rales and friction sounds in the chest. The pulse rate after the coughing spell was 168, hardly perceptible. Two hours later, it had dropped to 130. The patient complained of headache, earache, and various other pains and aches during the week, but at the end of the week she appeared stronger and brighter.

Fourth week, November 5th to 11th. Temperature range was 100.4° to 103.8° F.; pulse, 110 to 164; respiration, 28 to 48. On the seventh there were several sharp fluctuations, temperature between 100.4° and 103.2°; pulse between 110 and 148; respiration, between 28 and 44. The cerebral and intestinal symptoms were milder, but the gastric symptoms were more severe. She was still restless at night, but there was no delirium and she was bright during the day. There was little abdominal distention, stools were more often semiformed and not so frequent, and irrigations and enemata were unnecessary. One day, a few small doses of a calomel brought a thin, green, offensive stool, but the next was normal. Vomiting was now more frequent, the vomitus containing bile, mucus, and food. There was an absence of pulmonary symptoms aside from the character of the respiration, but physical signs were more marked than during the previous week. There was dullness on the right side, flatness with change of level on both sides, friction sounds, but no rales. The pulse was generally weak, becoming dicrotic on the morning of the ninth; later in the day it was irregular. On November 9th a painful swelling appeared on the left thigh, at the spot where frequent hypodermic injections of camphor in oil and other drugs had been made. Hot poultices, boric acid solution, and tincture of iodine were applied and an abscess was opened on the morning of the thirteenth. At the end of the week the temperature was generally lower, but the patient was not as bright nor as comfortable as at the end of the previous week.

Fourth week, November 12th to 18th. Temperature range, 100.2° to 103.8° F.; pulse, 102 to 152; respiration, 34 to 48. On the sixteenth the temperature range was between 101.2° and 102° F., pulse between 122 and 140, and respiration 34 and 44. On the following morning there was a drop in the pulse rate from 134 at midnight to 102 at 5 a. m., and a rise to 140 at 8 a. m. On the morning of the thirteenth the abscess opened and discharged a large amount of thick, stringy, greenish pus. The abscess formed a cavity in the fat, over one inch deep and one third inch wide. Under antiseptic irrigations, aseptic dressing, and drainage, the discharge diminished. After the fifteenth, when a mass of necrosed fat tissue was discharged, the drain when removed showed only a reddish serum or a small amount of pus; some days it contained nothing and it seemed that the wound was healing.. During this week the cerebral, intestinal, gastric and pulmonary symptoms were aggravated. The patient complained of frequent headaches, was generally restless at night, and was frequently depressed. The stools were sometimes a yellow liquid, sometimes a yellow soft mass, generally with a foul odor; there were from five to eight passages daily. No abdominal distention was evident, but some tenderness on pressure below the umbilicus. The gastric symptoms predominated. The patient frequently complained of nausea, and vomited a thin, yellow fluid which had a sickening odor. Lavage on the seventeenth had no result, the water being returned unchanged. Milk was generally retained, but other food was returned, either in a few minutes or after an hour or two. On the evening of the sixteenth the patient complained of pain upon breathing. Examination next morning showed pleuritic effusion on both sides. Still there was no cough, dyspnea, distention, or expectoration that might be expected with pleurisy, and the pain was rather an ache and not the sharp, sticking pain usually associated with this disease.

Sixth week, November 19th to 25th.—Temperature range, 100.6° to 103.2° F.; pulse rate, 136 to 152; respiration, 32 to 50. There was a fairly regular daily fluctuation of two degrees. And the pulse and respiration fluctuations were also fairly regular. It was a typical septic temperature, but many of the symptoms were present from the beginning of the relapse and were undoubtedly due to the typhoid infection. There was still great restlessness at night, while during the day the patient was sometimes bright, at other times dull or depressed. The stools had a foul odor, but otherwise resembled the stools on the fifth day of the relapse. The pulmonary symptoms were more pronounced, there was more pain in the chest, and considerable pain upon percussion; there was also some cough, but no expectoration. The predominating symptom was the persistent vomiting. The vomitus was a yellow or a greenish yellow fluid, alkaline in reaction, and containing mucus. The food during this week consisted almost exclusively of fluid and evaporated milk, and this was generally retained. Occasionally there were some flakes of milk curds. The patient was weaker this week. Widal and diazo taken this week were positive.

Seventh week, November 26th to December 2d. Temperature range, 100.4° to 103°; pulse 124 to 148, respiration 24 to 40. The daily fluctuations were slight. On November 28th the extreme range of pulse was 132 to 142, and respiration 32 to 36. The wound discharged very little pus, and was apparently becoming smaller. The vomiting of yellow fluid continued, and on the twenty-ninth the patient vomited a thin, acid fluid, not as yellow as the usual vomitus. Some foods caused nausea and were immediately vomited, but others that she liked were retained. As she was getting weaker it was necessary to increase the amount of food, but an increased food supply caused increased vomiting and diarrhea. The stools were still soft and yellow, and some were free from odor. On the 30th the patient passed a brown, partly formed, semisolid stool, the most normal since she had the relapse. On the following day, there was a discharge of pus from the rectum, and a few hours later a return of the soft, yellow, fecal discharge, covered with pus. There had been no symptom indicating perforation of the bowel, and the only conclusion was that an intestinal abscess had opened. During the week the cough increased, there was some expectoration of mucus, and one day a copious expectoration of frothy white mucus. There was still some pain in the back, but she complained of considerable pain in the joints. She was cheerful and bright, and not so restless at night.

Eighth week, December 3d to 9th. Temperature range, 99.8° to 103.6° F.; pulse 124 to 144, respiration 20 to 42. At noon of the sixth the temperature was 99.8°, pulse 124, respiration 24. Four hours later these had risen to 103.6°, 144, and 42 respectively. The vomiting continued, the vomitus being sometimes a yellowish, sometimes a greenish fluid, which toward the end of the week had a foul odor; a similar foul odor came from the mouth. Some food was retained, but most was vomited after a few hours, generally in process of digestion. The stools during the week were generally thin, yellowish, or greenish; occasionally there were partly formed, brown feces and sometimes a small amount of free pus. On the afternoon of the 8th the nurse noticed pus oozing from the vagina and that evening pus was found to come out of the vagina during a bowel movement. I found the following condition on the ninth: The wound was still discharging a small amount of pus. The patient complained of pain from breathing and coughed up a considerable amount of white frothy mucus and some thick greenish mucus. There was percussion flatness on both sides, friction sounds on the right, a few large moist rales front and back. She vomited a thick, greenish fluid, containing pus, bile, and mucus. While she was straining at stool, pus oozed from the vagina, the feces were covered with pus, and some pus dripped from the rectum after the feces passed. The right foot had become edematous and she complained considerably of pain. It seemed evident that there was now a rectovaginal perforation or a pus pocket in the cul-de-sac which had opened into the vagina, and the pressure at stool may have squeezed some of the pus in the pocket into the vagina. She was very weak, but cheerful. During the afternoon I sent her to the Jewish hospital in Brooklyn with the faint hope that a laparotomy might save her. In the hospital she could retain no nourishment, continued to grow weaker, became comatose on the afternoon of the eleventh, and died on the morning of the twelfth.

The autopsy report was as follows:

Name, H. N., AUTOPSY, *December 12, 1915.*

Young female, well nourished, well developed, looked eighteen years old, was thirteen; five feet six and one-half inches tall.

Skin. On posterior surface above right ilium are a few areas 2.5 by three cm. in length, of a color simulating a burn healed. Similar condition about each knee. Skin felt doughy. On the upper and outer aspect of left thigh were two circular areas—the upper one exhibited the subcutaneous tissue—the lower one a sinus which extended upward and inward for about five cm. Slight edema of lower extremities half way up leg, more marked on right side.

Pupils equally and moderately dilated. Mucous membranes very pale. Cervical glands not enlarged. No glandular enlargement. On section subcutaneous fat was yellow, about two cm. thick. The intercostal muscles were light pink. Subcutaneous fat over abdomen about four cm. thick. On opening abdomen there presented to view the transverse and ascending colon, cecum, and a few coils of small intestine. Omentum was thin and extended a little below umbilicus. Small areas of whitish color over peritoneum of transverse and ascending colon and all over omentum (fat necrosis). The transverse colon in left hypochondrium was adherent to parietal peritoneum. On breaking through adhesions, a large cavity was present which extended to dome of diaphragm. The adhesions extended to epigastrium and right hypochondrium and over liver, but did not present a continuation of the cavity described. The hepatic flexure of the transverse colon was adherent to inferior margin of liver and on breaking through adhesions, a cavity, which was continuous with the cavity described, was found. The adhesions between ascending colon and posterior parietal layer were intimate and on separating them there presented a necrotic membrane full of openings (artificially made) through which a large amount of greenish brown material (pus) exuded. In other words, the posterior surface of ascending colon was necrotic. The appendix showed congestion. Scattered throughout mesentery and on the surface of loops of small intestine, were small necrotic areas as described before.

Chest opened. Eighty to one hundred c.c. fluid in pericardium; retrosternal glands were not enlarged. Left pleural cavity completely obliterated by fragile adhesions. On reaching the level of the fifth rib, breaking the adhesions caused a gush of pus, the source of which was traced to an opening in the diaphragm communicating with cavity described. The right pleural cavity was partially obliterated by adhesions along the base that were easily broken through. On right side the diaphragm reached the fourth rib. On left side indeterminable. There was a pleuropericarditis on left side. No persistent thymus.

Heart. Surface, pale pink. Small amount of fat. Lower lobe of left lung intimately adherent to diaphragm and separation revealed necrosis of diaphragm and presence of an irregular opening connected with cavity described. On separating parietal pleura, to which dome of diaphragm was adherent, a few large necrotic areas were seen. Spleen intimately adherent to parietal peritoneum and tissues bounding it. Inner surface of spleen was left border of cavity. Upper surface of cavity was formed by diaphragm and posterior surface of stomach. Stomach contained a small amount of thick brown bile stained mucus. Rugæ were normal; numerous punctate hemorrhagic areas throughout. Duodenum normal. Pelvis clear, with the exception of a few necrotic areas as above described. Liver weighed five and three-quarter pounds, enormously enlarged, especially right lobe, pale, yellowish pink. Left edge of left lobe formed part of right edge of necrotic cavity. Right kidney was moderately enlarged, lower half of posterior surface and inferior pole was adherent to posterior structures. That part of retroperitoneal cavity on right side below the margin of floating ribs presented the lumbosacral plexus of nerves imbedded in necrotic tissue. Left kidney slightly enlarged, posterior surface adherent to posterior abdominal wall by necrotic adhesions. On right side the transverse processes of second and third lumbar vertebræ were denuded.

In reviewing the clinical history, we are struck by the persistence of the four groups of symptoms, gastric, intestinal, pulmonary, and cerebral, the frequent absence of correspondence between symptoms and physical signs, and the improvement in the cardinal signs, temperature, pulse, and respiration, toward the end.

The cerebral symptoms included restlessness which persisted throughout, delirium during the first two weeks, and hebetude frequently thereafter. The mental attitude changed as rapidly as the pulse and at times the patient said she felt perfectly well and wanted to get up and be dressed. Perhaps within an hour she would be dull and irritable, and moan without having any pain. She was generally depressed after vomiting, but not after stool. The signs of pulmonary disease were discovered on October 15th, but aside from the labored breathing occasionally and an infrequent short cough or rather a hack, there were no marked pulmonary symptoms until the fifth week. The symptoms and physical signs did not correspond at any time.

Anorexia and nausea began during the first week, vomiting during the third week, and this became the most pronounced symptom during the last three weeks. There was little change in the character of the vomitus, except that toward the end it had a foul odor and afterward contained pus. The diarrhea persisted from the beginning and did not change in character, except toward the end when it had a foul odor and contained pus. For several days at the beginning it was necessary to give frequent colonic irrigations to relieve the flatus, but the stools as well as the return from the irrigations were like the yellowish, thin, fecal movements of the eighth week. Some stools toward the end were more formed, darker, and harder than others, and it seemed that she was improving when pus appeared in the stool and it again became thin, yellowish, and foul. The greatest danger appeared during the first three weeks, when the pulse was frequently imperceptible. The pulse was weak and irregular after this time, but it always responded rapidly to hypodermic injections of camphor, digitalin, strychnine, brandy, or other cardiac stimulant. Whiskey was given throughout the disease; digitalis was given frequently and during the last week in half dram doses; dilute hydrochloric acid was given for six weeks with occasional intermissions. Other drugs were given when indications for their use arose, but most were vomited after the third week. Vomiting was controlled for a short time by cocaine, but when its action ceased the patient vomited more than before. Bismuth subgallate, tannalbin, and similar intestinal astringents temporarily controlled the diarrhea, but this was followed by abdominal distension. Neither hexamethylenamine, salol, nor the sulphocarbolates had any effect upon the character of the stools when they were foul smelling, nor was charcoal of any use for the stomach or intestines. The patient responded to drugs given *per os* during the first three weeks, afterward few drugs produced any impression unless given hypodermically. Under atropine given hypodermically the respiration improved when it was so shallow as to be barely perceptible, and the girl was cyanosed.

The question of vaccine treatment was considered. Here were two and perhaps three distinct infections, typhoid, pneumonic, and septic. The first was the primary and until late in the disease the predominating infection, and typhoid vaccine had so far been ineffective. This line of treatment was therefore considered inadvisable. Until it became evident that there was a severe septic infection, the outlook for recovery under the treatment was favorable, and it was decided to continue with drugs, diet, and careful nursing. In this I was supported by several physicians who saw the case. The autopsy, made a few hours after death by Doctor Blatteis, pathologist of the Jewish Hospital, revealed an extraordinary state of affairs, but it did not clear up some of the essential points in the clinical history.

The remarkable points in this report were, a pus reservoir lying between the transverse colon and the diaphragm; perforation of the diaphragm upward into the pleural cavity; no pathological condition of the lungs, except adhesion of the lower lobe of the left lung to the diaphragm; the widespread adhesions and necrotic areas; the denuded lumbar vertebræ; the absence of perforation of the vagina or other assignable cause for the presence of the pus in the vagina; the enormously enlarged liver. The clinical history and the autopsy findings were so greatly at variance that it was impossible to harmonize them except at a few points.

103 West Eighty-eighth Street.

The Value of Radium in Pelvic Cancers.—Henry Schmitz (*Surgery, Gynecology, and Obstetrics,* August, 1916) with respect to the above matter summarizes as follows: 1. The therapeutic action of radium depends on a correct technic, which must be based on a careful physical examination of each patient. 2. The results of radium therapy in inoperable and recurrent cancers surpass those of any known therapeutic agent. 3. The prophylactic use of radium in operable cancers increases the percentage of operability and probably the efficacy of the operative procedure.

THE GENERAL PRACTITIONER.

By J. V. O'Connor, M. D.,
Woonsocket, R. I.

For some time it has been the practice of a few of the so called leading medical men, to make use of various newspapers and medical journals in which to criticise the general practitioner of medicine. One author in particular has gained a great deal of notoriety; several of his articles have come under my observation and have served to lessen my former admiration and respect for him.

It is amusing to read a statement which says that the practising physician receives too great compensation for his services. I wonder if the writer of this sort of literature is familiar with the income of the average physician. A statement like the foregoing does not call for contradiction. All I suggest is that any one possessing such an opinion need only refer to statistics, when it will be seen that the physician, in most cases, is underpaid. Personally I do not believe that the author of the articles which I have read ever thought for a moment that his personal fee for office visits or consultation was exorbitant. Perhaps some of us who know of certain fees received, feel that in some cases he may have been overpaid. Of course, in his capacity as an internist, with his reputation and social standing, he may be entitled to enormous fees.

If the physician must write a word regarding his fellow medical man, let him begin by saying that, as a rule, the general practitioner is a conscientious person whose numerous works of charity are often unheard of and whose death is often premature, owing to hard work and worry over patients under his care.

I have often discussed the financial situation with brother practitioners, and it is a common thing to hear the remark, how poor their collections are and how difficult it is at times to make both ends meet. It is an easy matter for our friend, the author, to write articles casting ridicule upon his brother doctors. How nicely he informs the public that they are dealing with a lot of pill peddlers, whose knowledge is very limited, and that the only place where patients are properly cared for is the hospital. Again I beg to differ with our worthy specialist; a great majority of general practitioners know very well what they are doing. They are posted regarding their profession, especially those who have graduated during the past eight or ten years. They can make a first class physical examination, and, if necessary, can do a blood count, absolute or differential. They can thoroughly examine urine, quantitatively or qualitatively, and if need be can extend their knowledge a little further and do a gastric analysis.

While I will admit that hospitals are indispensable, I must also hold that a good home is far more acceptable to the patients. The patients prefer the home in a great majority of cases, and if they have the advantage of proper hygienic conditions, including good nursing care, they will do as well as, if not better than in the hospital. There are many medical cases sent to the hospital that would be better off at home under the observation of the family physician.

To go back to the income of the physician, it might be well to remember that the large fee often charged by the specialist is, in a measure, responsible for increasing the average income of the physician, on paper. Compare the average income from the earnings of the general practitioner who does nothing but general work, and you will find that they are fortunate if they obtain a good living wage. It is a fact that a large majority of the so called "big" men, particularly those doing office, consultation, and hospital work, are prone to look upon therapeutics as a very small matter. The author of the articles which I have read has the reputation of being a therapeutic nihilist. Medical treatment in most cases amounts to nothing. We all know that diagnosis is the keynote to success, but what comes after diagnosis? Just because the mortality in lobar pneumonia is twenty-five per cent., is that any reason why treatment is contraindicated? A therapeutic nihilist tells you that the mortality is twenty-five per cent., no matter what the treatment is. That is something that I do not believe. I have seen patients suffering from lobar pneumonia who would have died had not the "pill peddling" family physician stayed with them for hours and administered the very necessary stimulation as indicated. Personally I have had cases, one in particular, where it was necessary for me to stay with my patient many hours at a time for several days. Attacks of respiratory failure occurred often, twice he had an acute dilatation, and the crisis did not occur until the thirteenth day. At all times the patient responded to powerful stimulation, and there is no question in my mind that the patient would have died long before the crisis if he had not received symptomatic treatment whenever it was indicated. Of course, the question of stimulation is one worthy of no little attention. I believe that many patients are stimulated long before it is necessary, and therefore fail to respond when it is really needed.

At times the therapeutic nihilist may not favor surgical treatment, even if results seem to be all that are desired. I know of a very prominent internist (an author who has written more than one undesirable article regarding the general practitioner) who will tell you that the operative treatment for exophthalmic goitre, while mechanically correct is physiologically wrong, and for that reason he is somewhat skeptical. We all know that whether it is or is not physiologically wrong, we get results that are really good, and shall continue to approve of the surgical treatment in many cases. This particular diagnostician showed no interest in the treatment of exophthalmic goitre. The only thing that seemed to interest him was the diagnosis. He had absolutely nothing to offer, only rest and plenty of it. We acknowledge that rest is often essential, and in some cases seems to produce excellent results, but how often it fails.

To go back to the use of drugs, the therapeutic nihilist will very readily use quinine, potassium iodide, mercury, or iron. He will admit that good results are obtained when these drugs are used in their respective indications, but at the same time he will scoff at the practitioner who lays claim to results from numerous other drugs. It is quite unnatural to suppose that there are only half a dozen drugs in the world that are of any value. We have found quinine to be a most valuable drug. Originally some one told us that it was, and after using it we became convinced. So it is with many other drugs, and while I do not boast of using an enormous variety, those that I do use have proved satisfactory.

In my opinion the capable practitioner is he who can make a diagnosis, and if necessary give a legitimate reason for making it. He has a good knowledge of therapeutics. Making a diagnosis should be the object of every physician, but after that do not forget that symptomatic treatment is beneficial to your patient, often relieving the strain and helping him to get well. What would the practitioner of medicine have to offer, if, after making a diagnosis, he did comparatively nothing to help his patients?

In conclusion, I will repeat my statement, that for proper care and treatment the hospital is not always required; that the average general practitioner, with his therapeutic knowledge and his many acts of charity, is doing an immense amount of good. He is not a peddler of pills, but a hard working, conscientious man, who should in many cases receive more financial remuneration from those who can afford it than is now the case.

71 MAIN STREET.

AN EVALUATION OF PARAPHRENIA.*

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(Concluded from page 349.)

The following case also stands out prominently from a large amount of chronic paranoid material, chiefly by reason of retained equilibrium of affect life and the minor amount of damage, if any, to the function of the will.

CASE II. M. C., aged fifty-seven years; duration of psychosis at least eighteen years. Original diagnosis, chronic melancholia. In this case there had been the gradual development of fantastic but fairly closely coordinated delusions of persecution. Hallucinations of hearing and sight and finally of all the senses were the avenues through which the conspirators gained access to their victim. Occasionally, however, the visual falsifications partook of the grandiose and were in the nature of special revelations. In later years, too, there had been the development of a feeling of confidence and power on the part of the patient, a growing belief that after all he was to prevail over his enemies. All things considered, the reaction to the system of persecutory ideas had been fairly adequate. Once the patient attempted suicide to escape his pursuers. There had been no diminution in the delusional conceptions; indeed they seemed to wax stronger and if possible were elaborated with more detail.

The affect life is and has been strikingly different from what we should naturally expect to find in the chronic paranoid dementia præcox type of even the most gradual evolution. The onset of the psychosis was marked by a fairly well defined depression and there have been phases of emotional excitement scattered through its course. These episodes were obviously clearly dictated by the delusional trends, yet the emotions must have remained flexible or else they would not have been capable of responding to demands of the false conceptions. Our patient speaks quite freely of his persecutions, perhaps a trifle too eagerly, and there is lacking the inner psychic tension and self sufficiency which is so characteristic of the paranoiac. Again, he is quite willing to remain in the hospital as a voluntary patient. These two factors may be some indication of beginning deterioration, perhaps of will weakening, but they are certainly not typical or even suggestive of dementia in the præcox sense. There is in schizophrenia a certain asymmetry in the decline of the mental functions. In those paranoid types in which the delusions are fairly well worked out, and in which the intellectual functions are sufficiently preserved to knit them together into a system and maintain them for a long time without shrinkage, we usually find a disproportionate blunting of the emotions. At most, such a patient may rise to a climax of his persecutions by an outburst of anger or a paroxysm of fear, but the reaction to the every day incidents of life is marked by an inadequacy which tells only too plainly of affect blunting. The patient under consideration still retains, after eighteen years, enough emotional pliability to respond adequately to the many situations which commonly arise, even with limited social intercourse. He is quiet, friendly, approachable, and at times mildly exhilarated. He is occupied and, without urging, does a fairly large amount of work in an efficient manner. His muscular movements are natural and well coordinated, and there is no evidence of that awkwardness and stiffness in action and demeanor which frequently characterize defective will inhibition. Attention, memory, and orientation are not affected and there is a fair degree of knowledge of current events.

THE AFFECT.

One of the most serious obstacles which stand in the way of finally pronouncing judgment as to the real position of paraphrenia, is the necessity of attempting to exclude dementia in general, and deterioration of affect life in particular, from the clinical picture. The term, dementia, has been given an unfortunate latitude in psychiatry and has been freely applied to widely varying and even opposed conditions. It has been used to designate the permanent and general mental decline, characteristic of diseases which are directly traceable to demonstrable pathology of brain tissue, as, for instance, paresis; it has been considered the hall mark of dementia præcox, a psychosis for which no anatomical lesion has as yet been established, and in which the deterioration is frequently one sided and may for a long time be purely a matter of conjecture; and, finally, it has been qualified by the adjective "curable" and made to describe the stuporous confusion which is typical of infective exhaustive states. It would perhaps be less perplexing to restrict its application to "those defective mental states in which restitution is impossible." (12.)

Judgment as to affect loss must often be relative. In any unselected group of dementia præcox cases of not too long duration, it is frequently possible to strike practically as many notes on the emotional scale as there are individual patients to be considered. The distance in this respect, between those rapidly deteriorating hebephrenic forms in which at times all the mental faculties seem literally to be swept away by the overwhelming attack of the disease and the slowly progressive delusional types, is immeasurably greater than between the latter and paraphrenia.

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*Read at the meeting of the Philadelphia Psychiatric Society, College of Physicians and Surgeons, Philadelphia, Pa., May 12, 1916. The author is indebted to Dr. Earl D. Bond for his assistance in the preparation of this paper.

The intellect is more easily probed than any of the other mental faculties, and yet we all realize how insufficient and unsatisfactory are the instruments with which we must make our measurements. When we come to gauge the affect we not only have to deal with a far more complex and much less understood property of the mind, but the methods at our disposal are even more limited and less accurate. Of course, complete apathy is self evident, but there are almost infinite gradations between this state and the hypothetical normal affect. In most of the cases of paraphrenia there is some indication of a partial emotional loss. We are particularly likely to find early in the psychosis an unmotived variation between elevated, excited, and depressed states, or at times brief periods of apathy. These are the straws which show which way the wind blows. Might we not explain the relative integrity of affect life on the basis of some intrinsically determined quality of the emotions, which, while it may not be powerful enough to render them wholly impervious to damaging influences, is yet sufficient to turn the main stream of psychosis into other less resistant channels?

WILL.

If we attempt to solve the problem of paraphrenia by an evaluation of will function, we shall find ourselves beset by greater difficulties. Nor can we hope for much enlightenment from the sister science of psychiatry, namely, psychology. American psychologists are devoting most of their attention to the purely experimental side. Unfortunately, the emotional field is difficult of approach by this avenue, while the will is practically inaccessible. In England and Germany there are two bitterly opposed schools of psychological thought. The disciples of so called "association psychology" view our entire psychic life as a reciprocal relation between sensation and conception, and practically deny the existence of independent will functioning; the opposing school, of which Wundt is the most prominent exponent, would endow the will with important and far reaching powers. They regard it as that mental faculty which not only "gives impetus to thought associations, but which also stimulates its servant, the intellect, to produce ideas, to elaborate them by recalling the similar and the incidental, and to recognize causation and effect." (13.) There is much of interest in the discussion, but very slim hope of any practical result which might have an application to psychiatry.

As in the estimate of affect life we find manifestations of such ephemeral and mild nature that we must remain in doubt whether to regard them as pathological or not; so in consideration of will we likewise uncover passing symptoms of such a slight degree that it is practically impossible to decide whether we ought to view them as abnormal or ignore them altogether. Catatonic stupor and negativism are such outspoken indications of defective will inhibition that they occasion us but little difficulty, but the appearance of such incidents as circumstantiality, slight peculiarity of speech or movement, and occasional refusal of food are much harder to interpret. Practically all paraphrenia cases are open to suspicion in this respect. One of the patients I have described was once surprised in the act of going through a series of motions, apparently senseless and purposeless in character.

Attention (14) has been called to the possibility of certain of these so called symptoms being after all merely the end result of a series of conceptions, which, though in themselves abnormal, are yet logical in their connectivity. We can only obtain occasional brief glances into the inner psychotic processes of our patients' lives, and these are certainly not sufficient to permit us to follow with any accuracy the individual steps of abnormal reasoning. If we attempt to reconstruct the chain of thought which finally finds expression in some unusual act, we shall always discover that many and perhaps the most vital links are missing. At best, we may resort to crude theory in order to supply the deficiencies.

It may not be constructive to emphasize the objections which should be overcome before even the relative integrity of the affect and the will in paraphrenia may be granted, yet it seems to be a part of the problem which it would be unfair to ignore.

RELATIONSHIP OF PARAPHRENIA TO MANIC DEPRESSIVE INSANITY.

The resemblance of a number of paraphrenics to victims of manic depressive insanity seems to extend deeper than a mere surface similarity. Kraepelin (15) for a long time regarded all the expansive cases as expressions of the manic phase of this disease. Some of Krambach's patients, especially early in the history of psychosis, showed definite emotional disturbances, such as periods of depression culminating in suicidal attempts or characteristic excitements which were separated by a considerable span of time from the later paranoid condition. Seelert (16) records a well defined emotional cycle with recovery in a patient whose psychosis consisted almost entirely of closely systematized paranoid delusions. In an admission period covering twenty-nine years at the Danvers State Hospital (17), there were only fifty-one cases which were originally regarded as paranoia, and of these thirty-five were later shown to have been mistakenly diagnosed. McDonald, who made a retrospective analysis of the errors, brought out the fact that some of these patients were manic depressives who subsequently recovered. In one of the cases of paraphrenia reported in this paper, there is persistence of a good natured, friendly, and at times elevated emotional tone. I have made a preliminary study of a small group of manic depressive patients all beyond the age of forty-two years, in whom the paranoid trends are most prominent and frequently seem to outweigh the emotional symptoms. In some of them there is evidence of intellectual blunting not unlike that seen in paraphrenia; arteriosclerotic changes, however, probably play some part in this connection. It is possible that at least a few of the paraphrenias and more particularly of the expansive form may be due to the implantation of a paranoid psychosis on manic depressive soil, which may materially modify its clinical expression. A more remote possibility is the existence of a background of constitutional psychopathic abnormality distorting the picture of an emotional psychosis. Of course, we cannot hope to get much beyond the stage of vague speculation as long as our knowledge of causation remains in its present unsatisfactory state, yet reasoning backward from an unusual symptom complex will frequently suggest strongly an admixture of two disease processes. These are the cases we usually ally to the classification they happen to resemble more closely. In clinical medicine it is not at all unusual to have the symptoms of a disease masked by preexisting congenital, chronic, or even acute pathological processes.

THE INFLUENCE OF THE AGE OF ONSET AND OTHER FACTORS.

The onset in paraphrenia falls so uniformly within the involutional period that it deserves some consideration, not only from the etiological standpoint, but also as a possible determinative factor in the character of the symptomatology. A more intense study of age in its developmental relationship to our various mental faculties, and particularly as to its formative influence on the normal affect, may shed considerable light on our problem. It may be of interest to recall that the forms of dementia præcox in which the emotional loss is most rapid and striking are to be looked for at the period of puberty, when the affect is apt to be most unstable, while the varieties of the disease in which there is a more gradual decline commonly come on in more advanced life, when the emotions are less easily swayed. Mental disturbances are, in some sense, comparable to physical diseases, and it is conceivable that there may be a similar inclination to follow the paths of least resistance, attacking with greatest vigor functions which are most easily destroyed. So in senile dementia, the memory, which has already become impaired by the physiological decline of old age, is most prominently affected. It may be that the time of life in which paraphrenia commonly appears is about coincident with the period when the affect has reached its developmental apex, and thus the emotions are better able to withstand the destructive effects of the psychosis.

The age of onset in paraphrenia is probably also an important factor in determining the profuseness and detail of the delusional content. In the normal mind any isolated conception is enriched and expanded by the number of associations it is able to call up, and these in turn are dependent on the sum total of ideas which have been evolved from past experience of life. While this must obviously remain a variable quantity with each individual, yet it seems reasonable to assume that it has a certain, more or less constant physiological curve. For instance, the first three and probably the fourth decade of an individual's life might be represented by an ascending line, at first abrupt, and then more gradual, indicating periods when, for both intrinsic and extrinsic reasons, the store of knowledge gained by experience is most easily and rapidly increased. Probably toward the close of the fourth decade or in the first half of the fifth, there is a slowing up of the process. The curve representing acquired experience is then maintained at a higher or lower level and is less liable to undergo sharp variations. This is due simply to the fact that situations, as they arise, offer fewer possibilities for the acquisition of entirely new conceptions, because at some previous time the same ideas or similar ones have already been made a part of the consciousness. The measure of experience is almost filled, and further mental advancement is more dependent on a rearrangement, revision, elaboration, and more mature judgment of previously acquired notions than it is upon the assimilation of wholly new ones. An idea which appears at or after such a time is capable of the greatest possible development because it has a lifetime of experience to draw upon for its completion. If this is true for the normal mind, it also holds for the abnormal, unless the brain has deteriorated and systematic thought is prevented by dementia. The profusion and elaborate structure of the delusions in paraphrenia may probably be explained by the age factor. In other words, the time of life at which this psychosis appears corresponds not only to the period of greatest emotional stability, but also represents the beginning of the highest point in the intellectual development.

It is a well known fact that racial characteristics and conditions of life may materially modify the expression of a psychosis. For instance, the symptomatology of dementia præcox is apparently far less complex among the primitive than among the cultured races. Kraepelin (18) found that among the Javanese it uniformly presented a very simple type. There was practically always a preliminary period of confused excitement, which rapidly passed into a final silly dementia; catatonic manifestations were infrequent; hallucinations were rare; delusions of the simplest construction and the prodromal depression which we see so frequently were never observed. Such a clinical expression may in a large measure be due to existing conditions of life, yet the influence of a more meagre or of a different type of brain development cannot be entirely excluded. If the racial factor and all it implies can so greatly change the clinical expression of a disease, it is entirely possible that more delicate variations might be conditioned by independent familial peculiarities of various kinds. On account of the late onset in paraphrenia, it is exceedingly difficult to obtain trustworthy histories, but where the cases can be retraced, there is abundant evidence of distinctly abnormal character traits, many years before the onset of the psychosis.

INFREQUENCY OF PARAPHRENIA.

Paraphrenia is almost as infrequent as paranoia. Kraepelin found only a small proportion among the vast mass of material to which he had access. Eisrath (19) reports nine cases of paraphrenia systematica from a group of 3,520 paranoid patients. Of course, rarity in itself constitutes no real objection to the entity of a disease, yet when the other factors are so indeterminate, it must incline us to suspect that after all we may be dealing only with an aberrant form of some known condition.

The final decision as to paraphrenia must be postponed until further advances have been made along etiological lines. The studies of Abderhalden have opened a new field which promises to be fruitful. On the side of gross pathology, the work of Southard (20) is at least suggestive. All but two of his series of twenty-five dementia præcox brains yielded distinct evidence of structural abnormality. The chief correlations were between delusions and frontal lobe disease; catatonia and parietal lobe disease; auditory hallucinations and temporal lobe disease. It is interesting to note that the two normal looking brains were those of acute cases and microscopically showed abundant evidence of cell destruction and satellitosis. Whether or not the "brain spot" theory is to survive can only be determined by intensive studies on a large number of brains and a careful checking of the results by histological methods. Should "mental localization," as it might be termed, be advanced beyond the hypothetical stage, the conception of dementia præcox would be vastly simplified, and symptomatic differences would be explainable on the basis of variations in the locus of the gross and microscopical abnormalities. Paraphrenia, too, might eventually come within the scope of such an anatomoclinical correlation.

CONCLUSIONS.

From this rather incomplete study of paraphrenia the following factors stand out most prominently on the side of the "disease process" theory of Kraepelin. The late onset of the psychosis, the fairly close coordination between the delusional content and the reactions of the patient, the absence of definite dementia particularly as regards the affect life, the relative freedom from disturbances of the will, and, finally, the retention of personality.

On the other hand, paraphrenia bears at least a general symptomatic resemblance to dementia præcox; in many cases the emotional field and the will are involved, even though it be only in a minor degree: the presence of a certain amount of deterioration, though this is more inclined to affect the intellectual functions and may in part be due to retrogressive physical changes, especially of the vascular system.

The factors which seem operative in giving an unusual coloring to the clinical picture are the late age of onset with its little understood, but probably significant influence on the development of the affect and will; the possibility at least in some proportion of the cases of a manic depressive predisposition, and, finally, the modifying effect of an inherited psychopathic constitution.

Although at the present time the weight of evidence seems to be against the "disease process" theory of paraphrenia, it is important not to minimize the value of Kraepelin's recent contribution to psychiatry. The exact observational data which he has carefully gathered and emphasized by a special designation, will be extremely useful, even though the conclusions he has drawn are generally regarded as being not entirely justified by the premises. To retain the name, paraphrenia, would not only be a fitting tribute to Kraepelin's work on this subject, but would fill a long felt want in the classification of mental diseases.

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CHRONIC SUPPURATIVE OTITIS MEDIA.*

A Modified Radical Operation, Based on Thirteen Cases.

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In performing this particular operation in the following thirteen cases, my purpose was, 1, to stop the middle ear discharge; and, 2, to conserve, or, if possible, to improve the hearing. All operations were performed in the services of Dr. Robert Lewis at the New York Eye and Ear Infirmary, and Dr. A. B. Duel at the Manhattan Eye, Ear, and Throat Hospital.

OPERATION.

The usual postaural incision is made, as in the Stacke operation. The soft parts anterior to this incision are elevated and retracted forward; the cortex is removed with a gouge and the subcortical cells with curettes until the antrum is opened; the posterior bony canal wall is lowered and the antrum widened to its fullest possible extent. When the short process of the incus becomes visible, the external attic wall is removed by placing the back of the curette external to and in front of the incus and curetting from within outward. The bony canal wall is still further lowered until the facial ridge is reached, leaving only an epitympanic ring in its superior portion, with a width of about one sixteenth of an inch. In four instances I have removed this ring in the superior and outer quadrant of the circle, leaving the membrana tympani and ossicles intact.

The granulations, polypi, and cholesteatoma lying in the external and internal attic are removed by curetting internal or external to the incudal body, care being observed not to destroy the suspensory ligament of the malleus or its external lateral ligament. In curetting near the incus, great care must be taken not to disturb the ligament which binds the extremity of its short process to the bone below and just in front of the external semicircular canal. The drum and ossicles are of course not removed, but left *in situ*.

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*Read before the American Otological Society, May 9, 1916. Washington, D. C.

An L shaped metal flap is cut, as in a radical operation, the cartilage removed, and the flap sutured to the temporal fascia. The mastoid wound and attic region are packed snugly, thereby furnishing support to the flap, and the posterior wound is sutured.

Case I. A subacute condition; history of seven weeks' discharge. Operation three years and four months ago; large perisinus abscess, with perforation of the premastoid lamina and necrosis of the adjacent posterior bony wall. The ear has been dry since shortly after the operation. The incus was removed. At present, the patient hears an acoumeter at six feet and a moderate whisper at six feet.

Case II. Ear had been discharging for two years. Operation was performed two years and nine months ago. Cholesteatoma was found in the antrum. Ear remained continuously dry since shortly after the operation. Whisper heard at eighteen inches, and watch only on contact, before the operation. The patient now hears an acoumeter at one foot and a whisper at four feet.

Case III. Ear had been discharging for two years. Operation was performed two years and three months ago. The ear remained continuously dry since shortly after the operation. Prior to the operation, the patient heard a whisper at twenty feet. She now hears a whisper at four feet and an acoumeter at the same distance.

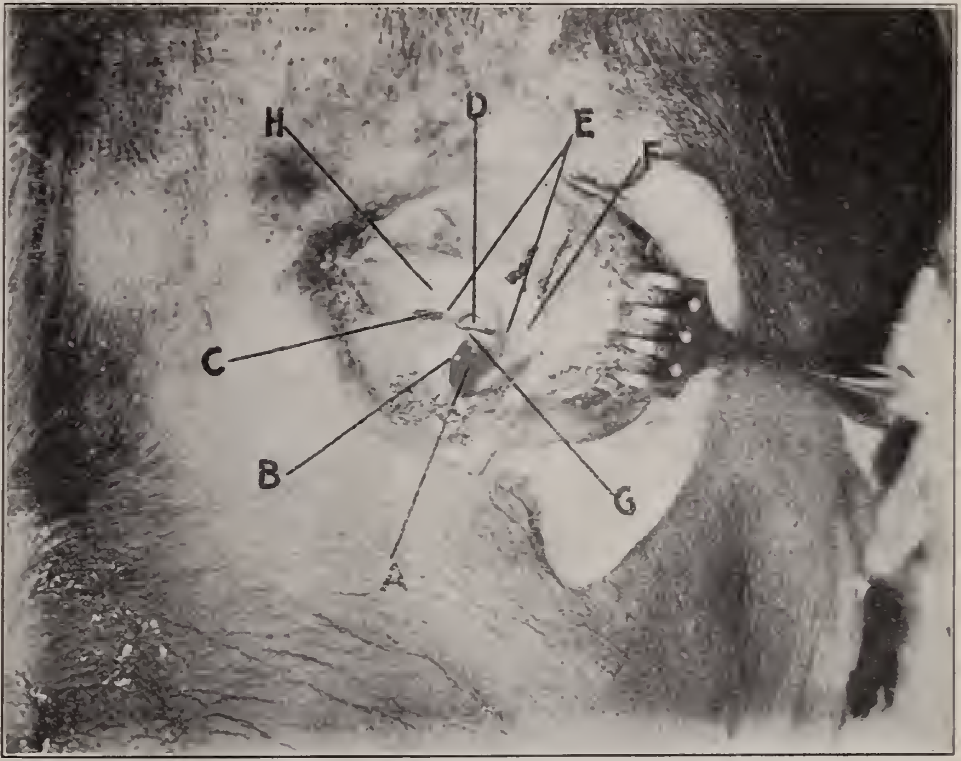

Fig. 1.—View of completed operation, with epitympanic ring intact, taken from behind, prior to closing posterior wound. Drum and ossicles are left intact. A, membrana tympana; B, facial ridge; C, external semi-circular canal; D, malleo-incudal body; E, attic of the middle ear: F. plastic metal flap sutured to fascia of temporal muscle; G, epitympanic ring; H, antrum.

Case IV. Double otitis media purulenta chronica: right ear had been discharging for one and a half year, and the left for six months. Double operation performed two years and four months ago. Both ears are dry and have been so continuously since shortly after the operation. Hearing before operation: Right ear, acoumeter at three inches and whisper at three inches. Hearing now: Acoumeter at two feet and whisper at eighteen feet. Left ear before operation: Acoumeter at twelve inches and whisper at one foot. Hearing now: Acoumeter at six inches and whisper at twenty feet.

Case V. Ear had been discharging for four months prior to operation, which was performed twenty-one months ago. A very large exostosis was present, springing from the posterior wall. Since operation the ear has discharged intermittently. At present there is a very slight discharge from the tube, which is not perceptible to the patient. At present the patient perceives a whisper at five feet and an acoumeter at four feet.

Case VI. Double otitis media purulenta chronica; the right ear had been discharging for six months and the left for two years. Double operation was performed simultaneously seventeen months ago. Both ears have been continuously dry ever since shortly afterward. Hearing at present: Right ear, acoumeter at twenty feet and whisper at twenty feet. Left ear, acoumeter at fifteen feet and whisper at fifteen feet.

Case VII. Clinical diagnosis of tuberculous otitis. The ear had been discharging for five months previous to operation. This was performed one year and four months ago. The ear is now dry, and has been so continuously, with the exception of a slight discharge which began three months ago and lasted for about three weeks. A perisinus abscess was found in this case and the sinus was accidentally opened during the operation. An acoumeter is now heard at two feet and a whisper at eight feet.

Case VIII. Double otitis media purulenta chronica. Both ears had been running for eighteen years, following scarlet fever and diphtheria. Operation was performed a year ago. The left ear has been continuously dry since shortly after the operation. The right ear has been dry at times, but is discharging at present. Hearing prior to operation: Acoumeter, right ear, three feet; left ear, six feet; whisper in both ears at six feet. Patient now hears: Acoumeter, right ear, eight feet; left ear, two feet; whisper in both ears at eight feet.

Case IX. There had been a discharging ear for the past seventeen years. Operation was performed nine months ago. The ear has been dry at times, but is at present wet. The discharge is from the tube. Hearing before operation: Left ear, acoumeter at two feet and whisper at six feet. The hearing since the operation is the same.

Case X. The ear had been discharging for ten years. Operation was performed eight months ago. Since then there has been a continuous slight nonodorous discharge from the tube. Before operation, an acoumeter could be heard at ten feet and a low whisper at ten feet. At present an acoumeter is heard at five feet and a loud whisper at five feet.

Case XI. Patient had a discharge for five years prior to admission to the hospital. Operation eight months ago. (A previous operation had been performed a year before that and the posterior wound had never healed.) Cholesteatoma was found in the antrum. The ear is now wet. Before the operation the patient heard the acoumeter at ten feet and a whisper at ten feet. Since the operation patient hears the acoumeter at six feet and a whisper at four feet.

Case XII. Patient's ear had been discharging for fifteen years previous to admission to the hospital, following measles. Operation, seven months ago. The ear was dry until three months ago; since then there has been a slight discharge. Hearing before operation: Acoumeter at three feet, whisper at six feet. Hearing now: Acoumeter at seven feet, whisper at ten feet.

Case XIII. Patient had discharge from the ear for five weeks previous to admission to hospital. Operation was performed six months ago, and showed necrosis of the posterior bony canal wall and perforation of the premastoid lamina. The ear is now dry and has been so for over four months. Hearing before operation: Acoumeter at twenty feet and whisper at twenty feet. At present it is the same.

SUMMARY.

These thirteen cases represent sixteen primary operations, for in three instances both ears were involved and a double operation was performed. From the standpoint of duration of discharge, the cases have been arbitrarily divided into two groups.

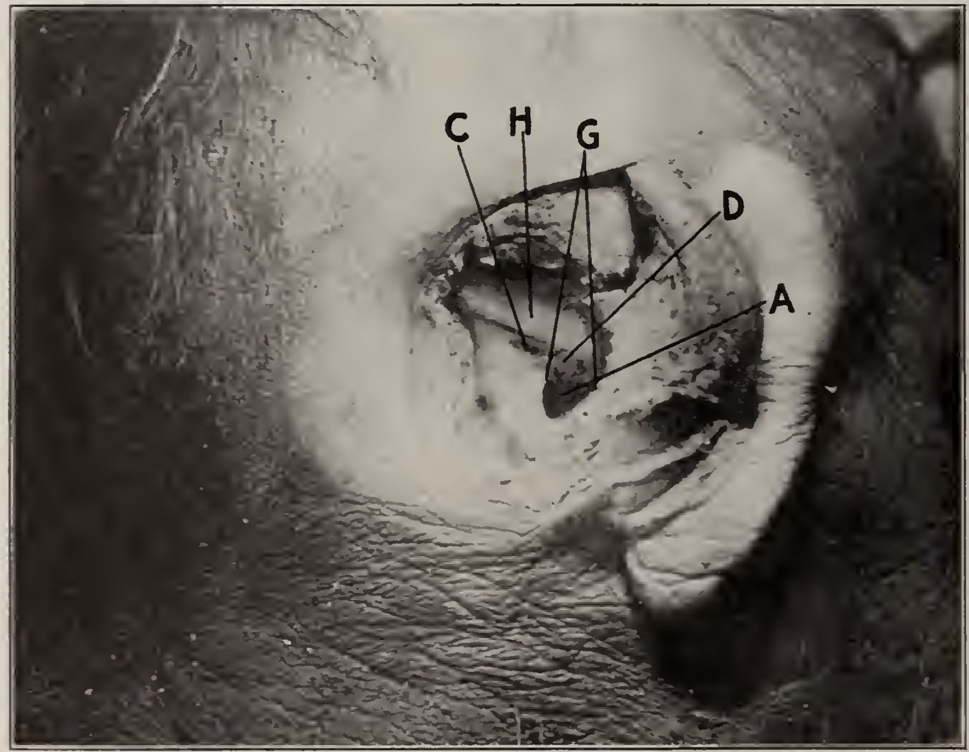

Fig. 2.—View of completed operation, where the epitympanic ring of bone has been removed in the superior quadrant. Drum and ossicles are left intact. A, membrana tympani; C, external semi-circular canal, D, malleo-incudal body; G, epitympanic ring of bone has been removed between termination of lines; H, antrum.

1. Those in which the discharge had lasted for five years or more, previous to operation;
2. Those in which the ear had been discharging for less than five years.

In the first group, there were six primary operations with the following results: Four of the ears are now wet, and have been more or less so continuously since the operation. The discharge is nonodorous, however, and is much less than before the operation. Two ears are intermittently wet and dry.

The hearing results in the six cases show that in three instances the hearing for the whisper was improved; in one it remained the same, and in two there was a slight depreciation in whisper perception.

In the second group of cases, or those having had a discharge for less than five years, excluding the two subacute cases, there were eight ears coming under this classification. Six of these have remained continuously dry since operation; and two intermittently so. Three of these ears show improvement in hearing, as compared with tests made before the operation.

In the grand total of sixteen operations performed, eight resulted in dry ears, which have been continuously dry since convalescence from operation; four have discharged intermittently since operation; and four continuously. One of the intermittent cases is at present dry.

The longest duration of dryness since operation, in the eleven chronic cases reported, has been two years and eight months; and the shortest has been six months.

With one exception, all the patients were adults. Two cases were complicated by the presence of well marked perisinus abscess. Six had marked constitutional symptoms, such as severe headache, dizziness prior to the operation, etc., and since the operation these symptoms have been relieved. In two instances, cholesteatoma was found in the mastoid; one of these cases resulted in a dry ear, which has remained dry for over two years. In none of the thirteen cases did the patients think the hearing had become impaired since the operation. It is interesting to note that in Case XIII, the hearing was almost normal before the operation; it is the same at present, showing that, in this case at least, the procedure had no ill effect upon the hearing.

All the cases ended in recovery. In the nine healed and dry ears, it is interesting to observe the amount of repair which has taken place in the tympanic membrane. Six of these cases now show intact drums, despite the large perforations which formerly existed. In three of the cases, half of the drum membrane was missing. The remaining five cases show large, dry, unhealed perforations.

An interesting feature is the development of a secondary tympanic membrane, which is all but one of these cases has grown across the attic region in the process of healing, completely closing off the attic from the mastoid cavity.

In applying the dressing, it is necessary to pack the attic region snugly until it becomes well dermatized; otherwise it will soon become filled with a thick plug of granulations which, if infected, will be apt to discharge copiously, reinfect the middle ear, and prevent its proper aeration. It is probable that the discharge which occurred in two of the wet cases in this series was caused by the failure properly to appreciate the importance of this point.

It will be seen that the best results were obtained in the second group of cases, namely, those having a history of discharge lasting less than five years. The procedure seems especially applicable in this class of cases, and more particularly in chronic cases in which there is good hearing.

I believe that this operation is indicated in cases of aural discharge of several months' standing, which have resisted treatment, and where the patient is threatened with the possibility of long continued suppuration. I do not think that the presence of a large perforation, or the absence of half the tympanic membrane is a contraindication to the operation, as demonstrated by some of these cases.

The important element to be considered in cases of subacute and chronic otitis media, in the absence of constitutional symptoms, is, of course, the hearing. If this is good, and the discharge is of less than five years' duration, I believe this operation to be especially indicated. In cases of exostosis of the canal associated with otitis media purulenta chronica, and in perforation of the premastoid lamina associated with necrosis of the posterior bony canal wall, it should be the operation of choice. Another point in favor of this procedure is that the danger of causing an injury to the facial nerve is negligible.

CONCLUSION.

This operation is not presented as one that would entirely replace the radical procedure; the latter has its own distinct field of usefulness. It is very difficult to compare the results obtained from a radical operation with those obtained from a modified radical operation, save in a general way, since of course no one can say what the results would have been in any one of these cases had a radical operation been performed. I am convinced, however, that the functional results compare favorably with the best which follow the radical operation; and that in the future, as we learn better how to select cases for this modified radical operation, it will yield even better functional results as well as a dry ear.

148 West Fifty-eighth Street.

Painless and Shockless Childbirth.—M. W. Kapp (*Medical Record*, August 5, 1916) reports the use of his own method of obstetric analgesia without amnesia. It consists in the hypodermic administration of heroine hydrochloride in doses up to one half grain to produce the required insensitiveness to pain. If the pains are retarded by the heroine, then pituitrin may be employed to rearouse uterine contractions. By this method shock is lessened, labor is shortened; valvular cardiac trouble and albuminuria are not contraindications.

ORTHOPEDICS OF THE HAND.

A Report of Two Cases.

By Lawrence G. Hanley, M. D., LL. D.,
Buffalo, N. Y.

My first case is one of grafting of the terminal and middle phalanges and restoring the ungual phalanx of the index finger. I was called to attend Frank Smith, aged seven years, August 1, 1892. His index finger of left hand had been cut off in a hay cutter at the junction of the middle and terminal phalanges. I saw him about one hour after the accident. The severed portion of the finger was in a cloth on the table. An anesthetic was given and the amputated part was sewn on with silk sutures. The hand was put into a water bath, saline solution, and kept there for two weeks. The middle phalanx was cut diagonally, but the joint of first and middle phalanges was not injured.

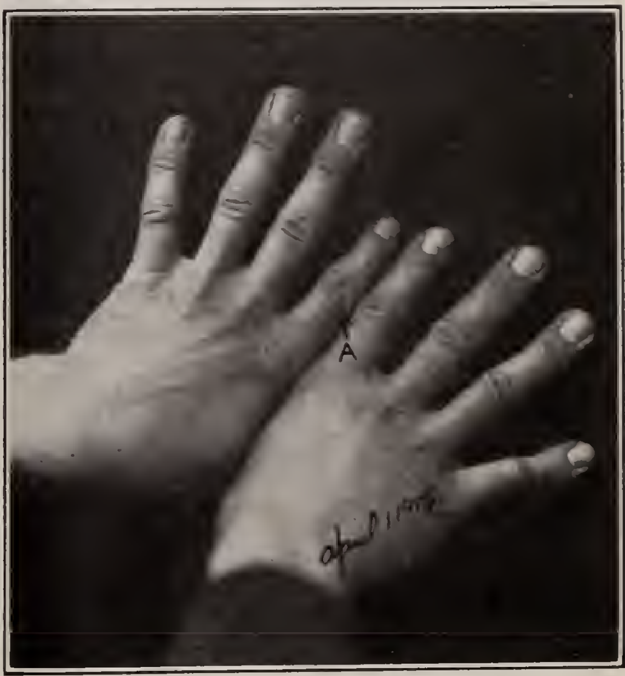

Fig. 1.—Index finger was cut off twenty-four years ago, was replaced under saline solution and healed completely. A shows line of union.

The parts united and flexion and extension are perfect, but he suffers slightly from cold in the tip of the finger. Fig. 1 shows the difference in size. There was no pressure from bandages and dressings to interfere with the restoration of circulation, and the heat from the water also aided. This was done twenty-four years ago, and the photograph was taken April 1, 1916.

My second interesting case was that of Loretta McGee, a clerk aged twenty-seven years, who, on November 27, 1914, while dusting under a coffee machine, had part of the ungual phalanx of the index finger cut off at the junction of skin and nail. She was seen by me one hour and a half after the injury, minus the top of the finger.

I applied adhesive strips lengthwise to the finger, from the middle of the hand to the tip, attempting in a manner to draw skin over the top. The dressing was left on for one week with a blood clot on the cut surface. Subsequent dressings were applied in the same way as already described. It took nearly four months to grow the nail and produce the conditions shown in Fig. 2. The nail is perfect, but the finger is a trifle shorter and thinner than normal. I have succeeded in several cases in shaping and preserving the ungual phalanges by this method.

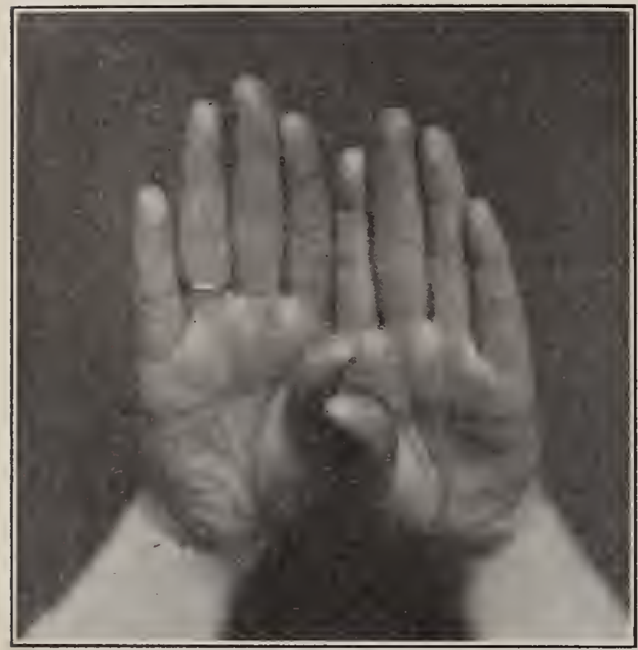

Fig. 2.—Tip of left index finger was severed two years ago; it was replaced under a blood clot, and functions perfectly.

428 Porter Avenue.

FROST BITE IN THE HAND RESEMBLING RAYNAUD'S DISEASE.*

By N. S. Yawger, M. D.,
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(From the Department of Neurology, University of Pennsylvania.)

Case. The patient, aged thirty-one years, a brakeman on a passenger train, was referred to the surgical dispensary of the University Hospital, with a condition in the right hand which it was feared might necessitate amputation. The patient was transferred to the nervous disease service. Family history: Nothing was revealed suggestive of vasomotor disorders. Personal history: Habits were good; he did not drink and denied ever having had a social disease. He was the father of one healthy child; his wife had since had a miscarriage at about three and a half months. There had been practically nothing to indicate an unstable vasomotor system—no hemorrhage from any part of the body, no vertigo nor impaired vision; no "dead" fingers or toes; nor had he had chilblains on his hands, feet, or ears. Upon two or three occasions there had been slight urticarial manifestations after eating certain articles. There had never been disability or disturbance in the arm previous to the exposure.

History of accident: In December, 1912, while at work as a brakeman, the patient had his right hand frozen. The temperature was about 10° above zero and the exposure was for a half hour, at the end of which time a glove that he had been wearing and which was perfectly dry, was removed and the hand was found to be seriously swollen. The edema subsided as soon as the part was warmed. For two months there was absolutely no trouble and then, without known cause, the finger tips felt cold, sensitive, and painful. The pain, which soon became intense, was stinging in character; it extended up the fingers and through the hand as far as the wrist. There was no swelling nor was there sufficient disability to prevent the patient performing his duties satisfactorily. The pain was almost constant for six months, though the intensity varied. Then followed a period of a little more than two years with freedom from all symptoms.

In October last, the patient was obliged to have his hands in cracked ice for about fifteen minutes, and twenty-four hours later severe symptoms developed in the right hand. At first the part felt numb and then the wrist became swollen and painful. This was followed by the development of ulcers; there were eleven of these, mostly along the ulnar edge of the hand and at the tips of the fingers. The thumb and all fingers were affected, except the little finger. Some of the ulcers lasted for two months; in fact, one of the sites has to be protected at the present time. The growth of the finger nails was markedly retarded for some weeks. The patient was told that he had Raynaud's disease and that he might lose his hand at any time.

The patient's general appearance was good. The heart action was normal and there was no evidence of nervous disease or disorder of the vascular system other than the condition of the right forearm and hand. The coagulation time of the blood was studied by Dr. George Dorrance, who reported it normal. The Wassermann test in the blood was negative.

There is at present no appreciable loss of power, and the hand is used steadily at work, but every precaution is taken to prevent exposure to cold. No discomfort is experienced, except for a slight chilly feeling and this is always present. The circulation in the hand is easily affected, for instance, elevation usually causes prompt blanching.

Examination of the affected part shows two depressed cicatrices at the ends of the thumb and index finger. There is a well marked transverse groove across the nail of the ring finger. To the examiner the temperature of the affected hand feels slightly lower than that of the opposite side. There are no changes in pain, touch, and temperature sensations. Attempts to get the radial pulse usually fail, though occasionally a very feeble movement is detected. The ulnar pulse is distinctly more feeble than that of the opposite side. There is no appreciable difference in the pulsation of the arteries at the elbows, and the blood pressure in the two brachial arteries is equal, 130 mm.

The case is unusual and I have not been able to find the record of a similar one. Déjerine and Mouzon (1) have reported a case where pressure from a cervical rib upon the subclavian artery led to ischemia of the extremity and subsequently to thrombosis. Their patient had experienced pain and numbness in the hand for some time; then the fingers became white and tender, severe attacks of itching developed, and there were urticarial manifestations; the part was threatened with gangrene, and a resection of the rib was done at which operation the thrombosis was discovered.

Our patient has a slight enlargement above the right clavicle and this led to a röntgenographic study of the cervical region. There was reported to be an incomplete cervical rib in the right and a rudimentary one in the left. It was not thought that the rib was sufficiently long to exert pressure, nor do the clinical findings point to such a condition.

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*Read before the Philadelphia Neurological Society, March 24, 1916.

As to Raynaud's disease, this disorder need not affect corresponding areas, as is stated by Cassirer (2), "for example, I saw a case of this kind in which there appeared to be a congenitally weaker arterial vascular system of the affected arm." In our patient we know of no disturbance in the part previous to exposure.

A feature of present day military tactics is trench warfare, and this has brought out the baneful effects of cold on the feet. Abroad, much has been written recently upon the subject of disturbances that follow soon after exposure, but sufficient time has not yet elapsed to acquaint us with the more remote effects. It has often been questioned whether in frost bite the damage is greater to the bloodvessels or to the nerves. In order to come to a better understanding of this distressing condition, Smith Ritchie, and Dawson (3) recently made an experimental investigation and their findings are most instructive; they show much more extensive injury to the bloodvessels. These observers subjected rabbits to conditions similar to those of soldiers in cold, wet trenches. Subsequent microscopic study of the bloodvessels showed dilatation, a deposit of fibrin along the lining, swelling of the endothelium, and vacuolization of the muscle fibres of the media; there was also an increase of cells in the perivascular tissue. The nerves showed no degeneration of the myelin and the swelling which was present in the axis cylinders existed, they believed, as a result of the general edema.

The condition in our patient appears to have resulted from frost bite and subsequent exposure to cold. There probably has developed an inflammatory process which has gone on to sclerosis of the bloodvessels, and since no irregularities can be made out, it is assumed that the condition is more or less uniform. The striking vascular disturbance and the absence of nerve changes appear to bear out the findings in the experimental work of the English investigators just cited.

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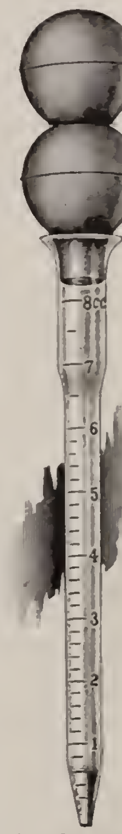
2005 CHESTNUT STREET.

THE VALUE OF IODINE IN GONORRHEA.

By M. Abramovitz, M. D.,
Baltimore.

The net summary of the pathology in gonorrhea and gonorrheal affections in the various stages being: "Bacteria invading tissue, causing at first a round cell infiltration and later connective tissue formation," the idea suggests itself at once, Why not combat it with iodine? Iodine in proper strength will undoubtedly kill bacteria. Iodine favors the absorption of connective tissue and prevents its formation. Iodine will neutralize the action of the agents which prevent the solution and absorption of necrotic tissue, and at the same time uncover and lay bare to the action of a germicide the germs which were protected by the necrotic tissue (1). Iodine has a peculiar attraction for specifically inflamed tissues (2).

Iodine would thus be the most valuable agent to defeat the pathological condition in gonorrhea if not for its violently irritating qualities. In fact, the idea of iodine in gonorrhea has undoubtedly occurred to many as it did to the writer. Bargues (3) tried iodine in urethritis, but found it so irritating that he abandoned it after a disagreeable experience. Iodine for intraurethral injection serves as the proverbial sour grapes to the urologist.



Air Pressure Syringe.

Pressure on the upper bulb expels the contents of the syringe and moderately inflates the urethra. Continued pressure on the lower bulb without changing the position of the hand will inject in the uretha a fresh volume of air which, by the voluntary relaxation of the compressor urethræ muscles by the act of urination, will drive the drug up into the posterior urethra.

Recently much has been done in the research of colloidal drugs with gratifying results. Colloidal drugs have proved overwhelmingly superior to the crystalline. A very interesting study of colloids by McGuigan (4) bears out the statement that colloids protect the sensory nerves, as shown by the fact that sugar dissolved in mucilage tastes less sweet than in water. For the same reason ice cream does not taste as cold as ice (Cushny). He also shows that the toxicity of crystalline substances is in many cases ninety times greater than that of colloids. The reason is that colloids are absorbed slowly. The absorption of a colloid can be lessened to such an extent that the rate of excretion may be nearly equal to the rate of absorption, in which case no toxic action would or could be expected. Diamond (5) explains why a colloid will act much better than the same drug in the crystalline form; it is because colloids have the property of adsorption, i. e., the property of charcoal to store up large volumes of gas. The minute subdivision of colloid particles effects enormous surface absorption.

Aware of the prohibitive qualities of crystalline iodine, and the possibilities of the same drug in the colloidal state, the idea of the intraurethral injection of colloidal iodine strongly appealed to me, especially after reading the many favorable reports of well known European clinicians, asserting the full effect of iodine minus the irritation. Such was the report of Auregan (6), which showed that this form of iodine had no irritating effect on open wounds, while it was effective in the reduction of the mortality of tetanus from sixty to 31.2 per cent.

The employment of a French preparation of electrocolloidal iodine for nearly a year in every case of gonorrhea presenting itself for treatment, with an improvement from time to time in the technic, gave net results as described briefly in the following case reports:

Group I (hyperacute anterior urethritis), twenty cases; youths and young adults. History of recent infection with rapid development. The tissues were highly inflamed with more or less swelling. Severe burning on urination. Profuse yellowish green discharge. Microscopic examination of the discharge showed numerous intracellular gonococci with many floating free in the fluid portion of the pus (apparently from the overfilled and ruptured cells).

Technic of treatment. The patient was instructed to urinate. The anterior urethra was flushed out with a warm mild solution of boric acid. The urethra was then stripped by gently milking it toward the meatus for the purpose of having it as dry as possible. Two or three c. c. electrocolloidal iodine was drawn up in the air pressure syringe (see figure), which had been previously sterilized by boiling and made absolutely dry (by either wiping it with sterile cotton on an applicator or by passing absolute alcohol through the barrel of the syringe). The end of the syringe was inserted into the meatus, which was made to fit well around the tip of the syringe, and with pressure on the bulb, the drug was discharged into the anterior urethra, utilizing the air cushion back of the drug to inflate moderately that portion of the urethra and so serve to open the pus pockets in the depressions or sacculations of the canal. The syringe was then withdrawn, while the left hand holding the penis compressed the meatus so that no air or drug escaped. The penis was then raised and lowered several times so as to allow the drug to cover the mucosa of the entire anterior urethra and thus reach every infected area. The enormous surface absorption of the colloid amply covered the mucosa. Absorbent cotton was then applied and fixed over the glans by a rubber band. The patient was instructed to dress the penis for a short time flexed over the symphysis pubis, which allowed the drug to stay in the canal by gravitation and not be discharged on the cotton, as it was when the penis was allowed to hang downward. The treatment was repeated twice daily, with the result that the gonococci disappeared in five to seven days with complete recovery in ten to twelve days.

In none of the foregoing cases was there and extension of the inflammation causing complications, nor was there any connective tissue formation. The latter fact was ascertained by repeated endoscopic examinations after recovery. The absence of complications can be explained to be due to the oily base of the drug which materially helped drainage by keeping the urethral walls apart. Extension of the inflammation was thus arrested.

I have found that the most practical way to keep the syringe sterile for the next injection is to fit to a large test tube a cork with a hole cut therein to admit the barrel of the syringe. The test tube is filled with absolute alcohol, which keeps the tip of syringe submerged.

To patients unable to come to the office more than once daily, I gave an outfit consisting of a flask of the drug, a sterile syringe in a sterile test tube with alcohol as described above, and one practical demonstration was given to the patient at the office, which enabled him to carry out the treatment at home twice daily without difficulty.

I found that in some of the cases, where there was great swelling and pain, that previous irrigation of the canal by a 0.2 to one per cent. sodium chloride solution, made the application of the drug absolutely painless. This proved useful in hypersensitive youths during the first few treatments. The action of sodium chloride—according to Hanzlick (7), when applied to mucous membranes, is to prevent the absorption of iodine.

Group II (moderately acute and subacute urethritis), fourteen cases; adults or middle aged men. History of recent infection with rather slow development. Very little or no pain on urination. The discharge was of a mucopurulent character. Gonococci (intracellular) present in the discharge. Six of the patients gave history of this being their second or third infection. Urine examination and endoscopy promptly placed them in the group of chronic cases. The remaining eight were treated as described in the technic of Group 1. These cases terminated favorably in from two to three weeks.

Group III (chronic posterior urethritis), twelve cases; adults and middle aged men. History of infection, six months to many years. Microscopic examination of the urinary shreds and particularly the so called morning drop showed gonococci plus staphylococci, streptococci, and colon bacilli. Endoscopically, the posterior urethra presented a picture of erosions, ulcerations, and granulations. Slight narrowing—beginning of stricture—was noted in two of the cases.

Technic of treatment. As in most cases in that class, there was an involvement of the prostate, which was massaged two or three times weekly. After the massage the patient urinated. The urethra was irrigated with a mild solution of boric acid, allowing some of the irrigating fluid to enter the bladder at the end of the irrigation. The patient then completely emptied his bladder. The urethra was stripped as described above.

Five or six c. c. electrocolloidal iodine was drawn up into the double bulb syringe; the end was inserted into the meatus, which was held so as to fit around the tip of the syringe. The penis was raised to an angle of about 45°. The upper bulb was pressed, which discharged the contents of the syringe into the anterior urethra. The air cushion back of the drug drove it down the incline to the bulbous urethra or just in front of the membranous urethra, which at this point is larger in calibre. The patient was then instructed to urinate, the effort of which voluntarily relaxed the compressor urethræ muscles, while at the same time pressure was continued on the lower bulb, injecting a fresh volume of air into the urethra, which easily drove the drug into the posterior urethra. The natural curve and the dilated middle portion of the posterior urethra, the ridge (verumontanum), and the depression (sinus pocularis) in its posterior wall in all cases retained the drug, while any excess of air passed over into the bladder to escape at the end of the next urination. The penis was dressed as described above. One such instillation daily proved very effective. Recovery was complete in eight to ten weeks. The air pressure instillation proved to me invaluable. It not only made possible a quick and painless instillation of the drug in the posterior urethra, but it completely does away with instrumentation, which is always more or less traumatic.

Group IV (gonorrheal vaginitis and endocervicitis), five cases. History of infection. Microscopic examination of smears taken from vagina, cervical canal, and urethra, showed the infection (gonococci) present in both the vagina and the urethra. The urethra was treated as before. The vagina was cleansed by a warm antiseptic douche and wiped dry with sterile cotton or gauze. A suppository containing twenty-two grains electrocolloidal iodine in a gelatin-glycerin base was inserted into the vagina and fixed just in front of the cervix by a light gauge tampon. The patient was instructed to keep it undisturbed for two or three hours, after which she removed the tampon and irrigated the vagina with warm saline solution. One such treatment daily resulted in complete recovery in ten days to two weeks.

As pain is an important factor to the patient as well as to the physician, I beg to say, in conclusion, that the treatments above described are painless. But it must be remembered that colloids do not keep well because the electrolytes therein precipitate the particles in suspension. Care must be taken to use only such colloidal iodine as has been by proper dialysis freed of electrolytes and made absolutely stable, if the practitioner is desirous of attaining satisfactory results.

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1707 East Baltimore Street.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

DISORDERS OF NUTRITION IN INFANTS.*

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The short space at my disposal as well as the immensity of the subject make it impossible to do more than merely emphasize some of the most important phases of the disorders of nutrition in infants. It is advisable to divide this subject into two main divisions:

1. Disorders of nutrition indirectly attributable thereto;
2. Those which may be attributed to faulty nutrition as a direct cause.

Under 1, I shall classify the diseases of the mouth, such as stomatitis, whether of bacterial, chemical, or thermic origin as a primary condition, or secondary to infectious diseases such as scarlet fever, measles, etc. Of all the various forms, stomatitis catarrhalis is the most frequent in the newborn and in infants, and is often complicated with soor and Bednar's aphthæ, which is a decubitus of the palate over the hammulus pterigoideus. Such mechanical erosions result from too vigorous attempts to clean the oral cavity, of which there is no need prior to the eruption of the teeth. A light swabbing of the mouth after the daily bath with sterile water is always sufficient.

Soor is a disease of the suckling age—seldom in older children. It is due to a fungus (Oidium albicans). We know now that it is a harmless nosoparasite and that deadly general diseases are not due to this cause, but that it may form a primary disposition for them. Again I repeat that many an infant has been affected by this disease through much busying in cleansing the oral cavity, thus forming traumatic lesions for the development of soor. I should like to be permitted to make a therapeutic suggestion; sterile gauze dipped in a ten per cent. boroglycerin solution with which the nipples are covered and through which the child then sucks will be found a most effective measure.

The esophagus with its congenital or acquired stenosis and a spastic pylorus are other sources of nutritional diseases in infants. In my student days the generally accepted theory was that of one of my teachers in Vienna, Professor Widerhoffer, who declared that the diseases of the stomach and intestines like dyspepsia, gastroenteritis, etc., are in every way similar to these diseases in adults, with the *single exception* that the greater severity of these diseases in infants is caused by their physiologically lesser resistance. The fallacy of this theory is now recognized. It is interesting to note that even in the cases showing the most severe clinical symptoms the pathological findings show slight lesions. Bacterial invasion is considered a lesser cause of disorder of nutrition in infants than heretofore believed; to the introduction of food are due general metabolic disturbances known as diseases of the digestive system which lead us to the pathology of digestion. Formerly our principal thoughts centered around the decomposition of milk or turned to bacteria originated diseases as a cause of disorders of nutrition. Today we pay much less attention to this cause than to the *quality* and *adaptability* of food for infants. In other words the *tolerance* of the individual child for food is the primary consideration in the feeding question. Too little food and too much food are the principal causes of the disorders of nutrition, and this is a cardinal point.

To the first group belong cases of inanition due to simple hunger feeding, or to qualitatively unsuitable diet, or to the continuation of certain food for too long a time. If the tolerance for food in infants is overstepped, stagnation results and abnormal bacterial decomposition follows with its consequences.

Constipation in breast fed infants is due mostly to lack of nourishment. The food is absorbed in the upper intestines and does not produce any ferment for forming acids, which acids in turn cause peristaltic movements in the large gut. Artificially fed infants suffer from constipation through lack of suitable food, or qualitatively unsuitable food like a continued diet of cereals, rickets (muscular atony), and deficiency of fat in the food. Overloading the stomach with food highly diluted causes dilatation of the stomach and retards digestion, thereby producing stagnation and its resulting evils.

Overfeeding produces a circulus viciosus. The surplus food absorbs the free hydrochloric acid and prevents its stimulating action on intestinal digestion and pancreatic and bile secretion. This again results in stagnation which produces acid fermentation, giving rise to gas and increased peristalsis and causing green, watery, acid, odorous stools.

As a result of too much food we may have a gastritis in an acute form (due to the presence of irritating ingesta or to improper quantity of food or unwisely chosen periods of feeding). Intestinal colic is due to flatulence produced by undigested foods rich in fat and sugar.

In addition to insufficient food and to overfeeding, disturbances of nutrition in infants are further due to insufficiency of the digestive organs. In prematurely born infants there is deficiency of absorption and assimilation and the stomach, of course, has a smaller capacity. In artificially fed infants the cow milk containing more salts neutralizes the free hydrochloric acid. This permits bacterial proliferation and gives rise to the most tormenting symptoms of the infant's life—colica flatulenta.

The question most often confronting the pediatrist is that of the doubtful result produced in feeding with cow milk despite its (close) similarity to human milk. The question has aroused much discussion and given rise to various theories. We were taught by Biedert that the casein of the cow milk was hard to digest. Hamburger attributed the trouble to the difference in the albumins; Pfaundler and Escherich assert that special ferments in the human milk act as stimulants to digestion. Epstein avers the difference to be due to the fat, Cerny to the fat and sugar content. These are the most frequent causes of fermentation and irregularities in the digestion through the formation of acids, lactic and butyric, and are of main interest.

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*Read before the Yorkville Medical Society, May 15, 1916.

So much has been written and said on the subject of infant feeding that I shall permit myself only a few suggestions.

Infants of the same age require to be fed according to weight and size; starch should be added from the seventh month on; irregularity in feeding must be avoided: malnutrition is the first stage of marasmus.

And in conclusion may I add a few clinical remarks? Fifty per cent. of all cases of intussusception are found in infants and are due to very lively peristalsis. (The great frequency of intussusception in boys is due to the reflex irritation of an adherent prepuce). Intestinal parasites are often the cause of intestinal obstruction. *In the bottle fed*, hyperthermia is one of the primary causes of summer diarrhea.

Mercury salicylates, and codeine are excreted in breast milk and should therefore be avoided in medication of the nursing mother. The milk of the tuberculous or nephritic woman may injure the infant.

Cow milk *should not even be tried* in the first week of life. The so called milk injuries of Czerny and Keller are due to the high fat content.

Overfeeding causes stagnation of the gastric contents.

Starchy foods in early life are the cause of severe diseases of nutrition. Early feeding of eggs produces severe disturbances, skin eruptions, and nervous phenomena.

As a final dogma—breast feeding is superior to any other and the physician should *insist* on its practice wherever possible.

1097 Madison Avenue.

CARING FOR MILK IN THE HOME.

The three C's for the proper care of milk in the home are:

Keep milk { Clean;
Cold;
Covered.

The practitioner should draw the attention of his patients to the fact that milk is a highly perishable food, and the length of time it will remain sweet and safe, especially for children, depends almost entirely upon the constant care it receives between cow and consumer. Milk passes through three agencies—the producer, the dealer, and the consumer. If the first two have done their part, clean, safe milk will be delivered, thoroughly chilled, to the consumer. The consumer's responsibility begins the moment the milk is delivered at his doorstep.

Tell mothers who do not nurse their babies that because milk poured from vessel to vessel on the street is very liable to contamination from dust, manure particles, and germs, it is best delivered in capped bottles. If bottled milk cannot be obtained, the housewife should try to have some one in the family receive the milk in a clean, scalded utensil, cover it instantly, and put it without delay into the refrigerator, or the coldest available place. Under no circumstance should an uncovered pitcher, bowl, or pan be left out on the porch to receive bulk milk. The vessel, both before and after the milk is poured into it, is accessible to flies and collects particles of dust and dirt.

Even in the case of bottled milk, however, the consumer must see that the bottle is not left out in the heat for a moment longer than is necessary. Milk should be delivered and kept at a temperature of 50° F. or lower—the colder the better. At such temperatures bacteria develop very slowly and milk undergoes little change until consumed. A slight rise in temperature above this point, however, permits bacteria to multiply rapidly and brings about rapid deterioration of the milk, which may render it unfit for ordinary use and make it highly dangerous for babies and little children. For this reason bottled or other milk should not be allowed to remain in a warm place, as on a sunny porch or in a hot kitchen, for a moment longer than is necessary.

DELIVERY OF MILK IN HOT WEATHER.

In hot weather the best plan is to have the milkman put the milk directly into the refrigerator, because at that time of year milk cannot be kept properly without ice. If a refrigerator is not available, provide a small box containing ice, and if ice is unobtainable, provide some tight container with insulated walls that keep the heat from getting rapidly to the cold milk. A home made fireless cooker is admirable for this purpose, especially if partially filled with ice. In the absence of any of these devices, arrange with the milkman not to leave the milk in the sunlight, but to put it in the coolest, shadiest place around the house. If the bottle is wrapped in a piece of clean unbleached muslin and stands in cool water, the cloth will be kept wet by capillary attraction, and the evaporation of the water will keep the milk cool.

HANDLING MILK IN THE HOME.

In handling milk around the home, do not pour it from one vessel to another until it is to be consumed. Do not let the bottle of milk remain out of the refrigerator a moment longer than is necessary. Keep the milk covered, using paper caps or an inverted tumbler on bottles, or store it in clean, covered utensils. Any household utensil that is to be used as a vessel for keeping milk should first be cleaned thoroughly and scalded.

Before opening a bottle of milk, wash and wipe the neck and outside of the cap with running water The little depression on the top of the cap may collect dust or water and any milk that leaks out may attract flies. Lift out the cap with a pointed instrument or piece of sharpened wire kept for the purpose, so that the outside of the cap, which may be contaminated, will not be pushed down into the milk. Each time the milk is to be poured from the bottle, it is a wise precaution to wash the neck as described.

MILK IN A REFRIGERATOR.

The refrigerator where milk is stored should be cleaned regularly, especial care being given to keeping the drip pipe free and clean. The ice rack also should be cleaned, and any place where food is kept or milk stored should be scalded occasionally with sal soda solution. The refrigerator, even though cold, may quickly be contaminated by a few drops of spilled milk, or by small particles of food. No matter how clean the refrigerator, milk should never be kept in an open vessel. As milk absorbs odors easily, such food as fish, cabbage, or onions should not be kept near it.

CLEAN EMPTY BOTTLES.

As soon as a milk bottle is emptied, rinse it thoroughly with cold water. Do not return dirty bottles and do not use milk bottles except to hold milk. Returning dirty bottles to the milkman may mean that a few days later either you or your neighbors will get contaminated milk. In towns with proper sanitary regulations, this practice is forbidden by law. Milk bottles should never be taken into a sick room. Where infectious or contagious disease is in the house, all bottles should be boiled thoroughly and should not be returned to the dealer without the express permission of the attending physician. Such diseases easily can be made epidemic through disregard of this precaution.

WHERE THERE ARE CHILDREN.

Care of milk, important for all, is a vital necessity in a home where there are children. It is absolutely essential to the safety of babies. No careful mother will leave to a servant the task of caring for or preparing the milk for her baby. Mothers of small children should get, from their own physicians, explicit directions for the proper handling of milk and for cleaning and sterilizing nursing bottles. Pamphlets on infant feeding may be obtained from the municipal milk stations or health officers. Milk for babies cannot be kept too cold, and too much care cannot be given to keeping it clean and covered.

Further information on this subject may be had by writing to the U. S. Department of Agriculture, Washington, D. C., for Farmers' Bulletin 413, *Care of Milk and Its Use in the Home*.

The Diet of Children after Infancy.—J. H. Mason Knox (*Jour. A. M. A.*, August 5, 1916) notes that an enormous amount of time and study has been devoted to the dietetic requirements of infants, but that relatively little has been spent upon the equally important problem of the diet of children during the following period. From the few available studies the average requirement for a child of two years may be stated as ninety-four calories per kilogram: for one of four as eighty-two, and for one of eight as sixty-seven calories. The actual amount of food increases gradually from infancy to maturity, but the relative amount per kilogram of body weight decreases. There are wide variations from averages stated in individual cases, but the averages serve as valuable guides for most children. Little definite is known as to the required proportions of protein, fat and carbohydrate for children, but if sufficient fat and carbohydrate is supplied relatively little protein is needed. Not more than about four grams of protein per kilogram of body weight is required for children under eight, and about half that amount for those above this age. About half of the protein should be derived from animal foods, but as the child grows older this proportion should be reduced and more should be provided from the vegetable kingdom. About four grams of fat per kilogram seems to be required at the age of two, and half that amount after ten. The minimum fluid intake at two years should be about one liter, increasing to one and one half liters by the age of seven. The vegetables provide a sufficiency of mineral salts and this element needs no special consideration. Bearing these estimates in mind, the physician should construct a series of diets suitable for children of different ages which would provide the necessary amounts of the several food constituents in a balanced diet The additions from the period of infancy should begin with the simplest forms of food and the diet should be made increasingly more complex as the child's age advances. Special attention should be paid to the modes of preparation of the several foods ordered, and it is the duty of the physician to be able to give explicit directions on this phase of the problem. The author gives several suggestive diet lists for different ages, but these may be modified very largely to suit individual conditions. It should be borne in mind that the young child does not require any great variety in his diet and it is sufficient to have a few alternatives which can be used on different days.

Recent Progress in Dietetics as a Science.—R. de W. Baker (*American Journal of Electrotherapeutics and Radiology*, June, 1916) calls attention to the marked practical significance of the newer conceptions relative to the proteins and their decomposition products. Proteins are to be considered important, not from the standpoint of their content of carbon, nitrogen, hydrogen, etc., but from that of their yield of the desirable aminoacids, eighteen in number, used by the organism for tissue construction and repair, e. g., tyrosin, leucin, tryptophan, lysin, glycocoll, cystin, histidin, arginin, etc. Specific functions have been shown by Mendel and Osborne to belong to certain of these aminoacids, only a certain number of which are needed for the maintenance of nutrition in the adult, though nearly all are required for tissue construction or repair. Thus, the nutrition of adult animals is maintained by the gliadin of wheat given as the sole protein, but growing animals cease to gain unless lysin is added. Zein, the chief protein of the maize kernel, which yields no lysin, tryptophan, or glycocoll, does not alone meet the nitrogenous needs of animals, but when supplemented with tryptophan, maintains body nutrition, and with lysin in addition, body growth. The individual aminoacids can be manufactured, and some made by the body itself when required. Bacteria, acting on excess of protein or aminoacids in the alimentary tract, or protein in lumps, form toxic substances. Cadaverin, for example, is formed from lysin; indol and skatol, from tryptophan; and phenol and cresol, from tyrosin. Interesting possibilities arise in influencing the reaction of the body juices by the use of base forming foods such as potato, and acid forming foods, such as meats. The unknown but essential food substances called vitamines have also recently excited much interest. Animals failing to grow because of feeding upon lard, which contains none of these substances, begin to gain as soon as milk fat, egg fat, or codliver fat, which does contain them, is added to the diet. The entire subject of protein diet and nutrition is thus being transferred from guesswork and assumption to a scientific basis.

The Nutritional Value of Bread from the Whole Grain.—F. Röhmann (*Berlin. klin. Woch.*, January 31, 1916) states that much of the protein of the grain is contained in the layer immediately beneath the pericarp and is not utilized when eaten as ordinarily milled for whole grain bread. Aleuron cells can often be found whole in the human stools after the use of such bread. When, however, the grain is very finely ground so as to pulverize this hard outer layer a much larger proportion of its proteid contents is made available. Bread made of such finely milled whole grain has a much higher nutritive value than ordinary bread and provides so much additional protein that it very largely spares the much more expensive protein foods, such as meat. In addition to this the outer layer has been found to contain certain substances necessary for growth. Funk has termed these "vitamines" and ascribes to them certain specific growth stimulating properties. Röhmann does not subscribe to the theory of vitamines, but holds that the endosperm, which is the only part used in fine flour, is wanting in certain essential protein constituents—particularly those yielding lysin, arginin, and tryptophane. Just these essential constituents are, however, present in the protein substances found beneath the pericarp and which are available to man only in flour made from the whole grain, and specially in that which is finely milled. The use of such bread is therefore not only decidedly economical, but also provides a much more complete diet on the protein side.

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Contemporary Comment

Insanitary Surroundings.—Those who are in charge of the public health of a city are in large measure responsible where epidemics take place that could be prevented, remarks the *Texan Medical Journal* for August. We look upon war as cruel and barbarous, which it is. The little children who are dying by the hundreds in this country from infantile paralysis—the latest scourge due to official neglect and public indifference—are murdered even more inhumanely than the men who stand blindfolded before the firing squads of an enemy. Will the physicians stand idly by, and by their silence approve a continuation of conditions which they know produce nine tenths of the epidemic sickness and deaths of the country? In the face of their knowledge of the causes that create such things, can they keep clear consciences without raising their voices unitedly in protest?

Officials become indifferent unless they are prodded to do their duty. The people generally are careless as to public health unless brought face to face with some appalling contagion, and even then they soon forget. Millions are so ignorant that they do not know anything about the causes that contribute to such things or how to stop them. The physicians are the volunteer guardians of the health of the people. It is no longer merely their duty to heal, but it is equally their obligation to prevent disease. How long will they, either as individuals or as organizations, neglect this self assumed duty? Every physician in the land should get behind the State, county, and city officials in such a way as to impel better conditions. They should talk to the people about them wherever they go, should instruct in sanitary improvement, should fill the press with warnings of the dangers, should personally entreat officials to be alert in conserving the health of the people, and point out the ways and means of bringing about improvement.

Elsner, Physician and Citizen.—To a heartfelt appreciation by Dr. Fielding H. Garrison, of Washington, D. C., of the late Henry Leopold Elsner, M. D., LL. D., of Syracuse, N. Y., Dr. Abraham Jacobi has added a characteristic tribute:

> Dr. Henry L. Elsner was born in Syracuse, N. Y., August 15, 1857; graduated from the College of Physicians and Surgeons in 1877; became a teacher in the Medical Faculty of Syracuse University, which in 1915 honored him with the gift of the Doctorate of both laws; died in Washington, D. C., on February 17, 1916, and was buried in Syracuse, February 20, 1916.
>
> Forty years ago, like Frederick Forchheimer, Elsner was my pupil in the College of Physicians and Surgeons of New York. No teacher ever had one more appreciative, progressive, grateful, and successful. European masters completed for the young man whatever was required for his perfection as a physician to the individual sick; as an adviser to countless distressed families; as a hospital organizer and attendant; as a friendly and superior consultant in the service of private colleagues and public institutions. No wonder he remained all his life the welcome guest of every sick room or hospital ward; the last hope of the working man, the farmer, the judge, the professor and the statesman; the forensic expert and sanitarian; the medical leader of the centre of the State, such as Dean had been, and Wey, and Ward. Probably no one leader has, to the same extent, remained to his dying day the adviser and the revered and blessed refuge of those whom he instructed and enlightened, and supported and encouraged, in the classroom, in the clinic, and in the hospital. I am sure there never were practical lessons in ethics like those taught by Elsner through his example in word and deed.
>
> The presidencies of many local societies, that of the Medical Society of the State of New York, and his office in the House of Delegates of the American Medical Association, prove to those who survive him the honor we were all anxious to lay at his feet. By unceasing work and the many demonstrations of his wisdom and energy he rewarded the confidence we placed at his disposal.
>
> The date of his return from Europe, within a year, was a festive day for the community, as the news of his death proved a signal for intense universal mourning over the loss of a great physician and fellow citizen. In both capacities he left his permanent impress. His Commonwealth has often relied on and gained by his practical wisdom: his profession, by his teaching in scores of his papers and essays. His last great book on *Prognosis in Internal Diseases* means more than that mere title. It comprehends etiology, symptomatology, diagnosis, and therapy—indeed, it means practical medicine. That one volume comprehends all that a great and good physician could learn, and study, and teach from history, observation, and experience. It will be a textbook for all, and for many years. ABRAHAM JACOBI.

Editorial Notes and Comments

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WATER WASTE.

There is little doubt that one of the greatest advances of modern times, as well as the greatest advance in preventive medicine, has been the rendering of the water supply more wholesome. The engineering and sanitary problems involved in solving this question have often been stupendous; new sciences of water engineering, water analysis, and water bacteriology have sprung up around this endeavor. No settlement can now thrive or even exist for any length of time without a wholesome water supply. The nature of water pollution is particularly human. Indeed, no other source of water pollution is of much moment, although waste from industrial enterprises often renders water unfit for drinking, but not in the sense of being disease carrying. One exception to the nonhuman source of disease carrying water is found in the goitrous waters of Switzerland and parts of Austria. Even the extensive water purification works had no effect in lessening the incidence of goitre and cretinism. Nevertheless, heating the water to 80° C. rendered it nongoitrous. Here it was believed that the elements in the water causing the pathological conditions were the remains of ancient marine animals or certain salts, both rendered inert by boiling.

Even the courts have favored the right of the individual to get his water unadulterated or unpolluted, even against the interests of large industrial enterprises or large communities. Communities have been held responsible in money damages for deaths resulting from polluted water. The plenary powers of the courts have been successfully invoked to enjoin further or even contemplated water pollution.

Human intestinal excreta are the most prolific causes of infection and pollution of water. The enormous morbidity from typhoid in this country as well as the epidemics of other intestinal diseases elsewhere is directly traceable to preventable water pollution. The Public Health Service has been carrying on extensive investigations of the pollution of the tidal waters. It intends to stop the many leaks which continue to keep the typhoid incidence so high. Most large cities have extensive plants for water filtration and the detection of water impurities. Perhaps the best test for the presence of an undue amount of human pollution in water is the presence of the colon bacillus. The expense of water purification is so large that many communities have refused the installation of these plants on this ground. Others have been forced to economize in this most expensive commodity—pure drinking water. The installation of water meters has served to bring home to the community that they are consuming an article whose cost of production is considerable. Yet even those centres which have an apparently inexhaustible water supply have been threatened with water famine during dry periods. Every growing community is continually worrying about the question of having an adequate and wholesome water supply. The city of New York, with this very problem in mind, has just finished a sixty million dollar water supply enterprise; but because of the rapid growth of some centres and the extravagant use of water there is no absolute safety. Economy in water offers perhaps the best assurance of safety. Upon the ample supply and reserve of the water supply the health, comfort, and progress of a community depend.

In Europe the use of water is on a more economical scale—perhaps too much so. Some places use as little as eight gallons per capita a day. It is estimated that from ten to fifteen gallons per capita a day is sufficient for all purposes. Yet in some cities in the United States as much as two hundred and fifty gallons per capita a day are consumed. It is true that included in this estimate is the water going to waste from leaky house fixtures, water mains, and in industrial enterprises. Nevertheless, one half of the water supply in this country is wholly wasted. This may at any time become a serious problem. The supply must be conserved at all costs. The supply must be kept ample by stopping all sources of leak and by metering all water, as well as by bringing home to the public the necessity for economy. The waste of water in plenty may mean famine in leaner years, much to the detriment of the health of the community. Besides, the money thus saved could be appropriated elsewhere for the public welfare. The public should be made to feel the cost of water extravagance by paying for water they use. The purity and the adequacy of the water supply of a community must be as much a source of pride to the community as the beauty of its architecture or the physical development and health of its inhabitants. Like all advances in the field of preventive medicine and hygiene and public weal in general, the physician should act in the role of proselyter, and the need for active effort and influence in this matter is clear and imperative. Every physician is in duty bound to keep himself informed as to efficient performance of duty by the public officials who have in charge the supply and distribution of water.

THE RELIEF OF ANGINA PECTORIS.

Sufferers from angina pectoris are as well aware as their favorite physician of the extraordinary relief to be obtained from amyl nitrite. A London practitioner, Samuel Constable, apparently averse to the use of drugs in this condition, wrote to the *Lancet* for April 29, 1916, giving details of a new mechanical method of relief. His theory seems to be that minor attacks of angina are due to partial constriction of the vessels and major attacks to complete constriction. He had a friend, a Doctor X, who suffered from angina, and to him he paid a visit early in last December; he found him in much pain in both arms and chest. At once he got his friend to grasp the top bar of the bed with both hands, letting most of his weight fall on the now strongly stretched arms for some forty seconds. After a short rest he repeated the process some five or six times. Result: Immediate cessation of all pain in arms and some relief of the chest. Mr. Constable now got him on the floor to grasp the bar at the end of the bed with both hands behind his back, bending forward at an angle of about 60°, the chest thrown forward, and the head back, thus subjecting the muscles of the affected area to strong tension. This he repeated some half dozen times, each lasting about forty or fifty seconds. Result: Immediate cessation of all pains in the chest, the sense of constriction completely vanishing. He now went to his bath, and for the first time the exertion of washing caused only the merest suspicion of the old ominous forebodings of ill. For some weeks the process was continued about every two hours, the minor pains occurring with less severity and frequency; and it is important to note *that on no occasion did the stretching fail to give immediate relief*—the italics are Mr. Constable's—though the operation must have been performed hundreds of times. No medicine was taken. Doctor X is now at work and able to walk with almost his old rapidity.

Mr. Constable gives details of equally gratifying results in two other patients, one a man aged thirty-five years, the other a French polisher, fifty-two years of age. The latter described his sensation of comfort as accompanied by a tingling and rushing of blood over his face and neck. Mr. Constable believes that worry is the great predisposing cause, while the pain he attributes solely to the atheroma. As asthma is believed to have a similar origin, perhaps dietetic and hay fever asthmatics might obtain relief from their paroxysms by carrying out the same or similar procedures.

THE PATHOLOGICAL ACCOMPANIMENTS OF MENTAL STRAIN IN WARFARE.

Just as mental disease appears to be a growing menace coincident with the more complex requirements of civilization, so does any increase in the tensity of national affairs show a corresponding addition to the number of mental diseases. It was only to be expected that the present war would prove no exception to this rule. The reports which reach us from the firing lines describe conditions which prevail there by such terms as "inferno," "hell on earth," and "orgy of death." Surely it is small cause for wonder that some of the men forced to live through such scenes should succumb under the strain, and that those who are predisposed by reason of some psychopathic determinant in their heredity should manifest psychoses.

In the *British Medical Journal* for March 25th, Dr. R. G. Rows called attention to some of the mental conditions found at the front, as observed at the Red Cross Military Hospital, at Maghull. It seems that most of the men who broke down under the stress and were found to have psychoses and psychoneuroses, could be definitely proved to be neurotic; some had had distinctly psychotic attacks in earlier life. Not infrequently the history was of a mild psychotic episode years before with inadequate recovery. By inadequate recovery is meant that the patient instead of adjusting his mental conflict, compromised by leaving the scene. Then he drifted into the army with his mental trouble still dormant. One of these men accidentally shot a comrade; another had a friend shot dead at his side. Shocks of this kind brought back the psychotic symptoms.

Doctor Rows takes an enlightened view of the problem. He thinks that the mechanism of simple mental process should be described to the patient in plain language, and the emotional affect accompanying psychic events and its persistence in the unconscious be explained in understandable terms. In short, a psychic catharsis should be attempted. He believes also that a special hospital with an efficient staff should be devoted to work of this sort.

SANITARY FOOD HANDLING.

There is no factor of quite the same importance in the spread of disease as the ingestion factor. Many of the diseases formerly thought to have arisen in some unknown and miraculous way, are now definitely shown to be spread by ingestion of infected food products or of infected drinking water. The list of diseases so spread is hardly complete with tuberculosis, typhoid, cholera, dysentery, worm diseases, and the like. About fifty per cent. of all tuberculosis of childhood is of bovine origin, and, therefore, is ingestion tuberculosis. While drinking water is still accused of being the most prolific cause of typhoid fever, it probably is the least, for the reason that the typhoid bacilli in drinking water reaches the consumer much diluted, and because of its exposure therein is much attenuated as to virulence. On the other hand, infection carried to exposed food by unclean hands, or by flies which have perhaps alighted on or fed on infected human excreta, offers the readiest and the best method of infection. In a similar manner, the pernicious habit in some communities of spraying gardens with human excrement offers the richest possible source of infection. Faulty methods of sewage disposal in rural communities act to the same end. Surface soil pollution is a direct source of food infection as well as of pollution of drinking water.

However common food infection may be through faulty methods of cultivation or handling at the source, it may be overcome to a large extent by care in preparation. It is of no advantage that at some sources food is cultivated and handled properly if later it is to be rendered unfit by uncleanly preparation, or if diseased food handlers are to become means of transmission.

One of the largest abuses is the consumption of raw vegetables without proper cleansing. Indeed, because of this it is often not safe to eat raw vegetables, salads, or fruits, where kitchen methods are lax. Gritting of sand between the teeth while eating vegetables raw is a certain sign that they have been cleansed improperly, if at all. In countries where amebic dysentery is endemic vegetables are never eaten raw because the difficulty of properly washing them is recognized. In such localities, to contract dysentery is a certain indication that these elemental precautions with regard to raw food have not been observed. In cholera epidemics of the past the drinking water was indicted almost solely as the source of infection, but there is little doubt that infected food played an equal role.

The public is dependent in a large measure on the preparer of the food, especially in public eating houses, to destroy much of the unavoidably infected food, and must especially trust to him to use such sanitary precautions as will reduce to a minimum the transfer of infected materials to the food. Scientific food handling and food preparation can be made to accomplish this economically. As a factor in maintaining the public health and in preventing the spread of disease the public eating place is perhaps the most important, and no amount of stringency in its sanitary regulation can ever be accused of being unwarrantably oppressive.

THE PHYSICIAN'S VACATION.

The physician above other men needs a vacation, a change of scene and occupation. He needs it even if he is not a "busy" practitioner, and indeed almost in proportion as he is not busy, for the man who has recently hung out his sign, and the physician longer in practice whose time is none too full of professional work, have often more of stress and worry, conscious or subconscious, than their very successful brethren. There is such a thing as taking recreation the year round by losing one's self as occasion offers in work other than professional—in equestrian performances on one's hobby. There is rest and pleasure in variety of labor, but a complete change of place, board, and occupation is often needed also in order to put a new edge on living. The city physician finds it comparatively easy to absent himself from his office for a few weeks. Others do this, and his clientele expect to find him absent for a season each year. Besides, he may choose among many to look after his patients, without detriment to his business, while he is absent. In the village or country, it is different. Patients take it as an affront to find their physician absent, and have been known to dismiss him for his selfishness in leaving them in the lurch when they were about to be attacked by dyspepsia, or their children by the chicken pox. Perhaps the physician, or physicians in general, may be largely to blame in not educating the people to expect them to be away for a time and to leave their patients to the kindly attention of a brother physician, who may desire a similar service at another time.

It seems to be proved by a number of recent studies that we need our vacations from work chiefly in midwinter, but for most physicians the winter season is out of the question. Besides, the country or shore, whither we ought usually to go for recreation, offers its abundance of joys in the summer season. Still, if one is worn and feels the need of a change, the season may be neglected and a sojourn in the great city, or the south, will afford the needed change. It goes without saying that the physician will not obtain rest through doing foolish things in his vacation, as so many of the laity seem inclined to do. From experience with patients he ought to be so sensible in his recreational behavior as not to need a vacation from a vacation. To sleep o' nights—and maybe a part of the day for a season—and to be far removed from the ring of the telephone, is in itself worth all the cost of the lost calls it may entail.

WHOLE WHEAT FLOUR.

An interesting excerpt on the use of whole wheat bread is printed in our department of Dietetics in this issue of the Journal. In view of the fact that ordinarily it is difficult or impossible to obtain freshly ground whole wheat flour, it may be valuable to know that it is quite possible to obtain at small expense a practical household mill for grinding wheat. A small grinder in the kitchen may be used not only for supplying whole wheat flour for the family, but also for cracking wheat, corn, barley, oats, rye, and other grains for use as breakfast cereals. These should be obtained from a seedsman rather than from a grocer or feed store, because in this way a high quality of clean grain is insured at small cost. Flour may be also ground from any of these grains. In this way persons who need to have the benefit of unadulterated natural cereal foods can supply themselves at minimum expense. Moreover, there is an additional advantage in providing in our emasculated city homes a means for exercising the deltohumeral muscles of developing adolescents in the household; in other words, the children may be allowed the privilege of grinding the grain. The fireless cooker should be kept in daily use if these cereals are to be prepared most appetizingly and by truly scientific means.

TREATMENT OF IVY POISONING.

Studies of Rhus toxicodendron show that its poisonous principle is a volatile acid resin; therefore, the treatment of rhus poisoning with an alkali is theoretically right. In practice the correctness of the theory is borne out; a saturated aqueous solution of sodium bicarbonate being one of the most efficacious remedies. Recently a note was made in these columns of the application of ice water for rhus poisoning in the United States Army with good results. The possibility of combining the alkaline and ice water treatments naturally suggests itself, and upon trial this has been found to be prompt and efficacious. In two cases which have come to our notice a saturated solution of sodium bicarbonate in ice water applied freely and continuously to the infected area brought about prompt relief and a complete cure within twelve hours. In view of the suffering entailed by a severe attack of rhus poisoning and of the failure of the older methods of the treatment with opium and lead water, grindelia, etc., it is well to bear in mind this method, which is easy of application and prompt in affording relief. We should be glad to hear reports from any of our readers who may try this method of treatment.

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News Items

American Hospital Association.—The eighteenth annual meeting of this association will be held in Philadelphia, September 26th to 30th, with headquarters at the Bellevue-Stratford Hotel. A feature of the meeting will be an exhibit of hospital supplies.

The Cartwright Lectures.—These lectures, which are given under the auspices of the Alumni Association of the College of Physicians and Surgeons, Columbia University, will be given on October 24th and 25th by Dr. Richard M. Pearce, of the University of Pennsylvania, his subject being The Spleen in Its Relation to Blood Destruction and Regeneration.

Personal.—Dr. Abraham Jablons announces that he has opened an office at 219 East Twelfth Street, between Second and Third Avenues, New York.

Dr. James J. Mills, instructor in ophthalmology at Johns Hopkins Medical School, Baltimore, sailed for France recently, for the purpose of assisting in the treatment of eye injuries of soldiers.

Tuberculosis Week.—The National Association for the Study and Prevention of Tuberculosis announces that Tuberculosis Week this year will be observed from December 3d to 10th. Attention is directed to three special days indicated for this week, namely, National Medical Examination Day, Wednesday, December 6th; Children's Health Crusade Day, Friday, December 8th, and Tuberculosis Sunday, Saturday or Sunday, December 9th or 10th.

The Poliomyelitis Epidemic.—A report issued by the health department shows that on Wednesday, August 23d, there were reported in New York City 131 new cases of poliomyelitis, with 42 deaths; on Tuesday, there were 118 cases, with 39 deaths. The daily average of new cases last week was 134; for the first three days of this week the average has been 114. which indicates that the epidemic is declining. The total number of cases to date is 7,315, with a total of 1,689 deaths.

The Psychopathic Clinic at Sing Sing.—Dr. Bernard Glueck, of the Government Hospital for the Insane, Washington, D. C., has been appointed psychiatrist in charge of this clinic, which was established recently at Sing Sing Prison, Ossining, N. Y. He will devote his entire time to the work and will be supplied with the necessary assistants. The work will be under the immediate supervision of an advisory board of the National Committee for Mental Hygiene, which is composed of the following members: Dr. August Hoch, director of the New York State Psychiatric Institute; Dr. William Mabon, medical director and superintendent of the Manhattan State Hospital; Dr. William L. Russell, superintendent of Bloomingdale Hospital; Dr. George H. Kirby, clinical director of the Manhattan State Hospital; Dr. L. Pierce Clark, consulting physician to the Institution for the Feebleminded at Randall's Island; and Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene.

New Hospitals in Argentina.—The Argentine Government has recently accepted tenders for the construction of two new hospitals, one at Posadas, Territory of Misiones, and the other at La Rioja. The hospital at Posadas, to be known as the Hospital Común Regional de Misiones, is to be constructed at an expenditure of $136,529, and the hospital at La Rioja, which is to be called the Hospital Común Regional Andino, will cost $208,390.

New York and New England Association of Railway Surgeons.—The twenty-sixth annual session of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York, on Wednesday, October 18, 1916. A very interesting and attractive program has been arranged. Dr. William S. Bainbridge will deliver the Address in Surgery, his subject being the Cancer Problem. Railway surgeons, attorneys, officials, and all members of the medical profession are cordially invited to attend. Dr. D. H. Lake, of Kingston, Pa., is president, and Dr. George Chaffee, of Little Meadows, Pa., is corresponding secretary.

Poliomyelitis in Buffalo.—According to official reports of the Buffalo Department of Health, up to July 31st there had been reported only two cases of infantile paralysis in Buffalo with one death. This report contained the following résumé of this disease in Buffalo during the past: In 1910, fifty-two cases with five deaths; in 1911, nine cases, no deaths; in 1912, 316 cases with twenty-three deaths; in 1913, seventeen cases with three deaths; in 1914, nine cases with two deaths, and in 1915, thirty-one cases with five deaths. Since 1912 the Health Department, with the consent and assistance of the attending physician, sent a physician and a nurse to every case of poliomyelitis for the purpose of giving the mother instructions in the proper care and treatment of the patient. This was continued as long as seemed necessary.

Gifts to Hospitals.—The trustees of Flushing Hospital, Long Island, announce a gift from the three daughters of the late Dr. and Mrs. Joseph L. Hicks, of a trust fund of $5,000, the income of which is to be used toward the support of a bed in the hospital to be called the Hicks Bed. The bed is established in memory of their parents, who were active in the work of the hospital.

By the will of James Hay, late of Philadelphia, the Episcopal Hospital will receive $25,000 and the Home for Incurables, $5,000.

By the will of Fanny Brown, the Presbyterian Hospital, of Philadelphia, will receive $10,000.

Two bequests to the Presbyterian Hospital, New York, amounting to $350,000 are contained in the will of the late Charles W. Harkness.

Civil Service Positions in State Institutions.—The New York State Civil Service Commission calls attention to the opportunities offered to qualified physicians for appointment to positions in the medical service in State hospitals, prisons, and charitable institutions. Although the salaries offered seem to afford adequate compensation the number passing the examinations has not been sufficient to meet the needs of the service. An examination was held recently for prison physician, salary $2,000, but the number of competitors was very small and no one passed the examination. An examination for assistant physician in the prisons, salary $1,500, held at the same time, produced only two eligible persons. An examination for assistant physician in the State hospitals held January 22, 1916, produced eighteen eligible persons, but the list was practically exhausted before July 1st. Another examination was held July 15th, but only eleven competitors were secured. This position carries an initial salary of $1,200 with maintenance, including quarters, board, laundry, etc., and the salary is automatically increased $100 a year until $1,600 is reached, when opportunity is offered for promotion to the next higher grade, senior assistant physician, at 1,800 and maintenance. The State Hospital Service really offers a career, as there is a regular line of promotion for the medical staff from assistant physician to the position of superintendent. Any one interested in these examinations should write to the State Civil Service Commission, Albany, N. Y., for information.

A Paralysis Hospital at Garden City.—A temporary hospital for the reception of infantile paralysis patients was opened on Hempstead Plains, near Garden City, Long Island, on Thursday, August 17th. The hospital is designed to meet the needs of the community until the health authorities of the county have provided adequate accommodations. It has been established by popular subscription, about $2,500 having been raised to meet the expense of opening and equipment, and it is understood that the residents of Garden City will meet all further demands for money. Dr. Louis Lanehart is in charge of the hospital, which is a metal structure and will accommodate five patients.

Hospital Ship for the Sulu Archipelago.—The International Health Board of the Rockefeller Foundation has entered into a cooperative agreement with the Philippine Government for the equipment of a hospital ship for the Sulu Archipelago, and its maintenance for five years. The inhabitants of the Sulu Archipelago are scattered over a large number of islands and the establishment of dispensaries at various points would reach only a very small fraction of the population. To meet the situation this hospital ship is being provided. It will be expected to go from island to island meeting the people at established points, bringing medical relief to the afflicted, training midwives, and giving general instructions to the people. Preliminary investigation shows that the medical needs of the people are great. They suffer from malnutrition and from diseases which are fostered by filth and negligence. The common diseases are skin diseases in their worst forms, malaria, hookworm disease, dysentery, and other preventable infections.

Tuberculosis Conference.—Sectional conferences on tuberculosis will be held during the month of October in New Haven, Conn.; Louisville, Ky.; Jackson, Miss.; Newark, N. J., and Albuquerque, N. M., under the auspices of the National Association for the Study and Prevention of Tuberculosis. The Louisville conference, which will comprise the Mississippi Valley States, will meet on October 4th, 5th, and 6th. The New England States Conference at New Haven will meet on October 12th and 13th; the Albuquerque Conference, taking in the Southwestern States, on October 13th and 14th; the North Atlantic States Conference at Newark on October 20th and 21st, and the conference for the Southern States at Jackson, Miss., on October 30th and 31st.

The governors of every State in the territory of each of these conferences will appoint delegates, and the mayors of practically all of the principal cities will send representatives. Chambers of commerce, State and county medical societies, antituberculosis associations, women's clubs and other civic and social groups are being urged to send delegates to the conference in their various districts. The programs of each conference will be suited to the locality in which the conference is held. Speakers of national prominence will be present at these meetings.

Poliomyelitis Ward in Bellevue Hospital.—In order to care for the great number of cases of poliomyelitis, Bellevue Hospital has been obliged to open a special ward for the treatment of acute cases, where there are now some eighty patients, and a second ward to which they are transferred when convalescent from the acute attack, where there are now over fifty patients. This convalescent service is in charge of the neurological and orthopedic departments of the hospital, and furnishes a remarkably large field for the study of the disease and its results, and the benefits to be derived from suitable treatment.

The amount of work necessary to intelligently care for this increased number of patients has made necessary an increase of the personnel of the house staff, and there is at the present time a position open for a graduate physician in this poliomyelitis ward where he will receive board and lodging in the hospital during the period of his service, which would be a six months' term, and could be supplemented by a further period of six months if desired. Application should be made to the Superintendent of the Hospital, Dr. George D. O'Hanlon. Preference will be given to applicants having previous hospital experience, but the latter is not necessary. The facilities offered for the study of this little understood malady are so great that there should be no difficulty in filling this position.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,

Department of Biology, Olivet College.

Thirty-fourth Communication.

ARTICULAR RHEUMATISM.

Our meagre knowledge of the etiology and pathology of rheumatism avails little in determining a rational therapeusis. Excluding infective arthritis, with which acute articular rheumatism is often confounded, it is yet unknown what so alters synovial and serous membranes as to give rise to serofibinous exudates. There is warrant for the belief that there exists primarily a hemic dyscrasia, and all attempts at treatment must consider this presumptive causative factor even while seeking to alleviate the symptomatic misery.

In most cases there seems to be reduction of the alkalinity of the blood; this is best met by administration of sodium bicarbonate. A great deal of this alkali will be changed in the stomach to the chloride, but some of it presumably passes into the bowel, where it is taken up by the blood stream; even its decomposition in the stomach may be considered advantageous through the stimulation thereby of acid production by consuming the acid carbonates of the blood. The quantity of sodium bicarbonate required will be an amount necessary to keep the urine continuously alkaline.

Many clinicians report amelioration of distress in articular rheumatism by use of the salicylates, although in what manner pain or fever is affected by this drug is unknown. It seems certain that beneficial results frequently follow use of the salicylates, but it seems equally probable that many favorable reports represent inadequate observation. Possibly the salicylates neutralize to some extent the hypothetical toxin present in the blood stream, without accelerating elimination to any great extent. It is claimed that salicylates tend to prevent cardiac complications, and this may be a justifiable claim, if it is true that this drug really neutralizes toxins in the blood stream. Belief in such a prophylactic action is at present based on a purely gratuitous assumption, yet is one which might be embarrassing for the average physician to ignore.

An important part of the treatment is to secure rapid elimination of the hemic toxins by hemoclysis. The patient may be given hot drinks, in quantity; extra warm and large saline enemata may be administered slowly; saline solutions may be injected hypodermically; the patient may be sweated freely; the whole object being to promote as rapid metabolism in the blood stream as may be judiciously possible. Frequent cleansing baths in warm water are also desirable, not only for the comfort of the patient and his attendant, but also to maintain the skin in a condition favorable for free diaphoresis.

Local medication can be of but little utility. Especially delusive is the local use of any opium preparation, inasmuch as opium acts sedatively on the sensorium only, and is absorbed but little from the unbroken skin. Sometimes counterirritation exerts a favorable influence through its stimulating influence over a reflex path; and occasionally either hot or cold fomentations serve a similar purpose. Chronic inflammation of the joints is often relieved by hot air treatment, by which local circulation is hastened, and the reflexes are intensely stimulated. But it must be admitted that at present the pharmacologist can offer little aid to the therapeutist in the consideration of rheumatism.

Results Obtained with Carrel's Method in the Treatment of Wounds.—M. Perret (*Bulletin de l'Académie de médecine,* April 11, 1916) states that mere inspection, revealing a great variety of dirt carrying substances in the average wound by a military missile, is sufficient to convince one of the infected condition of these wounds, as a class. Two important points in the application of Carrel's treatment are, 1, that the wounded must be treated within six hours after the reception of the injury, and, 2, that the wounds must be widely opened up and entirely freed of all foreign substances before the irrigations with Dakin's fluid are begun. Within a period of about four months there were treated with Carrel's method under Perret's supervision 111 wounds of intermediate or pronounced severity, comprising seventy-eight wounds of the soft parts and thirty-three involving bones. In the former group complete disinfection was attained in three or four days, repair then following with extraordinary rapidity. Some wounds healed in ten days. In the case of a man who had sustained a perforating wound of the left thigh, a long abdominal erosion, and a broad, deep laceration of the right thigh, with hernia of the torn muscles and metallic fragments disseminated in the tissues to a depth of six centimetres, treatment of the wound by Carrel's method, after proper removal of foreign bodies, resulted in the patient's discharge in three weeks and his return to the front a week later. Wounds thus dealt with present a bright red color, never suppurate, and exhibit no odor or inflammatory reaction; the initial high temperature drops rapidly to normal. Compound fractures of the upper extremity healed very readily; two fractures at the elbow, for example, undergoing repair without fever at any time. The compound fractures of the lower extremity included injuries of the knee joint, comminuted thigh fractures, and fractures of the leg. The entire series of 111 patients is now recovered and in good health. No amputations were necessary, their principal cause, infection, having been eradicated. The statement may thus be boldly made that wound infection has now been mastered. Whether fluids other than Dakin's solution might yield the same results the author does not know.

Acute Frontal Sinus Headache.—Hugh B. Caffey (*Jour. Kansas Med. Society,* July, 1916). This condition is very commonly encountered by the general practitioner in epidemics of grippe and colds in the head and usually responds promptly to simple measures. The turbinate body should be gently massaged with a cotton tipped probe soaked in a two per cent. solution of cocaine and epinephrine. These applications should be followed by the use of an alkaline wash or the application of argyrol. The use of aspirin, codeine and quinine may often be added to the general treatment with decided benefit. The treatment of the nose should be repeated daily as long as the headache continues.

Radium Treatment of Epithelioma.—Thomas C. Kennedy (*Journal of the Indiana State Medical Association,* July 15, 1916) says that while radium is not a cureall, it will cure every case of epithelioma that is amenable to treatment. When used intelligently it is a painless, safe, and efficient method of treating malignant skin affections, and is to be preferred in epithelioma of the face. The number of treatments varies; improvement usually is noticed after two or three exposures, and frequently after the first. The analgesic action is marked and is frequently noted after the first application. It is held by some physicists that there is a decided difference in the physical properties of x ray and radium. The latter has cured cases in which the former had failed.

Intravenous Treatment of Tetanus.—C. H. Browning (*The British Journal of Surgery,* July. 1916) states that in the treatment of tetanus intravenous administration produces the most rapid action; Straub employs a 2.5 per cent. (i. e., isotonic) solution; from fifty to 150 c. c. should be injected in two minutes. Spasm relaxes in from one to five minutes, but the effect passes off in half an hour. On account of the effect of intravenous injections on the heart, Meltzer urges caution in the use of this method, and recommends injecting a six per cent. solution at the rate of from two to three c. c. per minute; slowing or shallowness of respiration is an indication for immediate discontinuance of the injection; if this does not cause prompt improvement, inject slowly through the venous cannula a small amount of 2.5 per cent. calcium chloride.

Treatment of Erysipelas with Diphtheria Serum. — H. Koller (*Correspondenz-Blatt für Schweizer Aerzte,* July 8, 1916) reports a case in which a woman sixty years old was suffering from a severe attack of erysipelas, and great improvement followed the administration of diphtheria serum. The first dose of 3,000 units was given April 15th. The next day five c. c. of electrargol were given by intravenous injection. On the seventeenth the second dose of the serum, 1,000 units, was given, and by the next day the patient was practically well. The course resembles closely that of a case reported by Pollak in 1915, but the extent to which it was influenced by the serum cannot be said to be proved. Koller emphasizes the advantage of using electrargol in combination with it, and says that they work together harmoniously, but to which the result is to be attributed is not clear.

Treatment of Chlorine Gas Poisoning.—A. Stuart Hebblethwaite (*Brit. Med. Jour.,* July 22, 1916) has found that the type of poisoning with chlorine, in which the patients were cyanotic and much distressed but preserved a good pulse, was found to require more effective treatment than the administration of atropine and the inhalation of ammonia. In these venesection was tried with very beneficial effects, bringing great relief of the cyanosis and pulmonary congestion, relief from the acute headache and the production of sleep with marked refreshment upon waking. To be successful the venesection should be performed early, and from fifteen to twenty-five ounces of blood should be removed, depending upon the robustness of the patients. Early bleeding greatly spares the heart from the effects of strain due to the pulmonary congestion, but in some individuals cardiac stimulants will be required, following the venesection.

Magnesium Sulphate in Delirium Tremens.—Edward A. Leonard (*Jour. A. M. A.,* August 12, 1916) states that lumbar puncture should be performed and ten to forty c. c. of spinal fluid withdrawn. Following this one c. c. of a twenty-five per cent. solution of magnesium sulphate should be injected for each twenty-five pounds of body weight. The withdrawal and injection should be made with the patient in the sitting posture and he should then be lowered to one of semi-recumbency. Nearly constant attention is required for twenty-four hours after the injection to secure nourishment and proper care of the bladder and rectum. The treatment produces prompt relaxation and often a paraplegic state which begins to disappear in twelve to twenty-four hours. Complete restoration of function and reflexes usually occurred in thirty-six to forty-eight hours, and the patients were then permanently free from their delirium and restlessness. Twelve cases were treated thus, only one injection being required in any case. Ten recovered and two died, a great improvement over the results of the usual methods of treatment.

Radical Treatment of Gastric Ulcer.—Joseph Cunning (*Lancet,* July 22, 1916) claims that the operation of gastro-jejunostomy is not curative and often leads to the development of conditions quite as bad as those which it has undertaken to relieve. Its mortality is not inconsiderable. In view of these facts the author has long practised the more formidable operation of excision of the ulcer. In some cases he has performed a total pylorectomy with anastomosis between the duodenum and the fundus. Some cases, however, were encountered in which neither of these operations could be performed on account of the close adhesion of the ulcer to the pancreas or other organ. For these a new plan was adopted, namely, detachment of the stomach from the adhesion by an incision encircling the entire ulcer. The opening thus made into the stomach was closed and the exposed ulcer scraped and left in situ to undergo healing, no attention being paid to the possible formation of adhesions. This new method gave most satisfactory results and the author has had no deaths following either this or the simpler operation of excision.

Heliotherapy in Chronic Suppurative Osteoarthritis of the Elbow Following Fracture.—R. Bayeux and J. Vallot, at a meeting of the Société de pathologie comparée (*Presse médicale*, June 29, 1916), reported a case illustrating the powerful disinfectant and healing action of sunlight, not only at the skin surface, but also deeper in the tissues. The treatment should be administered in the open air, for glass arrests the ultraviolet rays which are beneficial in this direction. The effect is more pronounced, moreover, in a warm than in a cool atmosphere, and the treatment should be given high above the ground, in a place free from dust. Experience is required to appreciate properly the activity of the sun's rays at a given place and at a certain time of day. Slow, progressive pigmentation is the best criterion of a favorable therapeutic action. On the first day only one half hour's exposure to the sun is indicated. This may then be augmented by ten to thirteen minutes daily up to a maximum of two hours.

New Remedy for Diarrhea.—M. Cloetta (*Correspondenz-Blatt für Schweizer Aerzte*, July 22, 1916) suggests the administration of a colloidal hydroxide of aluminum to take the place of bismuth, which has risen much in price. He states that this preparation passes through the stomach without being dissolved, to become dissolved gradually in the intestine, where it is not absorbed, but exerts an astringent action. He recommends it on the grounds that theoretically it is a correctly constructed remedy for diarrhea, and that through its prescription in the place of other preparations advantage will accrue to the medical service of the Swiss army. Erich Liebmann, in another paper on the same subject in the same journal, reports several cases in which this remedy, described under the name alutan, produced excellent results. He thinks it a useful remedy in many cases of diarrhea from various causes. The dose he suggests is from two to three tablespoonfuls daily, given in water or milk. The only unpleasant consequence is vomiting, which occurred in two cases.

Hay Fever: Its Treatment with Autogenous Vaccines and Pollen Extract.—Leon S. Medalia (*Boston Medical and Surgical Journal*, August 10, 1916) reports six cases of hay fever treated with autogenous vaccines. The results given are encouraging. The cultures were obtained by passing a sterile swab along the floor of the nose to the posterior wall of the pharynx in such a way as to wipe off as much of the mucous lining of the passage as possible during the withdrawal, and then, implanting in the ordinary way on glucose agar, blood serum, bouillon, and blood agar. Several tubes of glucose agar slants are used, sufficient for an autovaccine. Cultures are also made from the throat by swabbing off the tonsils, going as deeply as possible between the pillars of the fauces, and from the conjunctiva by placing a swab upon it, covering it with the lids, and having the patient squeeze the lids tightly, so as to have the swab soak up any secretion present. As a rule the growth was found sufficient for the preparation of autogenous vaccines at the end of twenty-four hours, and these were made in the ordinary way. Four of the cases were treated with pollen extract alongside of the autogenous vaccines, but the results obtained from the vaccines alone, as well as from the combined method, and the way these same cases reacted to the vaccines prior to the use of the pollen extract, make the author feel that the pollen extract can be dispensed with. One case of hay fever and asthma of over twenty years' standing has been under observation since March, 1911. The relief in response to the autogenous vaccine was marked. The patient needs two or three treatments each year, which produce no discomfort. She has had no asthma practically from the beginning of the treatment, and has been free from hay fever, with the exception of a slight transient attack of sneezing following a long automobile trip. This the writer believes to be the only case of hay fever on record in which autogenous vaccine has been used for such a length of time. No pollen extract was used in this case. It is worth noting that four of the six cases gave a family history of hay fever, which is confirmatory of the suggestion already made that there is a hereditary predisposition to this disease.

Treatment of Inoperable Cancer of the Breast.—C. W. Strobel (*Medical Record*, August 12, 1916) describes a method used by him in sixteen cases since 1898. It consists briefly of four stages: Denudation, removal, skin grafting, and finally lymphangectomy, radium and x rays. The first stage destroys and removes all the skin layers, with the underlying fascia as well as the nipple, and is done by crayons of potassium hydroxide. The second stage destroys and removes all mammary and adjacent infected tissues, from the midsternal to the midaxillary line and from the 2nd to the 7th rib. This stage is accomplished by a compound of zinc chloride, sanguinaria root, and willow charcoal. The skin grafting is done with skin from the patient's thigh to hasten convalescence, minimize contractures, and secure a freely movable skin.

A Few Suggestions for the Treatment of Fractured Jaws.—A. C. Valadier (*British Journal of Surgery*, July, 1916) points out that the treatment of an ordinary fracture of the jaws, such as we meet in times of peace, is an easy matter for the oral surgeon; but the wounds caused by gunshot, with which we come into contact at the present time, require special consideration on the part of the operator. Wounds caused by bullet or shrapnel will generally be complicated; that is to say, a piece of metal may lodge in a most vital spot. The following points have then to be determined: 1. Whether or not it is right to attempt immediate removal of the foreign body? 2. Whether the patient will stand the strain of an anesthetic? 3. Whether the region of the glottis may be so inflamed as to contraindicate the use of a general anesthetic? 4. The patient's oral cavity may be so lacerated that food cannot be introduced. Should he be surgically treated at once to overcome this condition, or should prosthetic interference for the reduction of his fractured jaw be applied before surgical interference? These questions are of the utmost importance, and can only be answered by the oral surgeon in charge.

Treatment of Acute Articular Rheumatism.—Avgusto Fantoni (*Gazzetta degli Ospedali e delle Cliniche*, July 20, 1916) maintains that this condition must not be looked upon from an etiological standpoint as a disease *per se*, but rather as a manifestation of a particular mode of action of many pathogenic microorganisms. The salicylic treatment, while specific, is incomplete and sometimes harmful. Fantoni recommends a powder containing: Aspirin, 7.5 grains; quinine salicylate, 1.5 grains; caffeine, one grain, and camphor, 1/10 grain; every half hour for five to seven doses. Intravenous injections of mercuric chloride are a rational procedure and shorten the disease in addition to preventing sequelæ.

Intravenous Injections of Colloidal Sulphur in Acute and Chronic Rheumatism.—R. Massalongo and S. Vivaldi (*Riforma Medica*, July 16, 1916) state that the treatment of thirteen cases by this method would show that the intravenous injection causes a short chill, followed by fever which quickly subsides with profuse sweating. Immediate and marked improvement in the patient's general health is seen, with rapid diminution of pain and shortening of the morbid process. They counsel its use in young and robust patients without visceral complications, where salicylic treatment has been without avail. The pharmacodynamic action of the sulphur is obscure, but it is analogous to that of other colloidal metals, especially gold. It would seem that this action in rheumatism is by thermic elevation and consequent intense diaphoresis.

Treatment of Pneumonia.—J. Watkin Edwards (*Brit. Med. Jour.*, July 22, 1916) advocates in a paper on industrial disease the following plan for treatment of pneumonia which has proved most satisfactory in his hands. The patient should be kept in bed in a warm, sunny room with plenty of circulating fresh air, but no draughts. The bed clothes should be light but warm, and the lower extremities should be tucked in with blankets and a paper or rubber sheet. A cotton-wool jacket may be used on the chest, but should permit easy examination and sponging without too much disturbance. Poultices should not be used, but the skin should be sponged daily and campher oil rubbed over the chest to relieve pain, promote the circulation and comfort the patient. Serum or vaccine treatment has not been very successful and has not yet won a definite place in the therapy of the disease. For the first three or four days water, lemonade or weak tea to the extent of three or four pints in twenty-four hours is about all that should be allowed. After this hot milk and hot beef tea may be given alternately every three hours and milk sugar may be added to the lemonade. An initial dose of calomel should be given and this may be repeated when needed, with or without a saline laxative The prevention of constipation, restriction of the diet and the administration of an abundance of water are the best measures to prevent meteorism. Large doses of the acetate or citrate of ammonium should be given from the beginning to promote the free action of the skin and kidneys. Constant tepid sponging best relieves the high fever and for pain the use of small doses of aconite and antimony is often helpful. Dover's powder, gray powder and quinine in powder or capsule is useful treatment for the pain. Leeching or cupping may also be helpful. Where there is toxemia more water should be given and diuresis and diaphoresis should be promoted, and in alcoholic cases a mixture of potassium iodide and creosote gives good results. The amount of warm air and of sunlight should be increased and ammonium carbonate and strychnine, with or without digitalis, should be provided in the face of circulatory failure. Reliance upon the general measures of care and nursing is better for sleeplessness than upon the modern soporifics. A small dose of morphine may be required at bed time in some cases, and when he is comfortable the patient should not be disturbed for anything during the night.

Drug Addicts and Their Treatment.—T. D. Crothers (*Medical Record*, August 5, 1916) considers hospital treatment to be the first essential in most cases and that substitutes of the narcotic family are dangerous, and sometimes are worse than the original drug. Elimination is necessary by the skin, the bowels, and the kidneys. Mineral baths are most useful whether they contain soda, salt or gas. Symptoms and conditions concealed by the drug and which come to light upon its withdrawal are important. The central fact is that drug addictions are distinct neuroses and psychoses and are amenable to treatment and curable. The rapid cure would seem to be the best by means of excessive purgation, bathing, rubbing and the drinking of large quantities of water, as there are no symptoms of the expected shock. However there is certain to be reaction in such cases, in a tendency to recurrence of the habit. This method is suitable only in a certain percentage of cases; gradual withdrawal is indicated in others —the proper method must be determined by the physician in each individual case.

Vaccine Therapy in Chronic Bronchitis.—H. A. Cables (*Lancet-Clinic*, July 22, 1916) lays stress on the adequate differentiation of chronic bronchitis with abundant sputum from pulmonary tuberculosis, and calls attention to the efficacy of vaccine treatment in the former. In chronic inflammation of the finer divisions of the bronchial tract there is a great tendency to localization and, to some extent, one is able to determine the causative agent, e. g., the streptococcus, staphylococcus, or influenza bacillus. The streptococcic form is usually more widespread than the other varieties, and is manifested in afternoon fever and tachycardia, night sweats, loss of weight, and mucopurulent yellowish or greenish yellow sputum. Differentiation from tuberculosis is at times only possible by painstaking examination of the sputum, by the tuberculin test, and by carefully considered physical findings. The staphylococcic type is generally more localized and the symptoms are less severe. In the treatment, Cables uses stock vaccines of the Van Cott formula. The first dose given is a large one, to excite the formation of a great amount of antibodies. The interval between doses is always at least four days, and is lengthened to a week or ten days as improvement takes place. Codeine, one quarter grain every two hours, is often given to procure temporary relief before the action of the vaccine is brought into play. A typical dose of vaccine contains fifty million streptococci, one hundred million each of colon bacilli and pneumococci, and five hundred million staphylococci. The improvement following each dose depends upon the severity of the reaction, which is partly local and partly systemic. Histories of cases are given illustrating the benefit obtained. Great care was taken to eliminate cases of tuberculous infection. No auxiliary treatment was given.

Sparteine Sulphate.—W. H. Zeigler (*Southern Medical Journal*, August, 1916) concludes from his experiments on various animals that sparteine is not a cardiac stimulant, but is a depressant to both the heart and the respiration. Death is due to failure of the respiration, aided by the action of the drug upon the heart muscle.

Therapeutic Action of the Soluble Salts of Emetine.—F. Fernandez Martinez (*Revista de Medicina y Cirugia Practicas,* July 21, 1916) recounts his experience with emetine in amebic dysentery and tropical hepatitis, and describes its action as efficacious, brilliant and specific in such cases. Its action in nonamebic diarrhea was unsatisfactory, but its hemostatic and antihemorrhagic power was well proven.

Vaccines in Acute Infections.—Ellis Bonime (*Medical Record,* August 12, 1916) brings out five important points in this regard, namely, a correct bacteriological diagnosis, the correct time of vaccine administration, correct interval between doses, prevention of the growth of microorganisms beyond the reach of antibodies, and the proper preparation of vaccines from growths of the causative organisms.

A Method of Treatment of Shell Shock.—E. T. C. Milligan (*Brit. Med. Jour.*, July 15, 1916), states that owing to the probable hysterical nature of this complex disturbance he has employed suggestion, while the patients were under the effects of chloroform until the stage just preceding involuntary struggling. The method yielded excellent results in the majority of cases, but at times it was necessary first to anesthetize the patient completely and resort to suggestion as he was recovering from its effects.

Action of Socalled Female Remedies on the Excised Uterus.—J. D. Pilcher, W. R. Delzell, and G. E. Burman (*Jour. A. M. A.*, August 12, 1916) made tests, using the excised, surviving uterus of a guineapig, a method which has given good results in the case of pituitary and other ecbolic drugs. The drugs employed were those commonly used in specialties and proprietary preparations advertised for the relief of menstrual and uterine troubles. Authentic specimens of the several drugs were obtained and identified by competent pharmacognosists. Fluidextracts and freshly prepared infusions were the preparations used. The drugs included black haw, blue cohosh, cramp bark, liferoot, Jamaica dogwood, pulsatilla, St. Mary's thistle, skullcap, unicorn root, valerian, wild yam, blessed thistle, false unicorn, lady's slipper, motherwort, and squaw vine. Blue cohosh was the only drug which caused stimulation and this threw the uterus into a state of tetanus. The others were either wholly devoid of all action or caused relaxation or complete cessation of contractions when used in considerable concentration. Only the fluid extracts were active in those cases where any activity was present, the infusions always being virtually inert. Excepting, possibly, blue cohosh, none of the drugs was found to be ecbolic or a uterine tonic, and it is very improbable that even this would be of value when taken internally, for the requisite concentration for the production of its effects could not be reached by this mode of administration. The use of these drugs is not only fruitless, but it is even harmful, since it perpetuates therapeutic fallacies.

Treatment of Diphtheria.—George E. Ebright (*California State Journal of Medicine,* August, 1916) advocates an initial dose of eight to ten thousand units, usually the latter, and the repetition of the dose every six, eight or twelve hours as occasion demands until there is evidence of effect upon the membrane. He feels that this procedure is best even in small children; that it hastens the termination of the infection; that by stopping the diphtheria intoxication as early as possible, complications are less frequent, and also that probably the length of time for the disappearance of the diphtheria bacilli is shortened; in other words, that the tendency for the development of carriers is less. In the discussion of this paper Cullen F. Welty remarked that people who have had their tonsils removed are not diphtheria carriers, and that the only way to get rid of a well established infection of the throat is to take out the tonsils.

Evacuation of the Uterus in Early Pregnancy with the Aid of Pituitrin.—J. L. Bubis (*American Journal of Obstetrics,* April, 1916) asserts that it is possible to empty the uterus in the early stages of pregnancy in a few minutes with the aid of pituitrin and a curette, with very little loss of blood and without shock or collapse even in the most severe cases. No hot irrigations are required to assist in the expulsion of the fetus or placenta, nor are any irrigations or packing employed after evacuation of the uterus. Preliminary packing of the cervix and vagina to induce softening of the cervix and excite uterine contractions is likewise usually not required. The injection of one c. c. of pituitrin is given after the cervix has been dilated, while the patient is under the anesthetic. Sometimes the curette is unnecessary, strong pains beginning within a few minutes and entirely expelling the uterine contents. Where the uterus is unable to evacuate itself, the curette is used to separate the adherent placenta from the uterine wall, a procedure which causes practically no bleeding, even if the placenta is removed piecemeal, owing to the firm, hard condition of the uterine wall due to the drug. The uterine cavity is wiped dry with gauze and swabbed with five per cent. iodine solution; it decreases in size as rapidly as its contents are removed. With this procedure Bubis has been able rapidly to empty many uteri in the fourth and fifth months of pregnancy in which a diagnosis of dead fetus had been made, but the cervix was closed.

Miscellany from Home and Foreign Journals

Movements of Foreign Bodies in the Brain.—Captain George Vilvandre and Captain J. D. Morgan (*Archives of Radiology and Electrotherapy*, June, 1916) report two cases with x ray photographs showing how a bullet changes its position in the brain. Beside shifting backward, the bullets rotated. The fact that damaged brain tissue is fragile and because of the patient's lying in one position for days at a time account for this migration.

Cultivation of the Organisms of Variola, Vaccinia, and Varicella.—Horace Greeley (*Medical Record*, August 12, 1916) describes the discovery and cultivation of small bipolar bacilli from the pustules of all three diseases which are actively motile, form spores, and are encapsulated. Primary cultures stain with difficulty, but full development brings easy staining power. The Gram test varies with the age of the organism, although spores and polar bodies are always positive. Agglutination tests were unsatisfactory, as the vaccinia organism was clumped more markedly by variola serum than the variola organism itself. The varicella germ was irregularly affected, but strangely was uninfluenced by the varicella serum.

An Entericlike Fever.—Albert J. Chalmers and Norman Macdonald (*Lancet*, July 22, 1916) have encountered several cases in the Sudan in which the symptoms were closely similar to those of typhoid fever, differing chiefly in the absence of enlargement of the spleen, less severe toxic symptoms, constipation and no mortality. From the stools of several of these cases an organism was cultivated which was neither *B. typhosus*, nor one of the paratyphoid bacilli. Its cultural characteristics are detailed in full, for it seemed to be an organism belonging to the *entericus* group which bridged the gap between *B. typhosus* and *B. coli*. It was found to give some group agglutination with sera from typhoid and paratyphoid and was well agglutinated by sera from the cases from which it was isolated.

Albuminuria Following Administration of Hexamethylenamine.—O. Leyton (*Lancet*, July 22, 1916).—A man thirty-nine years old was first seen nine years ago and, although then in apparently perfect health, his urine was found to contain granular casts and red blood cells, and to boil solid with albumin. The albumin consisted of serum albumin and serum globulin. Careful examination failed to reveal any evidence of renal disease or cardiac involvement, but it was found that he had been taking large amounts of hexamethylenamine and it was thought that the liberation of formaldehyde might have produced a permanent damage to the kidneys. The drug was being taken to relieve a colon bacilluria. He was seen again recently, nine years after his first visit, and the condition were found to be about the same as before and his health and strength were apparently still quite normal. The only change was the development of very slight evidences of some myocardial impairment. Following the second examination he underwent a surgical operation, from which he recovered normally.

Syphilis of the Bladder.—James Pedersen (*Medical Record*, August 5, 1916) insists that a diagnosis of bladder syphilis cannot be made in any stage of the disease by cystoscopy alone. It requires the corraboration of at least one essential such as history, Wassermann reaction or syphilitic signs elsewhere in the patient, or the therapeutic test. Although the condition is frequently overlooked, it presents a uniformly good prognosis when recognized and properly treated.

Cardiac Symptoms Following Dysentery.—E. B. Gunson (*Lancet*, July 22, 1916) states that in a group of sixty-five cases of dysentery, including both the amebic and bacillary forms, there were three deaths. In each of the three fatal cases there were serious symptoms of embarrassment, including dilatation of the heart toward the end. In seventeen per cent. of the cases which recovered, evidences of circulatory deficiency were also present, such as dyspnea, palpitation, vertigo, pericardial pain, and a feeling of exhaustion. These symptoms on the part of the heart lasted beyond the third week of convalescence.

The Circumpenile Muscle: Some Observations on the Anatomy of Phimoses.—Goeffrey Jefferson (*Surgery, Gynecology, and Obstetrics*, August, 1916), in connection with this subject, summarizes as follows: An examination of ten prepuces removed at circumcision and one entire penis and scrotum (fetal) confirms the existence of abundant unstriped muscle fibre beneath the skin of the penis. These are prolongations of the dartos sheet and form the circumpenile muscle. The fibres of this muscle possess the power of altering the preputial orifice to a certain extent, and hence a consideration of the latent powers of the muscle in causing varying degrees of phimosis is important.

Abdominal Pregnancy.—Frederick J. McCann (*Lancet*, July 15, 1916) records an interesting case of this rare condition in considerable detail. All of the evidence obtained during a laparotomy pointed to the probability of the condition having been primary in the abdomen. The pregnancy went to full term without causing the mother any distress and it was only diagnosed after the escape of a large amount of amniotic fluid from the vagina followed by a cessation in the further progress of labor. Upon operation a full term fetus, recently dead, was found lying free in the abdominal cavity but separated from the intestines by a thin amniotic sac which enclosed it and prevented the formation of intestinal adhesions. The placenta was normally formed and attached to the posterior aspect of the body of the uterus. It is suggested that the ovum found lodgement immediately after extrusion and fertilization at that point of the uterus upon which it would naturally fall when expelled from the ovary. There was certainly no evidence to believe that the pregnancy had originally been tubal and had become abdominal only after rupture of the tube.

Rupture of All Extensor Tendons of the Fingers from Gonococcal Tendovaginitis.—Eduard Melchior (*Berlin. klin. Woch.*, February 7, 1916) describes the case of a woman in which rupture of all the extensor tendons of the fingers of the left hand had occurred spontaneously. Only that of the thumb remained intact. Over the dorsum of the wrist was a swelling and a small, superficial ulcer. Culture of the thick creamy pus from the interior of the swelling yielded a pure growth of gonococci and the same organisms were isolated from the urethra and cervix. The initial swelling at the wrist had begun in association with a polyarthritis apparently also of a gonococcal nature. The condition was treated surgically.

Evacuating Patients from the Serbian National Military Hospital.—W. A. Jolley (*Military Surgeon*, August, 1916) notes that their hospital was practically an evacuation hospital; the patients being taken to Austria on hospital ships as rapidly as conditions permitted. It is hard to realize the work required to prepare 400 men for transportation. The order would be received to furnish 100 men, who could walk a little, or, in other words, handle themselves, 100 men who could ride sitting up, and 200 recumbent cases. This order would often come in the midst of other work, which would have to be dropped to get the men ready for shipment, and then they would often wait for several hours until they could be taken. One may read of train loads of wounded, but one cannot appreciate the amount of labor required in the handling of these men in addition to the feeding and surgical care involved.

Complications and Sequelæ of Operations for Inguinal Hernia.—Lincoln Davis (*Jour. A. M. A.*, August 12, 1916) has collected and analyzed fifteen hundred consecutive cases operated in for the relief of inguinal hernia. The cases were operated in by seventy-five different surgeons, including the members of the resident house staff. No cases of strangulated hernia were included. The ages of the individuals varied from ten months to seventy-seven years, the greatest number falling between the ages of twenty and thirty. There were 1,388 males and 112 females and in 1,244 cases the hernia was unilateral. Varying technic was employed and in many cases other operations were performed at the same time as that for the hernia, nevertheless the total mortality was only half of one per cent., and of the eight deaths two were not due to the hernia or to the operation. There were nonfatal postoperative complications in 438 cases, many of which were trivial. Some sepsis occurred in the wounds in 158 cases, but was slight in most. Respiratory complications were common, occurring in 138 cases, and included pneumonia, bronchitis, cough, pulmonary infarct, etc. One half of the total number of cases were followed up one year after operation. Of these seventy-six per cent were certainly entirely cured and many others were cured of their hernia but had some minor complaint associated with the previous operation, such as local anesthesia or pain in the wound. In only three and seven tenths per cent. of the total number of cases operated in were there definite recurrences.

The Cardiac Disabilities of Soldiers.—John Parkinson (*Lancet*, July 22, 1916) has made observations on ninety consecutive cases sent for treatment on account of cardiac symptoms following exertion, and comes to the conclusion that this is not a specific form of heart disease and does not merit a special name. In none of the cases were there any of the physical signs indicative of cardiac disease and the disability was always unmasked solely by the exertion. In nearly half of the cases there was a history of similar disability during civil life. The condition occurred following acute rheumatism, dysentery, and influenza; in men over forty years old as a result of some myocardial change; in association with some functional nervous disorder such as palpitation; and in cases endowed with a limited cardiac efficiency under normal conditions of life and whose heart did not respond to training. The symptoms complained of in these individuals could be reproduced by making them climb twenty-five to fifty steps, and the functional efficiency of the heart could thus be tested. The increase in the rate of the heart after exertion was found to bear no relation to the severity of the functional deficiency, and could not be employed as an index of this condition. Even in the absence of abnormal physical signs referable to the heart, such men were seldom fit for active medical service.

Concussion of the Nerve Centres Due to Explosions.—Jean Lépine (*Bulletin de l'Académie de médecine*, July 4, 1916) points out, from observation of over 1,500 cases of severe concussion, that, in contradiction to views held at the beginning of the war, concussion from shell explosions, manifested in sudden mental confusion with persistent apathy and headache, and at times deafness and dumbness, is not simply related to emotion or a neuropathic or hysteric state, but is associated with organic changes. The explosion exerts violent pressure on the surface of the body, especially the relatively soft abdomen—many complaining of abdominal pain as though a blow had been received there—causing increased pressure in the internal vessels, in particular those of the brain and cord, which are enclosed in an unyielding bony casing. The vessels thus tend to dilate and elongate, sometimes rupturing. The cerebrospinal fluid is often bloody for a few days, and occasionally hemoptysis and vesical hemorrhage are noted. The retinal vessels show a sinuous, dilated condition for some days after the injury. Immediately after the latter the heart beats feebly, rapidly, and irregularly—a condition unrelated to psychic shock, since it is noted in unconscious subjects who did not hear the shell coming. Brain congestion sometimes persists weeks or months, and may even result in a complete paralytic syndrome. Permanent low blood pressure, with weak heart action and the appearance of a strained heart, may also follow. Stretching of the perivascular sympathetic fibres may be a factor in these disturbances; inequality of the pupils and vasomotor disorders are frequent. In one instance a suboccipital herpes zoster appeared a week after the concussion. Concussion of the labyrinth, as a special phenomenon, must of course be differentiated from the central concussion just discussed.

The Indications for and Results of Cerebral and Cerebellar Decompression in Acute and Chronic Brain Disease. — Charles A. Elsberg (*Surgery, Gynecology, and Obstetrics,* August, 1916) holds the view that conservation is indicated in fractures of the skull and that there must be definite signs of brain lesion or symptoms of increasing intracranial pressure, before surgical interference is instituted. Excluding patients with depressed fractures or with large meningeal or subdural hemorrhages, Elsberg has collected from his records sixty cases of skull fracture that either were not operated in or in which a decompressive operation had been performed. He has excluded all those with gross lesions, whether depression of bone, laceration of the longitudinal or transverse sinus, and the like; although in every patient who is operated upon, except where the only lesion is an extradural hemorrhage, a decompressive opening should be left after the cause of the increased pressure has been removed.

Of the sixty cases of fractured skull, twenty-four or forty per cent. recovered without operative interference, although many required most careful watching and in some he was in doubt for many hours as to the need of decompression. Fourteen, or twenty-three per cent., were moribund when admitted to the hospital and their condition never improved sufficiently to allow of an operation, even without anesthesia. Twenty-two patients were operated upon and a unilateral or bilateral subtemporal decompression was performed. Seventeen patients recovered and five died. The deaths in every instance were due to extensive and hopeless laceration of the brain. In a number of the patients, extensive collections of blood were washed out from under the dura.

Bone and Joint Disease in Relation to Typhoid Fever.—John B. Murphy (*Surgery, Gynecology, and Obstetrics,* August, 1916) is of the opinion that joint destruction in typhoid arthritis is due to the same etiological factors as in other types of acute virulent arthritides, namely, a, the interarticular pressure produced by the products of infection, pus, etc., under tension hastens the destruction and absorption of tissue; b, interarticular pressure, due to involuntary muscle contraction, favors destruction and absorption of the cartilage and bone ends when infection is present; c, added to the foregoing factors we have the biotic and toxic destructive effects of the invading microorganism. All of these should be relieved at their earliest moment of manifestation. Whenever a joint is involved, as for instance, the hip or knee, a Buck's extension should be at once applied. It must be applied with greater care and watched more carefully for its pressure effects than other types of arthritis. Otherwise, dermatitis, pressure necrosis, etc., occur. When the hip is involved the limbs should be dressed in double abduction, because then luxation cannot occur. The tension from the products of infection, when effusion or swelling in the joint are great, can be relieved best by, 1, aspiration, which may be repeated frequently if tension recurs; 2, by injection and lavage of the joint with a one to 1,000 or a one to 500 solution of the hypochlorite of calcium, with immediate suture of the soft parts. Drainage should never be inserted, as this would favor or rather insure subsequent synechiæ or ankylosis. When the knee is involved great care should be taken to avoid hyperextension; that is, a few degrees of flexion should be maintained and frequent changes of position resorted to. If the joint infection manifests itself after the acute symptoms of typhoid have subsided and the patient is in the convalescent stage of the disease, vaccines of the autosensitized type should be resorted to. In the knee and hip lesions a cast should never be applied, as that favors ankylosis. In the ankle, the limb should be maintained in dorsal hyperflexion, which can best be accomplished by a cast. Passive motion, however, should be resorted to every day in order to avoid the tendency to ankylosis, which is always associated with a cast in these cases. When ankylosis has once developed, arthroplasty should be resorted to in about a year after the bony fixation has taken place. It never should be an early procedure, as latent viable foci of typhoid bacilli may be present. These produce an infection of the wound and militate against a good result. The simple opening of the hip or knee with lavage with the calcium hypochlorite solution, or opening and lavage with the phenol solution with immediate closure, not infrequently entirely cures the joint lesion in typhoid arthritis, as it does in the streptococcus arthritis of scarlatina, where this proceeding applied early gives the best results.

Detection of Disturbances of Equilibration and Orientation in Cases of Cranial Traumatism.—Cestan, Descomps, and Sauvage (*Bulletin de l'Académie de médecine,* July 4, 1916) have found that in many cases of cranial injury, whether intracranial exploration has or has not been done, and whether the injury has been produced directly or through violent atmospheric commotion, disturbances of orientation and equilibration constitute the only immediately discernible trace of a previous concussion of the brain. They describe an amplified form of the Babinski-Weill procedure for the detection of slight disturbances of this nature. The subject, standing in a large room or hall, is asked carefully to note the position of some object at some distance in front of him, then to make eight steps toward it with the eyes closed, next eight steps backward, and so on five to ten times. The usual abnormal result is a deviation such that a star-shaped figure is produced; less often a zigzag or hooked progression is noted, and rarely a curved progression. The authors adds to this procedure two identical tests, the first executed after the subject has made a complete turn on his heels, clockwise, with the eyes still closed, and the second, after he has made another complete turn, counterclockwise. Deviations from the straight line in one or more of the three tests are not considered abnormal, except under the following conditions: 1. where there is star-shaped progression in the same direction as the complete turn just executed, provided the total deviation in the six to and fro movements exceeds 30°: more particularly, 2. where the starlike deviation is always in the same direction, whatever the direction of the preceding complete turn, and, 3. where, after little or no deviation in the first test, a complete turn results in progression in a lateral direction.

Proceedings of National and Local Societies

AMERICAN PEDIATRIC SOCIETY.

Twenty-eighth Annual Meeting, Washington, D. C., May 9 to 11, 1916.

The President, Dr. ROWLAND GODFREY FREEMAN, of New York, in the Chair.

President's Address.—Dr. ROWLAND GODFREY FREEMAN, of New York, addressed the society on the subject of fresh air, by which he meant cool, dry, moving, out-of-doors air. This he considered an agent of wonderful power, its value being due not so much to the presence of oxygen and the absence of carbon dioxide as to the fact that it allows the body to control its moisture and temperature.

Recent Progress in the Physiological Action of Atmospheric Conditions. — Professor FREDERICK S. LEE, of New York, spoke by invitation on this subject, detailing some recent experiments in the Physiological Laboratory of the Columbia University School of Medicine that had resulted in bringing about a change in regard to the views concerning the physiological action of atmospheric conditions. He stated that when a certain external temperature is fairly comfortable, an elevation of it, especially when accompanied by humidity, is deleterious, and the more so when the air is stagnant.

Some Studies on the Mode of Infection in Pyelitis of Infancy.—Dr. RICHARD W. SMITH, of Boston, spoke of the two conflicting theories regarding the mode of infection of the kidney in this condition, by the ascending and by the descending route, and said that aside from the greater frequency of pyelitis in female babies, there was no experimental or clinical evidence in support of the ascending route theory; while the descending, or hematogenous, route theory was supported by the evidence that the colon bacillus may enter from the gastrointestinal tract, and, in females, from the genital organs into the blood, and will be excreted by the kidney, causing inflammation at the pelvis of the kidney.

Dr. B. K. RACHFORD, of Cincinnati, asked why this infection was more common in females than in males.

Doctor SMITH, in answer to Doctor Rachford, said that the reason was that in the female the urethra is shorter, making the possibility of infection greater.

Dr. HENRY F. HELMHOLZ, of Evanston, Ill., referred to some experiments in animals in which he was able, in three out of twelve cases, to show by means of the x ray that there was a reflux from the bladder into the ureter.

The next paper was one by Dr. Alfred F. Hess, of New York, on "Diet and Growth in Infantile Scurvy." (An abstract of this paper, with the full discussion thereon, has already appeared in the New York Medical Journal, June 24, 1916, page 1230.)

Sarcoma of the Kidney Treated by the X Ray.—Dr. ALFRED FRIEDLANDER, of Cincinnati, described this case, which was inoperable, and said that the x ray had at first produced a decided shrinkage in the tumor and an increase in the weight and general well-being of the patient; but that later, the tumor had again increased greatly in size. The child had afterward succumbed to an intercurrent attack of measles.

A Brief Report of Sixty Blood Examinations with a Review of the Recent Literature of the Blood in Infants.—Dr. H. M. McCLANAHAN and DR. A. A. JOHNSON, of Omaha, presented this report of work, which was limited to the relative percentages of the white cells. The blood was taken without regard to the time of feeding. Sixty-eight infants, eighteen of whom were inmates of the Child Saving Institution, were examined for three weeks before the tests were made. All were between three weeks and two months of age. The results showed marked variation in the blood count.

DR. HENRY L. SHAW, of Albany, spoke of the great difficulty in establishing an average of white cells, on account of the fact that they vary a good deal and because of differences in classification. He considered it more accurate to give the maximum and minimum count for a certain age than to give a percentage.

Dr. JULIUS P. SEDGWICK, of Minneapolis, had found it difficult to obtain normal counts. He stated that some charts made by a student in pediatrics at the University of Minneapolis in the case of 135 newborn infants confirmed the findings of Doctor McClanahan.

Dr. DAVID M. COWIE, of Ann Arbor, said that the results of a similar experiment made by himself had shown the same curve as that exhibited. On the fourteenth day the red cells had almost entirely disappeared from the blood, and they did not reappear in the embryonal type.

The Creatin and Creatinine Content of the Blood in Children.—Dr. BORDEN VEEDER and Dr. MEREDITH JOHNSON, of St. Louis, had made determinations of the creatin-creatinine content of the blood in seventy-five children, and had found that the figure for normal children varied between one and two milligrams per 100 c. c., being somewhat higher than that for adults. The figure for creatin in the normal child averaged from four to six milligrams per 100 c. c., or considerably less than in the adult. No specific retention was observed. Comparisons with the total nonprotein nitrogen of the blood had been made in every case. The authors found that in nephritis there was a tendency for an increased retention of the nonprotein nitrogen without a definite increase in the creatinine. Such factors as age, sex, and starvation, were without effect on the creatin-creatinine content. No definite relationship was found between the creatin-creatinine of the urine and that of the blood.

The Hospital Care of Premature Infants.—Dr L. E. LAFETRA, of New York, stated that he had gone through the records of the last 200 cases at Bellevue and had found thirty premature infants that had been saved. One hundred and eighteen had died during the first three days, and thirty-six per cent. of those that had lived beyond this time were saved. Doctor La Fetra said that in treating these babies, the conditions of intrauterine life should be simulated as far as possible. While he considered the incubator designed by Dr. E. A. Cragin the best, he did not consider it usually a good thing to use an incubator. He preferred a small room that could be kept at the proper temperature, and said that such a room was also of advantage in managing feeble infants that were not premature. Breast milk mixed with whey should be given, and the food put into the infant's mouth, and often even into its stomach.

Doctor Veeder stated that at the Children's Hospital in St. Louis they had a similar room, in which they were able to maintain the temperature at 85° F. The children were left undressed on the bed. From 120 to 150 calories had been found necessary in order to make these infants gain. After they had been in this room for about two months, they had to be placed in the ordinary ward before again beginning to increase in weight.

Doctor SEDGWICK said that he had had considerable success with the four-hour feeding of premature infants, although Doctor LaFetra had not.

Doctor LAFETRA asked to hear the technic of these four-hour feedings, and said that he would be glad to give them a trial. He had not previously succeeded in getting in enough food by this means in the twenty-four hours.

Doctor SEDGWICK stated that they used breast milk, starting with ten or fifteen c. c. five times a day, and increasing the amount as rapidly as possible up to the quantity necessary to produce from 120 to 150 calories.

Dr. B. RAYMOND HOOBLER, of Detroit, stated that last winter, with a four-pound premature child, he had been able to maintain the room at the temperature considered necessary by Doctor LaFetra with the humidity in proper proportion.

Further Experience with Homogenized Olive Oil Mixtures.—Dr. MAYNARD LADD, of Boston, described a method of substituting olive oil for cows' fat in milk modifications, in order to get rid of the fatty acids, which are considered to be the cause of indigestion in certain cases. By this method he could obtain minute and permanent emulsions of the fats. In a series of thirty-seven cases, which had been unsuccessfully fed during an average of 6.3 months each, with a gain of only five ounces a month, successful results were obtained by the use of the Caulin homogenizing machine. When this same set of children were fed on the mixtures thus prepared, the rate of gain over a period of 4.7 months was increased to 18.15 ounces a month, with a corresponding improvement in the general condition of the patients.

A Method for Preparing Synthetic Milk for Studies of Infant Metabolism.—Dr. HENRY I. BOWDITCH and Dr. ALFRED W. BOSWORTH, of Boston, described in this paper a method consisting of four steps: The preparation of isolated food materials for use in making milk; the reassembling of these materials to give a mixture of the desired percentage composition; the emulsification of the fat and the solid or insoluble constituents entering into the composition of the food; and the pasteurization or sterilization of the food after it had been made. This synthetic milk strongly resembled the natural food in appearance.

A Study of the Topography of the Pulmonary Lobes and Fissures with Special Reference to Thoracentesis.—Dr. J. C. GITTINGS, Dr. GEORGE FETTEROLF, and Dr. A. GRAEME MITCHELL, of Philadelphia, as the result of this study, had concluded that the lowest safe point for doing thoracentesis in infants was the sixth or seventh interspace, mid-thoracic line. The best results were obtained in the fifth or sixth interspace, mid-thoracic line. Apparently the shape of the chest in infancy had nothing to do with the shape of the lungs or the position of the fissures.

Deformities of the Costochondral Junctions in Rickets.—Dr. EDWARDS A. PARK, of Baltimore, said that rickets might be extremely advanced in a rib, and yet produce no deformity at the costochondral junction. When this occurred, the cartilage became separated from the end of the rib, articulating only with the side of the rib on one aspect. In the angle between the two there would be found a wedge-shaped mass of periostum. The end of the shaft would take a position internal to the cartilage. He said that no growth would take place at the deformed costochondral junction so long as the rachitic process was at its height.

Report of the Committee on Vaginitis.—The Committee, consisting of Dr. J. C. GITTINGS, Dr. S. McC. HAMILL, Dr. C. A. FIFE, and Dr. H. C. CARPENTER, of Philadelphia, made the following recommendations, which were unanimously adopted by the Society:

1. That the American Pediatric Society address a letter to Health Officers, containing the following recommendations:

A. That cities be required to provide adequate hospital and dispensary facilities for the care and treatment of children having vaginitis. B. That matrons be placed in charge of the girls' toilet rooms in public schools. C. That toilet seats embodying the principle of the U shape be used in all schools, and that the toilets be of proper height for different ages. D. That city and State laboratories be empowered and equipped to make bacteriological examinations for physicians when patients cannot afford to pay a private laboratory fee. E. That educational literature on the suject of vaginitis be prepared and distributed to mothers through the medium of physicians, hospitals, dispensaries, health centres, and municipal and visiting nurses. F. That asylums for children and day nurseries be licensed, and that the license be not granted unless, first, the institution has adequate facilities for the recognition of gonococcus vaginitis; and, second, the institution excludes children having this disease, if they cannot be properly isolated.

2. That the American Pediatric Society address a special letter to hospitals which care for children, containing the following recommendations:

A. That separate wards be maintained for the treatment of children with vaginitis who are also suffering from other diseases. B. That microscopic examinations of smears be made before admission to the general wards of the hospital. In securing material for the smears, extreme care should be taken to observe rigid aseptic precautions. C. That observation wards be provided. D. That individual syringes, bedpans, catheters, clinical thermometers, thermometer lubricant, wash basins, soap, powder, wash cloths, and towels be provided. E. That single service diapers be used (at least, for girls); or, that diapers be sterilized in an autoclave at fifteen pounds pressure for five minutes. F. That nurses be required to make a daily inspection of the vulva of each child at the time of bathing, and to report immediately the presence of the slightest suggestion of a vaginal discharge. G. That low toilets be provided and equipped with seats embodying the principle of the U shape. H. That, for routine purposes, the spray be used in place of tub baths for the bathing of young girls, and that older girls be sponged in bed. I. That nurses receive special instruction as to the nature of vaginitis, the ease with which it is transmitted, the methods of preventing its spread, and the necessity for rigid aseptic surgical technic in its handling and treatment. J. That a dispensary with special facilities for the treatment of gonococcus vaginitis be provided. K. That nursing care and supervision be given in the home. L. That mothers be instructed as to the dangers of vaginitis, the manner in which it is transmitted, the best method of protecting other children, and the necessity of prolonged observation. M. That all cases of vaginitis under observation be voluntarily reported to the local Health Officer in States or cities where no legal requirements are in force.

Certain Phases of the Vulvovaginitis Problem.—Dr. B. K. Rachford, of Cincinnati, considered bacteriological tests for this disease as being far from wholly satisfactory, and likewise the means now in use for its prevention and cure. He said that the manner in which gonococcus vaginitis is spread in the child and in the adult could not be more unlike, if they were entirely different diseases, the former nearly always disappearing at puberty, and very rarely having any complications or sequelæ. While the course of the disease could be materially shortened by local treatment, this treatment, if overdone, might bring about pernicious habits.

Some Early Symptoms Suggestive of Protein Sensitization in Infancy.—Dr. B. R. Hoobler, of Detroit, stated that the reaction following the absorption of a sufficient amount of unaltered foreign protein, known as protein sensitization, is not of an explosive character, as in acute anaphylaxis, but is suppressed. He divided the symptoms into five groups, relating, respectively, to the skin, the upper respiratory tract, the lower respiratory tract, the digestive system, and the nervous mechanism, and said that these symptoms may come and go with great rapidity, different ones appearing at different times in the same individual. They gradually increase in severity and variety, appear more frequently, and remain longer. Many of them are also symptoms of other common diseases. Doctor Hoobler considered it important that the condition be recognized early, so as to prevent, by desensitization, its later manifestations.

(To be concluded.)

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1916.

The President, Dr. J. Wesley Bovee, of Washington, D. C., in the Chair.

(Concluded from page 382.)

The Constitutional Factor in Gynecology and Obstetrics.—Dr. Charles P. Noble, of Philadelphia, presented these conclusions: 1. The theory of environmental, constitutional hypoplasia or arrested development from unfavorable environment, operating at any period from the preconceptional state of dual life in the ovary and testis, to that of the youthful period in ontogeny, which was presented to the profession as a medical hypothesis in 1908, and which the writer believed to be proved upon human clinical and pathological evidence, was now shown to be equally supported by the clinical and the pathological facts of antenatal pathology and by the facts of comparative pathology, and to be demonstrated by the facts of experimental teratology. 2. The wisdom of the fathers of medicine, as expressed in their discriminating analysis of the facts of the hereditary nature of the diatheses or dyscrasias, together with the theory of environmental hypoplasia, constituted the law of devolution in its relation to medicine. 3. In order to obtain a comprehensive understanding of the practice of medicine, it was necessary to reject such of the teachings of Virchow and of his followers as were fallacious, and to combine the clinical wisdom of the fathers of medicine, from Hippocrates down, with the known facts of experimental medicine and their correct interpretation, and thus to arrive at the true point of view from which to study and to deal with the clinical problems which were the concern of practitioners of medicine and of each of its specialties. 4. The constitutional factor in gynecology and obstetrics, as was equally true of the other departments of medicine, was the chief element in the clinical problems which confronted the practitioner in dealing with disease and with atypical organs and tissues and their functions. 5. The recognition, comprehension, and employment of the foregoing principles would greatly enlarge the powers of the practitioner of medicine in diagnosis, prognosis, and in therapeutics, and would enable him to avoid many common, if not habitual, errors, and positively to substitute general nutritional and developmental measures for the local measures currently employed, and thus effect a cure, instead of mere amelioration of his patient's condition when this was due to environmental arrest. Further, it would enable him to give scientifically based advice as to methods of living when the biological type of the patient was recognized; to promote the development of environmentally arrested patients, and to enable them to maintain their health by living within their particular potential or capacity to produce energy, instead of attempting to live physiologically as typical individuals, which would, however, cause disease in the arrested or hereditary and environmental devolutes. 6. There remained unsolved two problems: 1. The process or mechanism whereby atypical morphology and function of environmental origin in ascendants became, at least, hereditary in descendants. Apparently its solution would be found in the facts of the maleficent consequences of urbanization in human stocks, which escaped extermination by degeneration and disease, and the variations and adjustments which ensued, whereby acquired immunity was attained; and similar facts concerning the consequence of the long continuance over generations of other unfavorable environment, such as insufficient nourishment, malaria, the hookworm, and food deprived of some element necessary to nutrition, or so mistreated as to be relatively poisonous. It might become demonstrated by subjecting shortlived animals to definite, unfavorable environment, for twenty or more generations, and observing and correlating the facts thus obtained. Facts from biology as to species of animals and plants subjected for generations to inimicable environment would also aid in the solution. 2. The eradication of degeneracy and its prevention would probably find solution in the development of euthenics and in the segregation or sterilization of subjects manifesting marked degrees of degeneracy, more especially of the hereditary types.

Precancerous Changes in the Uterus.—Dr. William S. Stone, of New York, pointed out the evolutionary character of the different types of cancer of the uterus as beginning in definite benign lesions, such as erosions, leucoplakia, and glandular hyperplasia, which showed variable quantities and qualities of epithelial overgrowth and metaplasia that might differ litle from the regenerative activity observed in the benign lesions, or after a longer or shorter time might show atypical features that were differentiated with difficulty from the alterations they knew typified malignant neoplasm. To such pathological changes the speaker thought the term, precancerous, might be appropriately applied, as they appeared to represent changes that were neither cancerous nor noncancerous, but were in the stage of becoming cancerous. Their relation to the development of a cancerous growth was shown by the fact that their morphological features included, in different combinations of quantity and quality, the numerous histological criteria upon which the diagnosis of a fully established cancer was made, lacking only in some instances the features of destructive activity and purpose. The strongest support of this conception was derived from the reproductions of types seen in the different stages of their progress. In the author's material, for example, he found the atypical features of a healing erosion determined by the original type of the lesion—simple, papillary, follicular, and the atypical types again reproduced in the different types of fully established uterine cancer. There were atypical erosions which were prototypes of either an epidermoid cancer or a papillary adenocarcinoma. There were leucoplakias which were prototypes of adult acanthomas. There were glandular hyperplasias which led to adenoma or adenocarcinoma. Finally, there were focal areas of leucoplakia, combined with adenomatous hyperplasia which might well furnish an origin for tumors designated as adenoacanthomas. In short, for each type of fully developed carcinoma there was a corresponding type of benign and intermediary change.

The literature had been critically reviewed, showing increasing evidence confirmatory of the sequence of benign lesions in the uterus and cancer, but the efforts to define their histogenetic relation had been limited to a few writers. More fully to verify the assumption that morphological features of intermediary stages existed, a closer cooperation between the clinician and the pathologist would be required. For the present, it was no argument against such an assumption that no tumor process was present or followed in a given case. The evidence in the literature was already sufficient to show that a fully established cancer might exist for a certain time without giving gross evidence of its presence, and numerous cases were recorded in which the curette had completely removed the lesion. There was no reason to assume that precancerous changes without treatment must always develop into malignant growths. Different types of fully established tumors had a different capacity to grow and destroy rapidly or slowly, and it did not seem reasonable to assume that a developing cancer had the same momentum that a fully established tumor possessed. In the study of beginning cancer of the uterus, several authors had directed attention to the fact that a certain type of early cancer might spread superficially over a wide area before showing marked invasive features, and it had occurred to the speaker that such a mode of growth might account in some measure for the extent of the process before it received the attention of the clinician. With the description of the speaker's cases there were sufficient clinical data to show the practical side of the problem, that the decision regarding the proper therapeutic procedure in such cases should be assumed by a competent clinician.

Painless Labor.—Dr. J. Clifton Edgar, of New York, pointed out that shock from the pain of labor in the highly civilized neurotic woman must be reckoned in general child bed mortality. Painless labor in these women was a life saving measure. The problem was the control of the pain in the first stage, the longest stage, often lasting a day or more. For the moment there was no ideal single method of painless labor. The only absolutely painless labor was one terminated by surgical means with complete anesthesia. Conditions would always arise, for example, in early rupture of the membranes, in which the necessity for painless labor would demand such surgical termination. The most satisfactory painless labor method of the moment combined opium and antispasmodics for the first stage, with possible vapor narcosis toward the end of this stage; vapor analgesia and anesthesia for the first and terminal parts of the second stage respectively. The narcosis aimed at should, until the perineal stage, be analgesic and not anesthetic in character, whether by drugs or vapor—a difficult or impossible object to attain unless they had had considerable experience.

In analgesic work, there was the tendency of the patient coming out from under the influence of the gas to suffer from the effects of shock owing to the acuteness of the suffering, or of anesthesia being produced with its dangers in the hands of the novice. To sum up, nitrous oxide-oxygen analgesia or "obstetric" ether or chloroform should be used for the second stage, pushed to anesthesia for the perineal stage; possibly forceps delivery with vapor anesthesia to eliminate part of the second stage. Nitrous oxide-oxygen analgesia or anesthesia was superior to any other during labor because of its oxytoxic action. Eventually an established method of painless labor might be related to public health questions. Lessening or abolishing the pain of labor might in the future limit birth control and criminal abortion.

Letters to the Editors'

HUMAN CONTAGION OF POLIOMYELITIS DOUBTFUL.

Long Branch, N. J., *August 19, 1916.*

To the Editors:

Permit one who has been on the firing line for half a century respectfully to suggest to the strategists (laboratory workers) of medicine to search in the mouths and noses of healthy children and adults for the microorganism of poliomyelitis. History tells us that Sternberg (afterward surgeon general of our army) inoculated in 1880 a rabbit with his own saliva and thus discovered a micrococcus which later came to be recognized as the chief etiological factor in pneumonia. It is a well known fact that this organism is found in the respiratory passages of pneumonia patients and that it is *frequently found in large numbers in the mouths of perfectly healthy persons.* The microorganism resembles somewhat that of poliomyelitis in shape and arrangement in pairs, also in its being found in the respiratory tracts of the patient and in *the mouths of perfectly healthy persons,* who are now termed carriers; other resemblances are that secondary cases are rare in both diseases, and that no immunizing agent has been discovered for either one. That this view is warranted by the facts is evident from the only reliable report of human transmission on record, viz., Sawyer's article in the *American Journal of Tropical Diseases,* September, 1915. He traces in all his cases as the *possible paths* of infection, four healthy men, the fathers of the patients, only one of whom is known to have been in contact with the disease eighteen months previously. Further details must be omitted here for lack of space. The fact that Sawyer himself regards these fathers as *possible* factors is additional evidence of the far fetched character of this singular theory of chiefly healthy carriers, which is in direct contradiction to the fact that in all other infectious diseases the *patient* is the chief source of transmission. In view of the pathetically mysterious status of this question, I hope that active search may at once be made for the microorganism, and that it may be found present in many healthy persons, irrespective of their proximity to poliomyelitis cases, which like pneumonia may be found to develop only under favoring conditions that may be limitable.

Quarantine. Busily engrossed with the most urgent therapeutic problem of recent time, physicians have singularly permitted the adoption without protest of a drastic quarantine, which appears to be unwarranted in view of the *unproved transmission* from human to human. Dr. Simon Flexner, who has proved only transmission from humans to monkeys, warns against "undue concern regarding the danger of conveying the disease." He writes: "It appears that these carriers are not more numerous in this disease than in many other infections of more common origin."

That human contagion is not proved is evident from the writings of authorities, e. g., Frost stated in the recent conference of health officers that the evidence *points* strongly to human carriers—*if it is contagious,* a large number are immune; it must be spread largely by other than sick persons—*mostly adults. Against* that is the seasonal prevalence and I may add the incompatibility with *facts* in other infections.

The same authority wrote in the July 14th *Report of the U. S. Public Health Service:* "Statistics of 2,070 persons exposed to poliomyelitis by residence with patients, show that only fourteen (0.6 per cent.) developed the disease in its frank form. . . . The contagiousness must be very slight, less than one fifteenth that of scarlet fever. . . . It may be fairly definitely concluded that it must be slightly or rarely transmissible, since it develops in small proportion in persons associated with acute cases."

This is confirmed by the observations of the New York Health Department that "the number of secondary cases is *decidedly small"* and that they are "comparatively rare cases," and by the proved *fact* that in the Vermont as in most other epidemics, "the disease originated in many sparsely settled townships far from the main highways in families that had not been in communication with the outside world."

No wonder that Frost said, after citing many instances in proof, "many investigators seriously doubt or deny the transmissibility of the disease."

In view of the fact that poliomyelitis is rarely contracted from contact with an acute case and of the accepted idea that it is mostly spread by adults, exclusion quarantine should logically be enforced on adults rather than on children. Rigidly enforced, such a quarantine would stop all travel, with the result that public resentment would immediately terminate it.

Having so far as I know stood alone in strenuous opposition to drastic quarantine, it is gratifying that the Washington Conference of Health Officers announced yesterday that *municipal quarantine is unnecessary.* They may well have added "futile and unwarranted."

That it is just as unnecessary and will be just as futile to close the schools as a quarantine measure is clearly demonstrated by the fact that in Newark before the schools attended by 25,000 children were closed there had occurred eighty cases of poliomyelitis, while afterward the number increased to 247 to the end of the month, and in August the number was 636. It is probable that other school closings have proved equally ineffective. It is imperative, therefore, that this matter be carefully investigated before all the schools and universities are closed by the unreasoning panic. The "psychology of the crowd" is demonstrated by the fact that no such panic has ever been created, by the actual fact that 9,000 deaths occur in New York city every year, accounting for about 50,000 cases of pneumonia.

Is it not high time for calmer judgment? The "psychology of the crowd" demands judicial reasoning to allay unreasoning fear. Simon Baruch, M. D.

INFANTILE PARALYSIS: THE PRACTICAL AND THE FOOLISH IN PREVENTION AND TREATMENT.

Westport, N. Y., *August 17, 1916.*

To the Editors:

In a letter to the *New York Evening Post,* some weeks ago, I pointed out what might be done in the way of prevention and care generally in cases of infantile paralysis. Later, I published two communications in the New York Medical Journal, stating what I believed was the most intelligent treatment, preventive and curative probably, of the disease, available to every one. I have not ignored, nor do I now, the utility at times of quinine, which has shown itself in my experience as being useful in certain instances of infectious disease. On the other hand, I am convinced it is not so useful as salicylate of ammonium internally, and given at the same time, they have seemed to me to be prejudicial in their effects. The use of carbolated vaseline in the nares is useful and unobjectionable

As to injections of immunized blood serum—probably given by an expert and with every precaution as to careful preliminary examination of the donor—it is being tried with obvious good results. Its use is limited, because of the supply that is obtainable. Besides, it should not be used, in my judgment, by the ordinary practitioner when he first sees the patient, nor at a time previous to his being called, when the preventive measures, which I have insisted upon, might be used even by the inexperienced physician, with practically no risk in any way. If not sure preventives, they are surely the best that have hitherto been offered from every point of view.

I await anxiously the verdict of my colleagues everywhere—my testimony is that from a long and varied experience. Beverley Robinson, M. D.

Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Surgical Nursing and Technic. A Book for Nurses, Dressers, House Surgeons, etc. By Charles P. Childe, B. A., F. R. C. S., Eng., Lieutenant-Colonel, Royal Army Medical Corps (Territorial), Senior Surgeon, Royal Portsmouth Hospital, etc. New York: William Wood & Co., 1916. Pp. xv-229. (Price, $2.)

Carefully revised and under a new name, *Operative Nursing and Technic* appears in its second edition. The demand for another edition was well merited, for among surgical textbooks for nurses *Surgical Nursing and Technic* is unique. It should find a place in the equipment of every up to date nurse. In the first chapter the author discusses the desirable qualities of the surgical nurse from an original point of view and enters a plea for shorter hours and more adequate remuneration of the hospital nursing staff. Following a discussion of asepsis and antisepsis, the requisites of a surgical case are given in explicit detail. The preparation and care of surgical patients from their entrance to the hospital until dismissal, the duties of an operating theatre sister and nurse, the care, preparation, and sterilization of all surgical articles, the selection of instruments, and requirements for operations in surgical homes and private houses are fully explained, and, in conclusion, nursing in military hospitals.

Written to meet the special needs of English nurses and with phraseology occasionally unfamiliar to many American nurses, the book will be found none the less useful for their guidance.

Although addressed to the nursing profession, it is the author's hope that the contents of this book will be found useful to students and dressers, as well as junior members of the medical profession. Its pages contain "the kind of practical information regarding operation cases required of students and dressers, but it is necessarily expounded in more elementary form than if it had been intended primarily for the latter. It is possibly none the worse for being elementary and entirely practical. Also, without presuming to give instruction to such, house surgeons, on first taking office, and young surgeons may perhaps find some assistance from these pages in the marshaling of their facts and the organization of their operative work. Surgery and surgical nursing necessarily overlap in places, and though the nurse cannot aspire to be a surgeon, every surgeon should be a good surgical nurse."

Burdett's Hospitals and Charities, 1916. The Year Book of Philanthropy and Hospital Annual. Containing a Review of the Position and Requirements on the Management, Revenue and Cost of the Charities. An Exhaustive Record of Hospital Work for the year. It will also be Found to be the most Useful and Reliable Guide to British, American, and Colonial Hospitals and Asylums, Medical Schools and Colleges, Nursing and Convalescent Institutions, Consumption Sanatoria, Religious and Benevolent Institutions and Dispensaries. By Sir Henry Burdett, K. C. B., K. C. V. O., Author of Hospitals and Asylums of the World; Hospitals and the State; etc. Twenty-seventh Year. London: The Scientific Press, Ltd., 1916. Pp. xvi-1071.

This excellent and conscientiously edited work appears for the twenty-seventh year without evidence of abridgment or other drawback, despite the editor's plea that the price of pulp paper, and the effects of war upon not only printers and editors, but also on hospital superintendents and secretaries, have added enormously to his difficulties and responsibilities. Fully 6,000 institutions are dealt with in this book, which includes hospitals in the United States and Canada as well as in Great Britain, and the annual cost of producing it is stated to amount to over $50,000. Included this year are all the territorial hospitals with the name of the matron in each case. Next year, a list of convalescent camps is promised. The venerable editor announces that he will soon celebrate his seventieth birthday and renews his request that some properly equipped person come forward to take his place; such a person, we venture to state, will not be easy to find. A high tribute is paid to the voluntary system on which hospitals in Great Britain are based and a comparison is instituted between the sympathetic treatment accorded to patients therein, and the coldly scientific attitude said to exist toward the inmates of certain prominent German hospitals. The book continues to be indispensable to editors of all kinds of periodicals, and a large demand seems to exist among lawyers. It is no mere list of institutions, this work; the fifteen introductory chapters take up in excellent literary form all sorts of questions connected with hospitals, their construction, for example, maintenance, nursing, missions, special institutions for the blind and the deaf and dumb, etc.

The Diagnosis and Treatment of Heart Disease. Practical Points for Students and Practitioners. By E. M. Brockbank, M. D., F. R. C. P., Hon. Physician, Royal Infirmary, Manchester, Clinical Lecturer on Diseases of the Heart, Dean of Clinical Instruction, University of Manchester. Second Edition. With Illustrations. New York: Paul B. Hoeber, 1916. Pp. 120. (Price, $1.25.)

It is a pleasure to welcome a second edition of Doctor Brockbank's little work; it is still of pocket size, which is an important factor in its usefulness. Books of this kind are very apt to grow unwieldy as editions multiply. The student who masters this volume may consider himself fairly well equipped to handle most of the cardiac cases which come under his observation. The concluding chapter is an admirable one on treatment; it is fortunate that the heart responds to so many drugs, for it is possible to mitigate greatly and for a long period the anguish and anxiety of the patient who first learns of his cardiac disability.

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Interclinical Notes

War Letters of an American Woman form a new series in the *Outlook*, which began in the issue for August 2d; news of the wounded and sick and of doings in the hospitals make up a large part of their most interesting contents.

* * *

In *Leslie's* for August 10th there is a picture of a group of Chicago "society women," who desire to accompany the Red Cross to war. Judging from the broad smiles on the ladies' faces, nursing in war is looked upon as somewhat of a lark by the *haute volée* of the lacustrine metropolis.

* * *

We are sorry to learn that the Poe portrait which appeared in the April number of the *Century* lacks certification; we thought that it looked very genuine. The pictures, including the cover of the August issue, are beautiful; there are some cool looking Alps in the frontispiece that we admire immensely.

* * *

The August *Scientific Monthly* managed to get in an editorial article on infantile paralysis. Dr. C. C. Little discusses the Relation of Heredity to Cancer in Man and Animals, and Professor Frank T. Carlton takes up a subject which seems likely to concern physicians for some time to come, viz., Essentials in the Study of Labor Organizations. Sir Ronald Ross and the Prevention of Malarial Fever, by Major General William C. Gorgas and Dr. Fielding H. Garrison, will be found to be of special interest to our readers.

* * *

In the *Outlook* for August 16th, an article on The Moon and the High Cost of Living, by Lewis Edwin Theiss, gives the astonishing information that the farmers of the United States in this twentieth century are a prey to old fashioned superstitions, and that the dark of the moon plays a large part in their calculations of crops to come. They plant cucumbers on June 21st, the longest day of the year, in order to have long cucumbers. The majority of farmers are so beset with fears and superstitions and so held in the bondage of custom and authority that they cannot take advantage of the opportunities that lie at their hands. The farmer does not think, he does not reason, he refuses to be exact, his mind is impervious to new and beneficial ideas. Money is lost in enormous sums from superstitions which come down from the ancient Greeks. There seems to be no way of educating the farmers out of their settled ideas. Mr. Theiss's paper is a discouraging revelation; no doubt, if the truth was known, the man in the street has his own collection of hoodoos. No wonder it is difficult to make any scientific advance in matters which obviously concern the public health.

* * *

Where do these young and new writers get their power of characterization? In the *Century* for August Phyllis Bottome begins a three part story, The Dark Tower, in which the hero and heroine are real *tours de force*. On the other hand, Krujer Hobbs, by Marjory Morten; The Bomb, by Alice Woods, and The Veil, by Katharine Holland Brown, seem to us to be little else than episodical. Cricket, by Stacy Aumonier, revived certain memories. We have clean forgotten, however, where "long leg" stands, also the meaning of the question, "Who would come off for us?" The author says that the birds and the insects praised God in solemn unison. We remember perfectly what unison is, and it is not what birds and insects sing in.

Official News

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the United States Navy for the three weeks ending August 12, 1916:

Hawke, W. W., Assistant Surgeon. Commissioned from July 5, 1916.

Little, R. M., Assistant Surgeon, Medical Reserve Corps. Ordered to duty at the navy recruiting station, Peoria, Ill.

Plummer, R. W., Surgeon. Detached from the *Hancock* and ordered home to await orders.

Pryor, James, Surgeon. Detached from the Naval Hospital, Annapolis, and ordered home to await orders.

Rogers, W. J., Assistant Surgeon. Detached from the Marine Barracks, Pensacola, Fla.

Roddis, L. H., Assistant Surgeon. Detached from the *Elcano* and ordered to Canacao Hospital, P. I.

Shaw, Harry, Surgeon. Commissioned from April 28, 1915.

Strite, C. E., Passed Assistant. Detached from the Aeronautic Station, Pensacola, Fla., and ordered to the *Louisiana*.

Toulon, A. J., Passed Assistant Surgeon. Ordered to the Aeronautic Station, Pensacola, Fla.

Walton, D. C., Passed Assistant Surgeon. Detached from the Canacao Hospital and ordered to the *Wilmington*.

Watt, James, Assistant Surgeon. Commissioned from June 28, 1916.

Wilson, Talmadge, Assistant Surgeon. Detached from the *Wilmington* and ordered to the *Elcano*.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 16, 1916:

Applewhite, C. C., Assistant Epidermiologist. Directed to proceed to Toledo, Ill., for duty in studies of rural sanitation in Cumberland County.

Banks, Charles E., Senior Surgeon. Directed to report at bureau, Washington, D. C., August 17th, to participate in conference of State and territorial health authorities with the bureau relative to poliomyelitis.

Bruckmiller, F. W., Sanitary Bacteriologist. Directed to proceed to Cincinnati, Ohio, for duty in studies of industrial wastes.

Carter, H. R., Assistant Surgeon General. Granted one month's leave of absence from September 20, 1916.

Collins, R. H., Scientific Assistant. Directed to proceed to Toledo, Ill., for duty in studies of rural sanitation in Cumberland County.

Fricks, L. D., Surgeon. Directed to proceed to New York for duty in the prevention of interstate spread of poliomyelitis.

Harolson, M. F., Field Inspector. Directed to proceed to Toledo, Ill., for duty in studies of rural sanitation in Cumberland County.

Hasseltine, H. E., Passed Assistant Surgeon. Granted two days' leave of absence on account of sickness, July 24 and 25, 1916.

Jones, W. M., Assistant Surgeon. Directed to proceed to New York for duty in the prevention of interstate spread of poliomyelitis.

Lanza, A. J., Passed Assistant Surgeon. Directed to proceed to Billings, Mont., to advise the State and local authorities relative to poliomyelitis.

Lavinder, C. H., Surgeon. Directed to report at bureau, Washington, D. C., for conference relative to poliomyelitis.

Le Prince, J. A. A., Sanitary Engineer. Directed to proceed to Providence, R. I., for survey of malarial conditions.

Paine, Liston, Assistant Surgeon. Directed to proceed to New York for duty in the prevention of interstate spread of poliomyelitis.

Rucker, W. C., Assistant Surgeon General. Directed to proceed to Baltimore, Md., for conference relative to poliomyelitis.

Stewart, G. McC., Acting Assistant Surgeon. Directed to report to Passed Assistant Surgeon F. Simpson for duty in plague suppressing measures in New Orleans, La.

White, H. F., Assistant Surgeon. Granted fourteen days' leave of absence from August 10, 1916.

White, M. J., Surgeon. Directed to proceed to Liberty and other places in Clay County, Mo., to supervise studies of rural sanitation.

Ziegler, M. V., Assistant Epidemiologist. Directed to proceed to Toledo, Ill., for duty in studies of rural sanitation in Cumberland County.

Births, Marriages, and Deaths

Born.

Krantz.—In Laurel, Md., on Tuesday, August 8th, to Dr. and Mrs. Herman Krantz, a son.

Married.

Potter-Tripp.—In New Bedford, Mass., on Monday, August 7th, Dr. Leslie F. Potter and Miss S. S. Tripp.

Died.

Brown.—In Benton, Ill., on Wednesday, August 9th, Dr. John P. Brown, aged seventy-three years.

Browne.—In Shenandoah, Pa., on Friday, August 11th, Dr. Alexander Browne, aged seventy-three years.

Dorfman.—In New York, on Thursday, August 10th, Dr. Waldemar Dorfman, aged sixty-two years.

Dunn.—In Henderson, Ky., on Thursday, August 10th, Dr. Miles C. Dunn.

Eager.—In Naples, Italy, on Thursday, August 17th, Dr. John M. Eager, of Philadelphia, Pa., aged fifty-two years.

Gollwitzer.—In Pittsburgh, Pa., on Thursday, August 10th, Dr. Adam J. Gollwitzer, aged seventy-five years.

Hayes.—In South Yarmouth, Mass., on Sunday, August 13th, Dr. Wentworth L. Hayes, aged thirty-nine years.

Johnson.—In Chicago Ill., on Friday, July 14th, Dr. Charles Johnson, of Austin, Minn., aged fifty-seven years.

Lockary.—In St. Stephens, N. B., on Sunday, August 13th, Dr. Joseph L. Lockary, of Roxbury, Mass., aged forty-five years.

McCorkle.—In Brooklyn, N. Y., on Tuesday, August 15th, Dr. John Alva McCorkle, aged seventy years.

Orr.—In Hot Springs, Ark., on Thursday, August 10th, Dr. E. M. Orr, aged forty years.

Owen.—In Moore, Mont., on Wednesday, August 9th, Dr. Solomon S. Owen, aged forty-eight years.

Peck.—In Oneonta, N. Y., on Friday, August 4th, Dr. Ozias W. Peck, aged eighty-one years.

Pepper.—In Rehoboth Beach, Del., on Monday, August 14th, Dr. Wilbur L. Pepper, of Philadelphia, Pa.

Sharp.—In Nashville, Tenn., on Friday, August 4th, Dr. Charles R. Sharp, aged thirty-two years.

Van Patten.—In Los Angeles, Cal., on Thursday, August 3rd, Dr. Andrew L. Van Patten, aged seventy-two years.

Wynne.—In Walnut Grove, Ala., on Saturday, August 5th, Dr. A B. Wynne, aged seventy-six years.

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Original Communications

PYORRHŒA ALVEOLARIS.

A Review of 1,496 Cases,

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Philadelphia,
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Elmer H. Funk, M. D.,
Philadelphia,
Associate in Medicine, Jefferson Medical College; Physician in Charge, Department for Diseases of the Chest, Jefferson Hospital;

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The exact date when attention was attracted to this condition is not exactly known. Riggs, after whom this disease is named, recognized it as early as 1844, since in a paper read by him at a meeting of the Connecticut Valley Dental Association, in June, 1869, he stated that he had treated the condition with success for over twenty-five years. Since that time, it has been known as Riggs's disease.

Subsequently, other names, as expulsive gingivitis, alveolar periostitis, pyodental pericementitis, have been suggested. Pyorrhœa alveolaris was proposed by Doctor Rehwinkle at a meeting of the American Dental Association, in 1877, but it appears to have been used by Wedl in a paper published several years previously.

The gross pathological changes by which pyorrhœa alveolaris is recognized vary as the disease progresses. Turner (1) refers to the first stage as "solid stagnation" and gives as its clinical signs—apparently healthy gums from under the edge of which may be squeezed a pultaceous mass composed of germs, later a subacute or chronic gingivitis, the edge of the gum swollen and showing bluish or reddish discoloration and protrusion of the interdental pads; the condition may be general or localized around one or two teeth.

A study of 1,496 cases convinces us that Turner accurately describes the first manifestations of pyorrhœa alveolaris, and that Dowsett's (2) description applies to the next stage of the disease, in which there is gingivitis and the interdental papillæ shrink down or become transversely creased, leaving a space between the teeth; at this stage there is no discharge of pus. Dowsett states that early in the disease absorption of the apices occurs.

In its fullest developed form, the clinical manifestations of pyorrhœa alveolaris are gingivitis with an inordinate tendency of the gums to bleed, shrinkage and recession of the gums from the teeth, forming pockets that contain pus, excrescences upon the roots of the teeth, and eventually looseness of the teeth.

Subsequent developments may show that these signs are not proper criteria upon which to base a diagnosis of pyorrhœa alveolaris, but the most casual or extended perusal of the literature on this subject will indicate that these phenomena are the signs upon which the medical and dental professions base a diagnosis at the present time.

With a few notable exceptions (3) it is generally believed to be a common disease; "ninety-five per cent. of people who apply regularly for dental service have present in their mouths in some location conditions which constitute the principal etiologic factors of peridental inflammation" (Black, 4).

Pyorrhœa alveolaris is not a disease of equal incidence in all classes; it is relatively rare among robust, educated, and intelligent adults, more frequent among delicate, ignorant, and unintelligent adults, common among those afflicted with certain chronic systemic diseases, and most common among the tuberculous, especially the ignorant and destitute tuberculous. We have examined 2,676 persons and find the incidence to vary from two per cent. to eighty per cent. in different classes, as shown in the following table:

Number examined.		Presenting distinct clinical signs of Pyorrhea.
200	Apparently healthy students, 20 to 30 years of age	2 per cent.
100	Ambulant private patients, educated cleanly adults	6 per cent.
300	Medical dispensary patients, adults, acute diseases only	7 per cent.
300	Medical dispensary patients, adults, chronic diseases only, excluding tuberculosis	15 per cent.
1,776	Pulmonary tuberculosis, 506 bed, 1,270 ambulant patients	80 per cent.

If this disease did no more than interfere with mastication it would be serious enough to deserve the attention that has been given it by the dental profession, but an indisputable mass of evidence has accumulated which shows that complications of pyorrhœa alveolaris develop in portions of the body remote from the head, and seriously injure or destroy important organs. Fossier (5) has collected from the literature seventy-five cases of severe or fatal pyogenic infections which appear to have been

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complications of pyorrhea or some similar disease of the mouth. After several years of clinical and laboratory studies of this disease in Rochester, Mayo (6) believes pyorrhœa alveolaris to be worthy of consideration among the possible causes of grave gastric disturbances. Niles (7) believes many cases of "idiopathic phlegmonous gastritis" and chronic gastritis are complications of pyorrhœa alveolaris and quotes Tucksdorff and Fitzgerald to support this view.

Of the ninety-seven patients with advanced pyorrhœa alveolaris, whom we were able to study most carefully, forty presented one complication as follows: Arthritis eighteen, gastric disturbance (anorexia, nausea, and eructations) ten, headache, lassitude, and anemia twelve. Twenty presented two complications as follows: Recurrent tonsillitis and gastric disturbance three, recurrent tonsillitis and arthritis seven, arthritis and fever five, gastric disturbance, malaise, and fever four, tonsillitis and cervical adenitis one. Twelve presented coexisting maladies which probably were complications, but the connection could not be established; of these three had recurrent earache, four neuritis, two albuminuria, and three furunculosis.

It is evident that the condition commonly referred to as pyorrhea is a serious one, the incidence and course of which can best be curtailed by a full knowledge of its etiology.

PATHOLOGY.

Until the order in which the involved tissues are attacked has been disclosed, it will be impossible to substantiate or discredit either of the opinions held at present as to the origin of this disease. A considerable number of dentists and some physicians believe as Rhein (3) and Weston (8), "instead of pyorrhœa alveolaris being so common, it is very uncommon and only found after some form of malnutrition has proceeded far enough to destroy the immunity of this end organ tissue." "The progressive pathological stages of pyorrhetic lesions indicate very definitely that one of the most, if not the most important factor is inherent in the tissue itself."

Znamensky (9) concludes from microscopic examinations of sections of the jaw, that the jaw bone is first destroyed by a process of rarefying osteitis. It is first transformed into connective tissue which becomes absorbed. When the bone forming the sockets of the teeth is destroyed, pockets are formed which become infected with pyogenic organisms and a flow of pus ensues. When rarefaction is limited to a part of the bone not containing marrow, cure is possible. He states that these changes are due to local or general conditions and names as causes, osteomalacia, syphilis, and rickets. These investigators fail to record findings which would conclusively support their positive statements.

Of the great number who believe that pyorrhœa alveolaris is due to extrinsic causes which first attack the exposed teeth and gums and affect the apices and alveolar processes later, Turner (10) is the only one who presents post mortem findings to support it. He concludes from post mortem studies of the jaws and teeth of fish, wild and domestic carnivora and herbivora, and man, of all periods from the thirteenth Egyptian dynasty to the present time, that a diet rich in sticky carbohydrates, especially finely ground flour, is the cause.

Confronted with these two opposing views as to the tissues first involved and the consequent relative importance of intrinsic and extrinsic factors in the etiology of pyorrhœa alveolaris, we have conducted our clinical and laboratory investigations so as to determine the relative value of these factors.

The röntgenologists, who in the last few years have added much to our knowledge of pathological processes involving the jaws and teeth, probably can and will supply the information necessary for a more adequate knowledge of the part played by intrinsic tissue defects in the development of pyorrhœa alveolaris.

ETIOLOGY.

One of the most striking findings in our investigation is the greater incidence of pyorrhœa alveolaris among the tuberculous than in any other group. The 300 medical dispensary patients, fifteen per cent. of whom had pyorrhea, may properly be compared with the 1,270 ambulant tuberculous patients, eighty per cent. of whom had pyorrhea. Aside from the fact that one group had tuberculosis and the other did not, no material difference existed.

In contrast to this is the incidence of pyorrhœa alveolaris among the syphilitic. We have inspected 100 adults with active tertiary syphilis, patients upon whom the disease had made a profound impression. Sixteen of these had normal mouths when examined and presented no evidence of a previous pyorrhea; fifteen had pyorrhea. Of thirty-two syphilitic adults (presumably with inherited syphilis) who had conspicuously bad teeth, but had always observed oral hygiene and had been adequately treated by dentists, none had pyorrhea. Osler (11) states: "Of the twenty cases of pernicious anemia which I had under observation in 1909, pyorrhœa alveolaris was present in more than half."

Red cell counts and hemoglobin estimations were made in forty of our early cases, and thirty showed some degree of anemia; in six the red cell count was 3,000,000 or slightly less, in twelve the hemoglobin was below seventy-five per cent. (Dare apparatus), and in four there was a great increase of platelets above normal. Red cell counts and hemoglobin estimations were made in twelve of our advanced cases; all showed some anemia, the average departure from normal being greater than in the less advanced cases.

We conclude from these findings that pyorrhœa alveolaris is more common among the tuberculous than the nontuberculous, that pulmonary tuberculosis predisposes to pyorrhea, or the conditions which favor the development of pulmonary tuberculosis also favor the development of pyorrhea; that the incidence of pyorrhœa alveolaris is not greater among the syphilitic than among the nonsyphilitic, and that syphilis does not predispose to the development of pyorrhea.

We believe these findings indicate that there are marked differences of susceptibility produced by different systemic diseases, so that some systemic diseases, such as tuberculosis, may properly be considered important factors in the etiology of pyorrhea, and others, such as syphilis, cannot be so considered.

Whether primary and secondary anemias are predisposing causes or complications of pyorrhœa alveolaris is a problem worthy of thorough investigation. In any event, the frequent association of the two conditions is a fact not to be forgotten in the examination of patients presenting the clinical signs of either.

CHEMICAL CAUSES.

Marked departure from normal in the chemical properties of saliva and buccal secretions has been considered by some to be the cause of pyorrhœa alveolaris. It has also been suspected that the disease resulted from the chemical action of citrus fruits when constantly used. Both these theories have been discredited.

The omission from recent literature of any reference to the rheumatic or gouty diathesis apparently indicates a rejection of the older opinion of the dental profession that these conditions were an important etiological factor in pyorrhœa alveolaris. We have observed but eight patients who might reasonably be so classified; two of those had poor teeth, but none of them had pyorrhea.

The incidence of pyorrhœa alveolaris among fifty patients with chronic nephritis under observation, did not indicate that this condition is a predisposing cause.

Examination of the mouths in diabetics showed, in a study of thirty cases:

15 had evidences of slight pyorrhea..........	50	per	cent.
8 had evidences of severe pyorrhea..........	27	"	"
7 were negative	23	"	"

Of the seven cases pronounced negative, only three had no traces of pyorrhea. The others had false teeth, but no evidences of the disease; we were unable, however, to get a history of the original condition of the teeth. It may be said there was no relationship between the stage of pyorrhea and that of diabetes.

In reference to age, the three patients in whom there were no signs of pyorrhea were comparatively young, ranging from fourteen to twenty-eight years. The cases were presented by the type of patients usually seen in dispensary practice.

We realize that not enough cases have been studied to warrant definite conclusions, but it is of interest to note the comparison of the percentages of the diabetics when placed alongside those of the tuberculosis column, discussed in detail under the heading of predisposing causes; showing that eighty per cent. of the 1,776 tuberculous patients examined had evidences of pyorrhea.

If we consider oral sepsis and pyorrhœa alveolaris different stages of the same disease, then in the study of its etiology we must consider the statements of Lane, Hunter, Pritchard, and others (12) who believe that the alimentary toxemia brought about by intestinal stasis is the cause of oral sepsis and pyorrhœa alveolaris. We have not yet been able to investigate directly this phase of the subject, but our work has brought out a fact that seems suggestive, a relationship noted by the writers mentioned, between intestinal stasis, alimentary toxemia, oral sepsis, arthritis, and tuberculosis similar to that observed by us between pyorrhea and tuberculosis.

VITAL CAUSES.

Attention has been recently fixed upon Amœba gingivalis Gros, which was heralded as the specific cause of pyorrhœa alveolaris. No better denial of this could be made than the recent statement of Smith and Barrett (13), that there are cases of pyorrhœa alveolaris which are not due to amœba. They still believe, however, that the vast majority of cases are caused by amœba.

There is strong evidence that few if any cases are caused by amœba. Williams, Sholly, and Rosenberg (14) report having made 995 smears from the superficial margin of the gums of children between five and fifteen years of age who presented no pus pockets. Sixty per cent. of all the children examined harbored amœba and twenty-nine per cent. of them had apparently normal mouths. In these cases the institution of oral hygiene without emetine, reduced the number of amœba carriers one half; oral hygiene plus emetine reduced the amœba carriers ninety per cent.

An organism which can exist in the mouth of twenty-nine per cent. of a large group of children, in such abundance that a superficial smear discloses it, causes no discoverable injury, and disappears in half the cases when a chronically dirty mouth is made clean, is primarily a saprophyte and not likely to possess specific pathogenic properties.

An organism, present in such a large number of mouths and capable of migrating to the tonsil and there causing changes productive of goitre, as has been inferred, would make the incidence of Graves's disease much greater than it is. Smith, Middleton, and Evans (15), in their latest communication, appear to have greatly discounted the possibility of amœba being the cause of pyorrhea. Smith and Weidman (16), Ribbert (17), Jesionek and Kiolemengolon (18) have reported post mortem findings of Endamœba mortinatalium Smith in the parotid glands, kidneys, and liver of infants under circumstances suggesting that syphilis predisposes to amebic infestations. This tends to discredit amœba as the cause of pyorrhea when considered with our observations that syphilis is not a predisposing nor an exciting cause of pyorrhea. We know emetine destroys amœba and have all regretfully learned that emetine is not a specific cure for pyorrhea.

Superficial scrapings from the gums of 100 pyorrhea patients were fixed, stained, and examined and none showed amœba. Twenty-four patients with advanced pyorrhea and sixteen with early or moderately advanced pyorrhea were repeatedly examined for amœba by the method recommended by Bass and Johns, before, during, and after treatment. Of the twenty-four advanced cases seventeen showed amœba before treatment, of the sixteen early and moderately advanced cases four showed amœba before treatment. The twenty-one patients infested with amœba were first put on emetine treatment alone, which caused complete disappearance of amœba, but did not improve the pyorrhea.

BACTERIA.

Beginning with Leuwenhoeck (19), almost innumerable studies of the bacterial flora of the mouth in health and disease have been made. More than a hundred varieties have been found, any of which may be present in the absence of disease. Many pathogenic and nonpathogenic staphylococci, diplococci, streptococci, bacilli, spirillæ, and leptothrices are included. No particular species or group of organisms has been shown to predominate in pyorrhea. Allen (20) states: "The flora of several pockets may vary greatly." Noguchi (21) and Ozaki (22) have studied the spirillæ found in the buccal cavity and have not established specific relationship between them and disease. Ozaki has also investigated those organisms which can be cultured only anaerobically. Goadby (25), who pointed out the necessity of using culture media of different degrees of acidity and alkalinity in order to cultivate the maximum number of bacteria from the mouth, believes an organism morphologically similar to Ducrey's bacillus of soft chancre is the causative organism of many cases of pyorrhea.

Numerous recent observations suggest that certain staphylococci, diplococci, and streptococci are more frequently responsible for the infectious complications of pyorrhea than other organisms. We have examined and compared 3,000 slides, uniformly smeared with buccal secretions and scrapings from the gums and teeth of 200 normal persons, 100 pyorrhea patients, and 100 patients having gingivitis or oral sepsis.

These examinations seem to show very clearly: 1. There are variations in the total number of organisms present in the mouth of healthy persons, there is a maximum number compatible with health, when organisms are present in excess of this number, oral sepsis results. 2. There is always a total number of bacteria in oral sepsis far in excess of what is present in a normal mouth, more than ninety per cent. of cases of pyorrhea showing a bacterial flora indistinguishable from the flora of oral sepsis. 3. Washing the mouth and brushing the teeth with water or any dentifrice after meals will always reduce to normal an excessive bacterial flora. 4. Spirillæ and staphylococci are more frequently found and form a larger proportion of the whole bacterial flora in pyorrhea and oral sepsis than in normal mouths. 5. The result of vaccine treatment suggests that staphylococci, diplococci, and streptococci are the most frequent causes of complications. 6. No legitimate distinction can be made between oral sepsis and pyorrhea, oral sepsis being the first stage of the disease commonly referred to as pyorrhœa alveolaris. We agree with Brown (26), who, after an extensive bacteriological study, states that while a large number of organisms have been isolated he cannot attribute a specific etiological role to any one of them.

When our knowledge of the incidence, etiology, pathology, and the effect of treatment is collated with Dr. O. M. Leiser's deduction that only twenty per cent. of the population of the United States use a tooth brush, it strongly suggests that in the vast majority of cases two equally important factors are necessary for the development of pyorrhœa alveolaris, 1, certain systemic diseases; 2, a chronically superabundant bacterial flora of the mouth.

DIAGNOSIS.

It appears that the manifestations upon which a diagnosis of pyorrhœa alveolaris is usually based—separation and recession of the gums from the teeth, the presence of pus in the pockets so formed, excrescences on the roots of the teeth, looseness of the teeth, and an inordinate tendency of the gums to bleed—are the late manifestations of a chronic disease, the etiological factors of which have been active for many weeks or months before such changes are produced. When these signs appear, irreparable damage has frequently occurred and treatment must be severe and prolonged in many cases. An inquiry directed to numerous dentists, to our own patients, and to those of various other physicians, has elicited the information that comparatively few physicians recognize pyorrhea or refer patients afflicted with it to a dentist until the disease is far advanced; that many dentists do not recognize the frequency of a remote cause and complications that require a thorough medical examination to disclose and medical treatment to correct. From the information we have collected, a conservative estimate would be that among educated well to do patients at least half the cases of pyorrhea reach an advanced stage before they are recognized or treated; among the poor, the ignorant, and the dispensary patients, the great majority of cases have progressed to a far advanced stage before they are recognized or treated.

The irreparable damage to the teeth which inevitably ensues when pyorrhea is allowed to progress, the consequent interference with mastication, digestion, and nutrition, the occasional development of grave systemic complications, and the resulting impairment of general vitality and immunity make the recognition of this disease in its earliest stages most desirable.

The diagnosis of pyorrhea in its early stages will be accomplished only when careful inspection of the mouth becomes a part of every medical examination, when we cease thinking of loose teeth, receded and bleeding gums as the criteria of diagnosis, and recognize less conspicuous signs as equally significant.

When gingivitis is observed, its cause must be sought for and corrected. It may be an expression of disturbed metabolism, such as is most commonly observed during pregnancy; it may result from anemia, primary or secondary; it may accompany diabetes, gout, or pulmonary tuberculosis; it may be a purely local condition, due to locally acting physical, chemical, or vital causes—in any event gingivitis is one of the frequent predisposing causes of pyorrhœa alveolaris; usually it is the earliest clinical sign of the disease.

Oral sepsis must be considered an early stage of pyorrhea. When accumulations of soft white or yellowish matter between the teeth are apparent, the microscopic examination of smears taken from the gums is superfluous—there is always an excessive bacterial flora. There is a distinct relationship between the bacterial flora of the mouth and pyorrhea. No precise method of determining the number of bacteria or the number which should be considered abnormal has been established. No doubt in time this will be done, but by numerous examinations of both healthy and diseased mouths, we learn to distinguish the normal from the abnormal, not with the degree of accuracy that might be desired, but sufficiently well to afford information of diagnostic value to compensate, in many cases, for the time, trouble, and expense.

Anatomical deformities (including cavities and malposition of the teeth) frequently afford a most favorable site for the lodgment and development of bacteria; as the physician's method of examination sometimes fails to disclose such as are apparent to the dentist, all cases of pyorrhea should be referred to the latter. When the signs of pyorrhea have been observed and a local cause discovered or apparently excluded, a search for remote or systemic causes and complications is indicated. A physician usually discovers pyorrhea when consulted in regard to some other infection or systemic disease; it is then that systemic causes of pyorrhea and complications are most frequently sought for and treated, and the examination should always include an examination of the blood for anemia and a search for signs of pulmonary tuberculosis.

Unfortunately many dentists have not yet realized the importance of referring patients with pyorrhea to a medical diagnostician for examination. It is highly desirable that the professions cooperate in the diagnosis of this disease. Rhein (3) has indicated the futility and danger of failing to differentiate this from other diseases, as follows: "In studying the dental path as an avenue of general infection, it is of the utmost importance to dissociate what is known as pyorrhœa alveolaris from either an ordinary alveolar abscess or its more insidious and dangerous type of an infected zone around the end of a root with no pus formation and no sinus, known as a dental granuloma."

TREATMENT.

The effect of various forms of treatment was studied in fifty cases of advanced pyorrhea. Preliminary examinations disclosed the presence of amœba in seventeen of these cases. Emetine was administered subcutaneously, injected into each pocket, and used as a mouth wash in solutions of different strength; it was also given internally.

From one third to one grain of emetine two or three times a day, for an average period of ten days was the practice in all but ten cases; the latter received maximum doses three times a day for one month.

All the cases that showed amœba before treatment failed to show any after the first week of emetine administration, whether hypodermically, into the pockets, or by mouth.

Microscopic examinations were made two weeks after the last dose of emetine had been given and again four weeks later. Of the seventeen patients who harbored amœba before treatment and showed none one week after treatment, six showed amœba again two weeks after treatment, and these six and two more showed amœba six weeks after treatment. In spite of the disappearance of amœba, emetine, alone, did not cause appreciable reduction of the bacterial flora and did not in an appreciable manner affect the course of the disease. Similar observations on the failure of emetine permanently to rid the mouth of amœba have been made by numerous investigators, notably by those conducting the research, still in progress, of the U. S. Public Health Service and the Department of Health of the City of New York (23).

We have failed to observe the beneficial effect of emetine in reducing the bacterial flora of the mouth that has been accredited it. Attempts to elicit germicidal power *in vitro* have all given negative results. Wherry (24), in discussing the germicidal power of emetine, states that Vedder found the addition of two per cent. of the fluid extract of ipecac to agar exerted a great inhibitive and germicidal action upon Bacillus typhosus, Bacillus paratyphosus, Bacillus dysenteriæ, and Staphylococcus pyogenes aureus.

Sterile agar liquefied and cooled to 45° C., was rapidly mixed with a quantity of the alkaloids of ipecac equivalent to two per cent. of fluid extract of Brazilian ipecac, charged with typhoid and paratyphoid bacilli and staphylococci, and poured into plates. Another set of plates was made by depositing the organisms on the agar after it had solidified in the dishes. These tests were repeated, using two and five times as much emetine. In all, 200 plates were made and comparison with their controls of agar containing no emetine failed to show appreciable germicidal power. Tested according to the Hygienic Laboratory method of determining the carbolic acid coefficient, one to 25, one to 150, one to 100, one to 150, and one to 200 aqueous solutions of emetine failed to kill the typhoid bacillus in fifteen minutes. Kolmer and Smith (27) have reported *in vivo* tests using the tetanus bacillus and Bacillus anthracis, which showed that emetine is not germicidal for these organisms.

Weston (8) admits that it is not probable that emetine exerts direct germicidal effect, but he believes there is a demonstrable lessening of amœba, reduction of the bacterial flora, reduction of pyorrhea, and an improvement in the tone of the gingival tissue surrounding the pockets after the administration of emetine, in many but not all cases. He explains the mode of action in the following words: "Its action is strongly suggested by an immediate change in the phagocytes found in the contents of the pyorrhea pocket, for these undoubtedly form one of nature's chief defenses against the majority of the mouth organisms. We are not certain what the mechanism is, though it seems to be an increase in the stickiness or adhesive property of the surface of the phagocytes, for in these cases after the use of emetine, they, the phagocytes, will be found to contain much larger numbers of organisms."

We have under way an investigation of the effect of emetine on phagocytosis, following the technic of Wright and of Ross, but have not yet made sufficient observations to comment on this view. Our study of smears from the mouth and pus pockets of pyorrhea patients, before and after emetine administration, did not suggest any such action.

Wright and White (28) have reported the cure of all cases of pyorrhea treated with intramuscular injections of mercury succinamide every seven days, beginning with half a grain. We have no knowledge of the effect of such treatment.

Treatment with autogenous vaccines made from all the organisms that could be cultivated aerobically on agar, blood smeared agar, and Loeffler's blood serum medium was tried. Vaccine treatment alone did not especially affect the condition in the mouth. In conjunction with oral hygiene and dental treatment it appeared to exert a beneficial effect in twenty per cent. of advanced cases, the most conspicuous influence being the amelioration or cure of complications, presumably due to staphylococci, pneumococci, and streptococci. Bertrand and Valadier (30) believe sensitized vaccines very much superior to nonsensitized vaccines in the treatment of pyorrhea.

The effect of oral hygiene as the sole method of treatment was studied. The patients washed their mouths and brushed the teeth after each meal. Various dentifrices, antiseptic and amebacidal solutions, and plain water were used. After a few days of this treatment all cases showed more or less improvement, but in no advanced case did it effect a cure. There was an apparent advantage in the employment of all the antiseptic and amebacidal solutions and dentifrices over plain water, but none of the dentifrices showed any superiority over the others or over liquor antisepticus of the pharmacopeia. Similar observations have been recorded by Rosenberger (29).

Dental treatment in conjunction with regular cleansing of the mouth after meals was the most effective form of treatment. By comparing results, it appears that the most beneficial treatment depends upon accuracy of judgment on the part of the dentist in determining the degree to which surgical procedures shall be carried out in a particular case. It seems that improvement or recovery is frequently retarded by failure to remove promptly teeth that eventually must be extracted; at times also teeth are unnecessarily extracted.

Many are pessimistic as regards the possibility of permanently arresting or curing advanced cases. It may be of interest to cite three cases we have had under observation for several years:

CASE I. Woman, fifty-six years old, pyorrhea of several years' duration, marked recession of gums, with pockets and excrescences on roots of four lower incisor teeth, all of which were loose; condition complicated by multiple arthritis and secondary anemia. After six months of dental and medical treatment the mouth was clean, pockets were obliterated, bacterial flora was normal, the involved teeth tight and functioning, the blood normal, and the arthritis gone. This condition of clinical cure has continued for more than two years.

CASE II. Woman, forty-seven years old, pyorrhea of more than four years' duration, involving six teeth of lower jaw, red, bleeding, receded gums, excrescences on roots of teeth, tortuous pus pockets, and looseness of involved teeth, secondary anemia. Dental treatment was unsatisfactory until three of the involved teeth had been removed. After three months of medical and dental treatment, subsequent to extraction of teeth, clinical cure was accomplished and persisted for a period of nearly three years.

CASE III. Man, thirty-two years old, marked recession of gums, slight pus pockets, slight pyorrhea, looseness of three lower incisor teeth, several years' duration, general physical condition apparently normal. Medical treatment not indicated. Dental treatment over a period of two years unsatisfactory until after removal of one tooth, after which clinical recovery ensued and persisted for more than a year.

The effect of various forms of treatment was studied in a group of one hundred which are classified as early cases of pyorrhea—cases in which there is no recession of the gums, no pus pockets, no excrescences on the roots of the teeth, no looseness of the teeth, the diagnosis being based on the presence of an excessive bacterial flora alone, or associated with gingivitis or the accumulation of soft white or yellowish matter at the margin of the gums and between the teeth. Dental treatment without the practice of oral hygiene had no effect on this condition. Medical treatment of coincident diseases, alone, had no appreciable effect. Various mouth washes were tried and none of them, without the aid of a tooth brush, was as effective as brushing the teeth with plain water. Regular washing of the mouth and brushing the teeth after meals in every case was sufficient to establish an apparently normal condition in all cases where a toxic or infectious systemic disease was not discoverable.

In every case of pyorrhœa alveolaris observed, both early and late cases, in which there has been amelioration, arrest, or cure, regular cleansing of the mouth has been part of the treatment, and no method or combination of methods has produced desirable results without it. The cases observed, in which treatment ameliorated, arrested, or cured the condition, maintained their improved status as long as regular cleansing of the mouth was practised and relapsed when cleansing of the mouth was omitted. This experience is but a repetition of the long established and generally known fact that cleansing of the mouth and brushing the teeth regularly is a potent measure in the preservation of the teeth and of health. The extent to which the dental and medical professions have failed to apply this knowledge in practice is incredible. It would be interesting and instructive to read a report of a commission composed of dentists appointed to visit the hospitals of the United States to inquire into the provisions for the care of patients' teeth while in hospital, to inspect recorded physical examinations, and to examine the mouths of patients, the majority of whom in the natural course of events spend from two to four weeks in a hospital and then return to labor.

Equally interesting information may be gained by questioning a dozen individuals who have many times been in a dentist's chair and yet never cleanse the mouth nor brush the teeth.

It is not sufficient to tell a patient the desirability of regularly cleansing the mouth and brushing the teeth and the consequences apt to arise from a failure to do so; it is imperative that they be kept under observation until influence has firmly established the habit of properly cleansing the mouth and teeth. Of those requiring such care many are adults with whom the failure to observe any toilet of the mouth is an inveterate habit; this, in spite of good intentions, leads to frequent or continual disregard of advice, unless they are impressed by frequent examination. Brushing the teeth, at first, is frequently a painful and disagreeable procedure, and this is another reason why they need repeated encouragement and advice.

When prescribing a tooth brush, it is necessary to specify the kind and method of using and storing.

CONCLUSIONS.

1. Pyorrhœa alveolaris is not a specific disease; its chief etiological factors are: 1. An excessive bacterial flora of the mouth; 2, deviations from normal of the affected tissues brought about by certain diseases.

2. Oral sepsis is the first stage of pyorrhea; the etiology of both is the same.

3. Pyorrhea can be prevented by regular cleansing of the mouth and teeth.

4. The detection of all the etiological factors in the majority of cases of pyorrhea requires a thorough dental and medical examination. Whenever possible an x ray examination should be made.

5. Acute recurrent gingivitis or chronic gingivitis or a persistent excessive bacterial flora of the mouth is a clinical sign of this disease.

6. Systemic complications are rare in the early stages and frequent in the late stages.

7. Coincident systemic diseases are frequently associated with pyorrhea.

8. There is no specific method of treatment.

9. The three indispensable factors in the treatment are: 1. Training the patient regularly to cleanse the mouth and teeth; 2, the institution of whatever dental treatment may be indicated; 3, medical treatment of coexisting systemic disturbances or disease.

10. Emetine may well be employed as an adjunct on the principle that it will do no harm and may possibly in some cases be beneficial.

11. When infectious systemic complications exist, an autogenous vaccine is indicated and even in uncomplicated cases will at times accelerate improvement.

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THE PREEXISTING CONDITION OF THE INJURED.

A Medicolegal Study from the Standpoint of Employer's Liability and Accident Insurance,

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Under the term preexisting pathological condition or state of health are united a number of pathological conditions, which always have a common character from the fact that they existed *before* the receipt of the injury. They may be congenital or acquired diatheses, at times some temporary general affection, at others simply an affection involving a single system, a single joint or organ. The abnormal state of health previous to the injury may be latent or patent, that is to say, it is present at the time the injury is received or is brought into activity as the result of the injury. It may be in indirect or direct relationship to the causative factor, viz., the injury. With a beginning which is variable, it need not of necessity cease with the recovery from the trauma and may very well continue long after the effects of the latter are recovered from.

In Germany, the law pays no attention to the pathological antecedents of the subject, and whether or not the consequences of a trauma are aggravated by the fact of a preexisting disease, that the working incapacity is prolonged, that the fatal outcome is hastened from this fact, or from an intercurrent disease, the right of the injured to his indemnity in full remains. The consequences of a trauma are undoubtedly greatly influenced by preexisting pathological conditions or predispositions, but the abnormal recovery of the injured is considered, in German law, as being derived from the injury *per se* and, consequently, the full right to recover remains.

In Belgium, in about seventy per cent. of the manufacturing companies and various industrial enterprises, the state of the workingman's health is examined at the time he is engaged, and since this point is covered and it is tacitly understood that the employer can by this examination protect himself, it follows that the most recent law, that of December 28, 1903, does not take the preexisting state of health of the injured into consideration. The latest French law, that of April 9, 1898, appears to leave the preexisting physical condition of the injured open to debate, as will be seen by the extracts of decisions rendered by the courts. On the other hand, the previous condition of health of the injured is taken into consideration by the courts of Switzerland, Italy, Sweden, Finland, and Luxemburg.

The fifth paragraph of Article V of the Swiss law of June 25, 1880, on the civil responsibility of manufacturers, declares that the responsibility of the employer shall be considerably reduced, if wounds or lesions previously received by the victim have exercised any influence on the later injury and its consequences, or if the health of the injured has been weakened by the previous exercise of his profession.

According to Soldan such legislation is only just, because the working capacity of the laborer, who formerly received corporal lesions, is not as good as that of a workingman who has never been the victim of an accident, and the employer in whose establishment a new accident occurs cannot be held liable other than for the damage imputable to this, the subsequent injury. If, for example, a laborer had already a hand mutilated from a former accident, he would probably be more awkward and thus more exposed to future injury, than a man having his members intact, but the employer at the time another accident occurs, cannot be held liable for the aggravation of the danger. In the same way, a workingman who has lost one eye will often not be particularly hindered in his work from this fact, and his wages will not be affected. But should he lose the second eye, it would not be equity to blame all the consequences of the resulting complete blindness on the second injury giving rise to the loss of the remaining eye.

A more doubtful case would be one in which the consequences of an accident are aggravated, not by the result of a former injury, but by congenital infirmity, for example, a predisposition to tuberculosis. In this case there will not be, generally speaking, a plea for a reduction of the indemnity, unless the congenital defect can be considered of a nature to diminish *per se* the working capacity or the probable duration of the life of the victim.

From the purely medical standpoint, the question of the preexisting condition of the subject raises the entire problem of the etiology in general, that is to say, the science of the causes of disease; or perhaps, it were better to say, the respective value of the divers sorts of causes, what might well be called their hierarchy. In point of fact, the various causes of disease are far from having the same value. In some we recognize only the power of predisposing to disease and thus we shall also study the part played by predisposition. Others are conditions without which the disease could not exist, and these can be termed necessary effective causes. The third class are the true determining causes, of much greater import since they give rise to the disease. They differ from the preceding since they are governed by chance and usually represent an absolutely fortuitous contingency. If the determining cause is, as has been so often said, the last straw that broke the camel's back, the animal must be mightily laden, as is the part played by the necessary efficient cause. From this we can readily fancy what may be the part played by predisposition.

In what class can we place a trauma, which is to be considered only as an intercurrent state? I shall leave aside cases in which the trauma may have played the part of a predisposing cause by creating a point of lessened resistance and by preparing the soil for other causes. There is no reason in this case for limiting the influence of the trauma, since acquired traumatic epilepsy has been known to be transmitted by heredity. In order better to fix our ideas, I shall, after a brief consideration of predisposition in general, examine in a small class of medical affections, the part played by each of these types of causes.

Predisposition. Before considering special cases relative to the preexisting physical condition, it is essential to come to an understanding of the definition of morbid predisposition, likewise its limits and its proof. Littré defines predisposition as "the patent or occult effect which, under the influence of predisposing causes, takes place in the body more or less constantly in a lapse of time of varying length, at degrees of divers intensity, according to the individual." Predisposition does not have any prodromal signs, even distant, of the disease which is to come. Neither is it a morbid imminence immediately preceding the affection. Predisposition is a premorbid state, a morbid aptitude, a special defect of the organism in question, which only makes itself evident by the frequency of diseases of the same order in the same family. It is not sufficient to create the disease and only await the determining cause in order to cause it to bud forth. It is an individual congenital condition, often hereditary, consisting in the fact that physiological excitants provoke an abnormal reaction and that the conditions of existence supported without inconvenience by the majority of people engenders in the predisposed various diseased conditions.

If the predisposition cannot be located in any organ, there is then a predisposition to a constitutional affection, or, on the contrary, there may be a visceral predisposition. In truth, the difference is far from being marked from diathesis or temperament.

When the court asks if there was any predisposition, this simply means whether or not the victim presented before the accident any signs which would lead one to foresee in the near future and without trauma, the occurrence of the disease, but also often it will interpret as simple predisposition the lesion which manifests itself by no involvement of the professional capacity of the laborer, thus confounding the latent state with predisposition. The essential character of predisposition is to be eminently variable. Idiosyncrasy is merely another term to express the individuality of the predisposition. It is the particular manner belonging to each individual of being influenced by agents capable of affecting him. From the fact that a person is predisposed, it does not necessarily follow that the disease will develop. There is nothing absolute or necessary in the relationship between predisposition and disease. On account of this very variability of their pathogenic action in different individuals, morbid hereditary or acquired predispositions should not enter into account when making a medicolegal estimate. All persons are equal before trauma and there only exist individual susceptibilities and relative immunity.

It is quite as perplexing to prove a predisposition as it is difficult to demonstrate its essence. An organism cannot offer better proof of its predisposition to a given affection than the ultimate development of the disease in question, no other proof can cause certitude, and all theoretical convictions are as *nil*. We know very little about predisposition to most diseases, such for instance as cancer, although Freud and Kaminer have endeavored to discover the biochemistry of the tissues which are thus predisposed. In general pathology, the notion of debility, the renal debility of Castaigne, appears to me to realize the type of predisposition. Unfortunately, it will be a long time before this debility can be placed in evidence.

In other words and briefly, predisposition is synonymous with potential state, and is the reverse of the formed, that is to say, clinically appreciable lesions. Simple predisposition should never be allowed to enter into the case by the court, the determining cause being the only one of importance. If, as has been said, the predisposed person is a candidate, this certainly does not imply that he is a postulant, and the term, elected, which implies a selection, is certainly much more just for designating the person upon whom this cause has fallen.

The first class is composed by the so called parasyphilitic diseases, comprising locomotor ataxia and general paralysis of the insane. In these affections we well know the principal etiological factor, which is syphilis, since Fournier and Erb proved by statistics that lues is at the root of these maladies, and it is for this very reason that Fournier called them parasyphilitic.

Clinical investigation is far from always revealing a syphilitic origin of tabes or general paralysis because it is often a difficult matter to discover syphilitic antecedents of old date, as the patient frequently denies infection, either intentionally or from ignorance. But now we can resort to the procedures of the laboratory, which absolutely demonstrate the enormous proportion of parasyphilitic affections which have specific infection as their origin. It is well known, too, that every syphilitic does not acquire either locomotor ataxia or general paralysis, and carefully prepared statistics covering a large number of cases observed at the Claybury Asylum, by William Mott, demonstrate that the number of syphilitics who become general paralytics amount to only about two per cent. Clearly this proportion is relatively small and will serve as a basis when we attempt by a calculation of approximate probability to estimate the medicolegal value of syphilitic predisposition in the question of general paralysis. Now, since all syphilitics do not become tabetics or general paralytics, it is because syphilis is not everything etiologically, and it requires something else to cause the development of parasyphilitic affections, in other words, a necessary complement. Unfortunately, this necessary efficient cause, or determining cause, if you like, is defined with difficulty. Why, in some cases does the syphilitic virus become localized in the cerebromedullary axis, producing very special lesions, always localized and always identical? The truth is, we do not know. Every syphilitic under the same conditions of treatment is capable of manifesting a gumma, while not every syphilitic will produce a diffuse meningoencephalitis. There is something hidden, which the most minute investigations have not been able to reveal nor can it be experimentally reproduced.

It seems, under these circumstances, that there is no very big place for trauma in the genesis of parasyphilitic diseases, and in point of fact, this very question has been greatly discussed. Unreservedly admitted to the same standing as other common predisposing causes before the laws of employer's liability were promulgated in civilized countries, its role has since been denied with much vigor. In the first place, there are cases which may very properly be qualified as pseudotraumatic. By serious clinical examination, by pathological considerations and experiments, it has been proved that these cases of so called traumatic locomotor ataxia or general paralysis are in reality nothing more or less than instances of these processes of syphilitic origin which have been brought to light by a trauma. In these cases, the former physical condition is simply a beginning of the affection which is detected and revealed by a retrospective inquiry, which is always delicate and particularly arduous, especially when we are dealing with an organic disease of the nervous system. All the efforts of the expert should centre toward the proof of existence of an anterior tabetic condition, or that of a paralytic state which has remained latent. Of this state we know absolutely nothing, unless it is revealed by some fortuitous circumstance. The victim tells us that he worked normally and may produce certificates showing only the fact of his being hired by other employers. These certificates have not the value of a medical examination and merely signify that the laborer, at the time they were given him, did not present any of the symptoms that a medical man might have easily detected. The statements of lay witnesses are equally valueless.

Since we have become aware of the frequency of early tabes, which can be detected by a few discreet signs, and remains unknown to the patient during an almost indefinite time, it is now more frequently discovered. In a large number of cases, Hitzig, Schittenhelm, and Kurt Mendel have demonstrated the presence of symptoms, which logically could be considered to belong to a fully developed locomotor ataxia, long before the trauma was received. Mendel points out the frequency, in the antecedents of tabetics, of pains which have been qualified as rheumatic, but which, when details are given, resemble extraordinarily the pains of locomotor ataxia. Maynaud goes a point farther and considers as diagnostic errors affections in which surgical measures have been resorted to, for example perforating plantar disease mistaken for a suppurating corn, etc. Consequently, the discussion has waxed high between the partizans of traumatic tabes and experts imbued with modern theories.

There is, however, an almost mathematical fact which should, in many cases, remove all doubt. It may be summed up by saying that, in these cases, the question of a preexisting locomotor ataxia is merely one of dates. A well advised medical man would never admit that the latent period could be reduced to a very short time or that the pathological process could develop in a few days. There is always a minimum delay, indicated for each disease by the average of minimum delays, in the generality of antecedent observations a delay which is always the same, that no force can influence nor can it be overstepped by jurisprudence, even if the principle of the preexisting physical state should some day be admitted.

In order better to illustrate this dictum I will here cite the case reported by Thoinot, Gilbert-Ballet, and Dupré.

Case I. A laborer, aged forty-four years, perfectly well previously, it would appear, since he worked on roofs, was crushed in the left inguinal region by an automobile. At a date which was not precisely fixed, but was certainly less than twelve days after the accident, the patient, while in the act of getting up, fell to the floor. This was a sign of motor incoordination because the giving way of the legs is looked upon as a transitional sign between the preataxic and the tabetic periods of the disease. Twenty-nine days later, paralytic disturbances were discovered, and the next day tabes was confirmed. Forty-two days after the accident, the Argyll Robertson sign was positive in the right eye, and some time later, beside an aortic dilatation, there was a deepening of the first sound at the apex along with a mild dysarthria. The case was lost by a verdict on January 3, 1911, and in the higher court on appeal.

CASE II. In another similar case reported by Verger, the patient, a woman, aged twenty-eight years, with a syphilitic husband, was retained in bed for fracture of the right patella, and after the cast was removed she was unable to stand. Careful clinical inquiry revealed attacks of pains occurring without apparent reason. These were erratic and of the pseudorrheumatic type, but the neurologists were of opinion that clinically they were fulgurant pains.

Without clinical control, with the very sudden onset of the morbid symptoms, both these cases might well increase the number of traumatic locomotor ataxia cases already recorded. There is no means of foreseeing that the incoordination and the trauma may both reveal and aggravate it at the same time. More than the trauma itself, I believe that immobilization resulting from the injury should be incriminated medically, but not juridically as a factor. Sachs, Freund, and Mendel have insisted on its unfortunate influence on tabetics and report cases where the subjects had been able to lead their normal life until an accident immobilized them, after which they became incapable of any work. It is just these very pseudorrheumatic affections which cause confusion in the minds of the judges and, consequently, hurt the cause of the preexisting health, which it was in the first place necessary to eliminate. It is hardly necessary to say that these considerations apply only to cases where the tabes comes on too soon after the accident.

The same degree of certainty is far from existing in cases in which the appearance of tabes is late or relatively so. The purely traumatic origin of tabes cannot be at once rejected and the clinical investigation may be absolutely negative in results. But this brief study of the so called cases of traumatic tabes has at least the advantage, that from the scientific standpoint at any rate, there does not exist a case in which the trauma can be properly assimilated to the necessary efficient cause which occupies, as I have pointed out, the second place in the hierarchy of causes. Since, on the other hand, I have endeavored to show that the role of the predisposing cause was filled almost exclusively by syphilis, there remains only one other part for trauma to play, and, in fact, trauma appears as a determining or efficient cause, bringing to the predisposed person a help to other causes.

The question of the preexisting condition of health in *general paralysis* is divided into two very distinct parts: 1. The question of whether or not the predisposing cause, namely, syphilis, constitutes a preexisting state; and, 2, the question of the existence of a general paralysis before the receipt of the injury and appearing clinically afterward; in other words, cases where, to my way of thinking, the preexisting state exists only from an abuse of words.

1. Does syphilis constitute a preexisting state in general paralysis? Here, again, the great predisposing cause, the only one, so to say, is constituted by syphilis. But beside this cause, although greatly remote, other predisposing causes are to be found, such as heredity, alcoholism, and the various poisonings. But no more than in the case of tabes can a syphilitic be considered as a latent general paralytic, and the necessary cause of general paresis—syphilis—is not in itself the efficient cause. The proper soil is required, although as yet it is badly understood, such as cerebral heredity, which renders the outbreak of general paresis possible. Nothing gives any clue as to the nature of the necessary efficient cause and the candidate for general paralysis is in no way to be distinguished from ordinary syphilitics. In order to recover damages it seems to me that what is to be considered is the preexisting state from the viewpoint of physiology, and not the former state from the etiological viewpoint. But still, experts are to be found who maintain that general paresis is always of syphilitic origin and only syphilitic, and they systematically refuse for this very reason to give any part to the trauma in their report of the case, no matter how small. To my mind this is an abusive interpretation. On the contrary, it is enough that the necessary facts are ascertained, in order to admit, juridically at any rate, the existence of traumatic general paresis. According to Ribierre (*Annales d'hyg. pub. et méd. légale* 1907, 1908, and 1909), we should, nevertheless, practically indicate the fact of predisposition, but this conclusion must not make us reject *de plano*, the diagnosis of a traumatic affection. And what is more, it is our duty to assure ourselves whether or not the injured person is a syphilitic.

We have plenty of autopsy reports and histological examinations of cases labeled posttraumatic general paresis and of alleged general paralysis without the trauma, and it would indeed be interesting to compare these records in a careful way. In a general paralytic who received an injury, Vigouroux and Naudasher found some softening, a leptomeningitis and a more marked inflammatory process in the left frontal region. Vigouroux and Hérisson found a hematoma of the dura mater, and adhesions of the latter membrane to the fractured parietal bone in a case where mental disturbances were present before the injury. Briefly speaking, we find in these cases localized lesions, while in general paralysis the lesions are generalized. According to Marchand, they may well become generalized, but produce, even anatomically, only a pseudo-general paralysis.

There is a question which comes up apropos of these results of autopsies, namely, Can we found a solid diagnosis and conclude as to the existence or nonexistence of a preexisting state, in cases of general paralysis from the macroscopic results, as indicated by Martin and Ribierre in cases of traumatic cerebral hemorrhage? In other words, if traumatic general paralysis is admitted, do the lesions here found differ greatly from those of ordinary diffuse meningoencephalitis? I think that this may be answered in the negative, although Collet encountered a predominance of lesions of the ependyma to the detriment of cortical lesions in a traumatic case. Luzenberger believes that when the trauma is followed by cachexia, the cell changes, represented by a peculiar polar distribution of the chromatophile substance, may completely resemble those produced by some serious general process, such as general paresis. However, the localization of the lesions of meningoencephalitis at a point corresponding to the trauma received on the skull, would lead us to favor a traumatic origin and the probable preexisting integrity of the brain. As to the aggravating influence of trauma upon a preexisting cerebropathy, be it either manifest or latent, it is unreservedly admitted, as abundant proof shows. This aggravation shows itself in general paresis by a much more rapid and particularly acute evolution of the disease after the receipt of the injury.

2. Quite different is the question, whether or not a general paresis existed or had already begun before the receipt of the injury. There certainly existed a general paralytic state in these cases, but such instances are not within the limits of the question, as it is the preexisting state that concerns us, and we are dealing rather more with pseudotraumatic affections having previously appeared. Frequently the subject will be considered by witnesses of his ordinary life, and in perfect good faith, as in excellent health before the injury took place, and inquiry in this direction may indicate that this was true, when in reality he was already in the grasp of the disease. In other cases, there is a rapid development of the symptoms of general paralysis after the trauma, so that the traumatism and the development of the paresis coincide. If the appearance of the paretic symptoms takes place the day following the injury, or even a few days later, the expert would naturally conclude that there was a preexisting latent paretic state, and although the subject may not have given evidence of previous disturbance, there is a sudden outburst of the general paralysis.

The trauma is only the efficient cause which gives rise clinically to a diffuse meningoencephalitis in a syphilitic. The intermediate period is here much too short for the condition of affairs to be otherwise. Here the trauma is responsible for revealing the true condition. From the fact that it can be shown that the general paresis had begun before the receipt of the injury, it does not follow that the subject has no right to recover damages, if it can be proved that the trauma exercised considerable influence over his working incapacity, due in itself to the paresis, but by which the genesis of this incapacity was hastened. Gerlach is of the opinion that it matters little whether the trauma provokes rapid or a slow development of the paresis, when the gravity of the prognosis is considered.

It is certainly more embarrassing when a person, syphilitic or not, in apparent good health manifests after a cranial trauma a series of little nervous and psychic disturbances, followed later by a classic general paralysis. Here the efforts of the expert should be directed to the state of apparent good health existing before the accident, and it will require all his sagacity. The majority of case reports are silent as to the disturbances of the prodromal stage of general paralysis, but an attentive examination would have detected them in the midst of this good health. The phenomena to be looked for are the very minute disturbances of dementia, neurasthenia, or cerebral excitement. In one case, Régis was able to prove that the patient, seven or eight months before the receipt of the injury, wrote queer letters, neglected to pay his debts, which he had always been prompt in doing, and put letters received in his pockets without opening them. Continuing his inquiry, Régis examined the letters written by the patient and found that words were omitted, so that the results obtained amply demonstrated the reality of an incipient general paresis and the widow lost her case for damages.

Thus, according to Gerlach and Euzière, we may correctly suppose, although the question is not as yet fully settled, that the trauma will not give rise to general paralysis unless the central nervous system was the seat of latent paralytic lesions before the accident. In order to recover damages, the victim must show that the accident has been the cause of the morbid phenomena and of the resulting incapacity to work.

The second class of affections now to be considered is composed of what may very properly be termed as arteriosclerotic diseases. They have this as a common character, that the arteriosclerosis forms a predisposition such that the part played by the efficient cause is greatly reduced, while the predisposition is everything. It is quite evident that a person, whose arteries are calcified, whose kidneys are in a bad state, is more greatly exposed to rupture of the vessel walls, even from a slight cause or one which is not even perceived. It is particularly in these cases that the disproportion of the part played in reality by predisposition and the very small part, theoretically negligible, of the efficient cause. A person falling dead upon the receipt of an insignificant trauma may very well have succumbed upon the occasion of almost any physiological act, but the family are so hypnotized by the accident, on which their attention is always riveted, that they overlook the really important cause. The frequency of arteriosclerosis is so great that there is hardly an autopsy of a subject over fifty years of age where some evidence of this morbid change cannot be found and, consequently, on account of this frequency it plays a large part in the evolution of many diseases. Two only need concern us, namely, cerebral hemorrhage and a neurotic state whose prognosis is largely influenced by the preexisting arteriosclerosis. I refer to neurasthenia, or other neurastheniform states. The predisposition created by arteriosclerosis has here such importance as a cause over all others, even that of trauma, that the necessary efficient causes are greatly reduced in value. It is usually a sudden increase in the blood pressure and a diminution of the resistance of the vascular walls that here represent the efficient causes, conditions which are clearly ill defined and difficult to demonstrate. Thus arteriosclerosis, as soon as it comes into play as a predisposing factor, takes a prominent place, putting to one side all other conditions. Without it, it would require a trauma of extraordinary violence to provoke disorders in an arterial system which, so to speak, flees from shock. There are, perhaps, other phenomena which we ignore, because Lejars, in his experiments on traumatic subcutaneous ruptures, noted that, contrary to what has been frequently upheld, a preexisting change in the arterial walls was not found in the majority of cases; and Lang, in a case of aneurysm from contusion of the abdomen, particularly insists on the fact that neither arteriosclerosis nor syphilis was involved. As far back as 1865, Broca and Chauvel were of the opinion that the majority of cases of rupture of the aorta from trauma occurred in subjects whose arteries were diseased.

At present we should be less positive on this subject, especially concerning arteries of medium calibre. Studying the action of trauma on viscera already the seat of disease, Payhaubert did not find any mention of a preexisting arteriosclerosis in the cases reported in the literature. Likewise, Dubujadoux was unable to discover any evidence of arteriosclerosis in a case of traumatic hemorrhage of the omental vessels. A case was observed by Demoulin of rupture of the aorta in a laborer twenty-seven years old, where it was shown that the subject had an atrophic chronic aortitis, probably heredosyphilitic in origin. An annual payment had been allowed by the court and a decision of the Court of Appeals confirmed it, esteeming that there was no reason to take the preexisting state into consideration. Thus, contrary to what it might seem logical to admit *a priori,* arteriosclerosis is wanting in many cases of traumatic hemorrhage without solution of continuity, where we should logically expect to find it, and its role seems more marked, as far as a general disease is concerned, in general processes, such as those which undoubtedly intervene in the genesis and aggravation of traumatic neurasthenia.

In this very completely documented report read before the second Congrès de médecine légale, Martin and Ribierre endeavored to estimate, beside the proofs of a preexisting arteriosclerosis, the respective part played by the traumatism and pathological condition of the subject, in cases of cerebral hemorrhage. In order to demonstrate with certainty the part played by the arteriosclerotic predisposition, these writers brought forward two lines of proof; the first, which is only one of probability, is based on the relatively frequent coexistence of other hemorrhages of the same age or old foci in the same subject. The second proof of predisposition is furnished by autopsy or operative interference. The former still furnishes the index of probability from the fact of the localization of the hemorrhage because, should it occur in the central nuclei, the part played by the trauma in the etiology of the hemorrhage should be admitted with only the greatest reserve. After the site, the evidence that the hemorrhage took place from newly formed vessels should make us cautious against an abusive interpretation of the part played by the trauma. It is well known that the fragility of the bloodvessels is greatest in the newly formed vessels which are found in patches of pachymeningitis in alcoholic subjects and epileptics. Clearly their rupture often occurs spontaneously, or a very slight trauma may cause a meningeal hemorrhage in these subjects. Consequently it is the reality of the trauma that the expert should endeavor to demonstate, if he desires to establish the fact that the rupture of the fragile newly formed vessels is the result of an accident and not the natural outcome of the morbid changes presented by the subject. Afterward, a histological examination of the cerebral substance, the presence of a renal lesion, a hypertrophy of the heart, and pathological changes in the cerebral vessels compose a series of proofs of predisposition to a hemorrhagic processus. The autopsy should be complete, and particular attention paid to lesions of nephritis and cardiac hypertrophy.

It is particularly in central hemorrhage, also termed late traumatic hemorrhage, that the relation between the hemorrhage and the trauma is, in the majority of instances, hypothetical, and in the others, indirect and subordinate to etiological factors of a complex nature, and of an importance quite equal to the trauma itself.

The cases submitted to the expert will be different when, instead of autopsy findings, we are dealing with purely clincical data. A clinical analysis of the antecedents of the subjects, an etiological inquest of the functional symptoms, will be of much less value, but is the only resourse when the patient survives. To reply to the second question relative to the respective parts played by the trauma and preexisting physical state in traumatic cerebral hemorrhage, Martin and Ribierre give a minute analysis of sixty-one cases, forty-eight only of which are considered. In many instances the relationship appears to the vague and uncertain. In a case due to Michel, the subject, an alcoholic, presented a hypertrophy with dilatation of the heart and a mitroaortic atheroma. In Kob's case the heart was flabby and fatty; in Mazurkiewicz's case there was atheroma of the aorta and vessels of the apex. In Cevidalli's case there was chronic nephritis, while in the one published by Vial, the subject, aged fifty-two years, was an alcoholic. The remaining cases are quite as instructive. The first case, one of Abadie's, was a man fifty-two years old with a senile arrythmic myocarditis; there was hypertension with hard arteries and a change in the heart sounds in his second case. In Bousquet and Auglada's case the patient, a man aged sixty-two years, presented a tension of 21 with a pulse of 70 and an aortic murmur.

From their study, Martin and Ribierre conclude that there exists a predisposition to cerebral hemorrhage, due to lesions of arteriosclerosis visible at autopsy or by disturbances of the arterial tension which can be detected by sphygmomanometry. They conclude that the preexisting state has here such importance that the efficient cause usually escapes the most minute investigation. It is commonly by an abusive extension of facts that primary importance is attributed in these cases to an insignificant trauma, the reality of which is not any too well demonstrated. This severe analysis should be followed by the expert in all such cases, and the results transmitted to the proper legal authority.

It must be admitted, in reaching the reports of these cases of traumatic cerebral hemorrhage, that the reality of the traumatism is far from being always demonstrated with all the evidence desirable. In Michel's case there was only an indirect shock on the head from an iron bar; in Kob's, a simple blow from the fist; in Frank's, the shock of a piece of wood on the head; in Bousquet's and Auglada's, a fall into a hole; in Mazurkiewicz's, a simple fall with no further details. Now, it is hardly possible to admit that the trauma alone was sufficient to produce a cerebral hemorrhage in all these cases, admitting that all the subjects were in perfectly healthy condition. As to the necessary efficient cause, it is never, be it understood, mentioned in the report. Consequently, the true part played by the trauma in cerebral hemorrhage appears as merely an efficient cause, fortuitously brought to bear simply to form a cumulative etiology fatal to an already undermined organism.

(*To be concluded.*)

THERAPEUTIC APPLICATIONS OF HUMAN THYROID EXTRACT.

By S. P. Beebe, Ph. D., M. D.,
New York.

A number of years ago, the writer mentioned in a paper read in a symposium before the Section in Biochemistry of the American Association for the Advancement of Science, that from the standpoint of physiological economy and therapeutic efficiency no form of thyroid medication was in the same class with human thyroid extract. At that time some calculations were made to determine how small a dose of this proteid was required to meet the physiological needs of a person suffering from myxedema. The writer had had an opportunity to test the efficiency of various forms of thyroid preparations in two cases of typical myxedema with classical symptoms, and it was found that when administered hypodermically a relatively very small dose of this proteid would control the symptoms of the disease more effectively than animal extracts given either by mouth or by hypodermic injections.

A great deal of experimental work has been done since that time in attempts to isolate the physiologically active substance from the thyroid gland. The most striking of these experiments are probably those of Kendall working at the Mayo clinic, who believes that he has isolated the functionally active iodine group from the cleavage products produced by hydrolysis of thyroid proteid with sodium alcoholate. He gives figures to show that this substance is very high indeed in iodine content, and suspects that it may be a combination of iodine with an indol group in the molecule. So far as the writer knows, these results have not been confirmed up to the present time, and the investigator, himself, has had some difficulty in repeating the experiments. This work, if confirmed, is of course of fundamental importance, but the question arises whether or not the cleavage products so obtained may not be produced under the conditions of the experiment, but not necessarily duplicated in the metabolism of living animals. It is certain to my mind from work of many investigators, as well as my own, that the iodine proteid combination isolated from the thyroid gland has the physiological effect which we ascribe to thyroid function, and in this connection I wish to quote from the article previously mentioned:

> The facilities for the absorption of this material are apparently not such as to provide for taking up a large quantity in a short space of time, and the question arises as to how large an amount of this material must enter the circulation in a unit of time in order to carry on satisfactorily the thyroid function. As far as we can judge from experimental conditions, the sensitiveness of different animals and different individuals to thyroid shows wide variations. In some instances I have produced noticeable effect in a human adult by the hypodermic administration of five mg. of protein prepared as above from normal glands containing between 0.32 and 0.36 mg. of iodine in each gram of fresh gland. In other cases, 0.01 gram has shown decided activity, while 0.06 gram usually shows quite pronounced effects, even in normal persons. In several cases of cretinism I have found 0.01 gram of this protein has been effective in completely ameliorating symptoms. In myxedema, 0.03 gram of these proteins taken each day has kept the symptoms completely under control. On the other hand, I have had patients taking 0.5 gram daily for considerable periods without producing any other effect, as far as could be determined, than that of general well being. There is then a very wide variation between the limits of the amount required to maintain health and the amount which a patient may take without causing marked physiological disturbance. Furthermore, if so small a quantity of protein as that mentioned is sufficient to satisfy the needs of the average patient for thyroid function, we need not suppose that the venous blood or the lymph coming from a thyroid should contain very much of this secretion. Three hundredths of a gram of this protein put into the blood which flows through a normal gland in one day (and this has been estimated by Kraus to be fourteen times the total volume of blood in the body) would not give an appreciable addition in iodine. It furthermore indicates what a large factor of safety there is in a normal thyroid gland. Such a gland would average about twenty grams in weight, from which there might be obtained three grams of the protein above used, or one hundred times the quantity sufficient to fill the demand for this secretion in the case of a myxedematous patient.
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> Since the isolation of iodothyrin by Baumann it has been believed that the thyroid function might be served by the use of this small fragment of the protein, but it is my belief that the thyroid function is not in all respects to be filled by this fragment. The physiological, as well as the most effective, method of administering thyroid secretion to an animal is to give the same biologic sort of secretion by hypodermic injection. I have in many instances been unable to get the same quality of effect or to produce the same change in the metabolism of an animal by administering thyroid by mouth as could be obtained when giving it directly into the circulation. We do not know on what tissue or set of tissues the thyroid secretion acts. It does not seem to me probable that it is to be compared to the exclusive action of secretin, but rather that most of the tissues in the body are in some way affected by this substance, perhaps in part through the medium of the nervous system. We know that it is connected in some way with the function of oxidation in the body. By the administration of thyroid to a cretin or patient with myxedema it is possible to increase the absorption of oxygen from twenty to seventy-five per cent. There is a corresponding increase in the amount of heat given off from the body. The removal of the thyroid from an animal will cause diminution in the absorption of oxygen, which may be again increased by thyroid feeding. Administration of thyroid to a normal animal will cause an increase of from ten to forty per cent. in the oxygen demand. In comparing myxedema with Graves' disease, we find a very marked contrast in this respect. With the former the absorption of oxygen, the food requirement, the energy exchange is often not more than forty to fifty per cent. of the normal, while in the latter we see these factors very much increased, occasionally to nearly double the normal. We are again confronted by our lack of knowledge when we find that these changes do not always follow thyroid administration.

For the purposes of these tests the animal glands and the human glands were subjected to the same processes of preparation. The method has been described elsewhere and will be repeated in this article. Those who have had much experience in dealing with myxedema patients, or with the use of thyroid in the treatment of cretins, are always gratified by the remarkably beneficial effects which follow this form of medication, so that thyroid extract comes as near to being a real specific treatment for these difficulties as is found in medicine. The results are dramatic in their seeming completeness, and yet we cannot observe these cases closely without being aware that the administration of animal extracts does not completely restore the patient to health. The administration of animal extract by hypodermic injection will produce fairly effective therapeutic results in the beginning, but if continued gives rise to annoying local reactions at the point of injection. This annoying local reaction is somewhat more disturbing than I have observed in other forms of alien protein administered in this way.

To obtain the most satisfactory therapeutic effect with thyroid extract, it is the writer's belief that human thyroid protein must be administered by hypodermic injection. This is in no way a criticism of the present methods of thyroid therapy. It is an interesting observation which seems to have a physiological basis and is borne out by clinical tests. During the last six years the writer has had an opportunity of using human thyroid extract by hypodermic injection in a variety of conditions, and its efficiency is so marked that it has seemed worth while to describe briefly some of these conditions and to suggest that in difficult cases it may be a suitable medicinal substance for the physician to use in combating disease in spite of the very great difficulties which necessarily surround its preparation. During this time abundant confirmation has been obtained of the observation that both qualitatively, which is most important, and quantitatively, which has no particular significance, it is far superior to the thyroid preparations commonly used in treatment.

The writer has observed many patients in whom the usual thyroid extracts afforded only partial relief and in whom the relief was accompanied at times by undesirable effects in other directions, who have been effectively treated with human thyroid extract injections without these untoward and disturbing symptoms shown by the heart and nervous system. Thyroid extract is now used in a great variety of conditions. In fact, some men, notably Hertoghe, find in its use a considerable measure of relief for a large proportion of the ills that flesh is heir to. Certain it is that in the last ten years thyroid extract has gained entrance to the treatment of conditions covering a considerable portion of the field of practice. As an example, there are many observations in the literature made by writers of this country and abroad regarding beneficial effects obtained in the toxemia of pregnancy. This effect is so marked that many practitioners find it of the greatest help in this condition and place great reliance upon it. The writer has not had large opportunity to test human thyroid extract in these conditions, but some observations which have been made indicate that thyroid extract, prepared from the human thyroid gland, is more effective than animal preparations in relieving the symptoms of toxemia. One case of this kind has been reported in the literature by Dr. George Gray Ward. This patient could not be relieved to such a degree by animal extracts as to make it safe for the pregnancy to continue. The administration of human thyroid extract by hypodermic injection made it possible for the patient to go to term and be delivered of a healthy child. For the details of this case the reader is referred to the original article. In brief, however, it was found that if these injections were suspended or an attempt was made to substitute animal extracts, the blood pressure increased, the volume of urine very markedly decreased, quantity of nitrogen excreted dropped within twenty-four to forty-eight hours to less than one half and even as low as one quarter of the amount formerly excreted. The patient was violently nauseated, with severe headache, and approached a condition of toxemia where convulsions were imminent. Very promptly after the administration of hypodermic injection of human extract the volume of urine increased, the blood pressure fell, the nitrogen elimination rose, headaches ceased, the nausea and vomiting stopped, and the patient was able to take a satisfactory amount of food and resumed a fair condition of health.

In another instance thyroid administration in the usual form had been begun at the fifth month because of the toxemic manifestations. This was continued for a period of two months without interruption, but with increasing severity of symptoms; so marked indeed that the patient had one mild convulsion. The human thyroid injections were begun at this time to the practically complete relief of the patient during the balance of the term.

In the ordinary hypothyroid conditions of a classical type accompanied by the usual manifestations of a mild myxedema or cretinism, this extract has proved its effectiveness. In one instance a patient with fairly typical myxedema undiagnosed for some time later had his disease properly diagnosed and thyroid treatment instituted. This patient, curiously enough, was one of those who showed marked sensitiveness to thyroid extract, although manifesting typical and well advanced symptoms of myxedema. Such a condition has been observed by many writers and, although not common, is nevertheless of sufficient frequency to put distinct limitations upon animal thyroid extract treatment in these conditions. This patient could take only three two grain tablets, containing five per cent. of pure thyroprotein, each day. This was not a sufficient amount effectively to control the myxedematous manifestations. A larger dose than this caused disturbing heart reactions and nervous symptoms which made the patient very uncomfortable. When, however, human thyroid extract was administered by hypodermic injection, in addition to the animal extract given by mouth, the symptoms were completely controlled and the myxedematous swellings cleared up, the skin became smooth and soft, the hair grew in and lost its dry, coarse texture, and the patient was relieved.

In another instance myxedematous manifestations in a man of thirty-five years of age, much undersized, were noted somewhat over six years ago. The usual thyroid extract was begun and continued for three months. Some relief was obtained, but it was not satisfactory to either physician or patient. At that time hypodermic injection of human thyroid extract was begun in addition to the animal extract given by mouth. Following these injections a satisfactory control of the symptoms followed. This patient has continued these injections during the last six years. For the last five years he has received one injection daily of approximately one c. c. of a 0.33 per cent. solution. On two or three occasions during this period the patient has been without the injections for a period of ten days to a month, and in spite of the fact that he has continued to take the animal extract by mouth, the former distressing symptoms—dryness of skin, falling of hair, and myxedematous swelling—have begun to manifest themselves. In this instance, therefore, it seems necessary for the health of the patient to continue the injections regularly. Because of the considerable length of time during which these injections have been continued, this case seems to be a notable one. Human thyroid extract has not been used to any extent in therapeutics, and this patient is undoubtedly unique in the kind and extent of the treatment he has had.

The dermatologist has found that thyroid extract has a beneficial effect in many skin diseases and is accustomed to rely upon it. The writer has not had an opportunity to observe personally many instances of skin disease treated with thyroid extract. In one instance a patient having scleroderma had been treated with thyroid for a number of months without much relief. Human thyroid given by hypodermic injection was begun and continued for some months with marked beneficial effect, not only to the skin lesion, but to the general health of the patient. This patient lived in a distant State and returned to her home, and has not continued the injections since that time. After stopping the injections the condition recurred in its former severity.

In the hypothyroid conditions accompanying goitre, or as a sequel to a former active hyperthyroidism, and in those somewhat ill defined and intangible clinical conditions in which there are manifestations of both hyperthyroidism and hypothyroidism, the writer has had a considerable experience in noting the beneficial effects which may obtain from the administration of human thyroid extract. These patients form a group troublesome to the physician. They require careful study and analysis and their treatment is not infrequently a matter of therapeutic experiment. Human thyroid extract has a place in therapeutics with these patients which is not to be overlooked.

With another group of patients the writer has had opportunities to observe effects that seem to be almost specific in their sharpness and promptness of result. This is a large group, and every physician, whether interested or not in ductless gland conditions, has to deal with patients of this sort. This group is composed of women, varying in age from twenty to over forty years, who have at the menstrual period a regular recurrence of toxic manifestations. They are likely to have severe headaches, profuse menstrual flow, extending over from six to eight days, nausea and vomiting at times, and are so much depleted by this experience that they have during each month only about two weeks of really normal life; the other two weeks are filled with the premenstrual psychic and physical disturbances, often of a severe grade. The period of actual flowing is often accompanied by colicky pains, great physical weakness, backache, with a loss of an unduly large quantity of blood; then comes a period of a few days' gradual physical, mental, and emotional recovery. Such patients are really only fifty per cent. efficient. Even during the two weeks of comparatively normal life they may be below par in physical strength, the constant drain of repeated, profuse hemorrhages leaves them anemic, nervous, fretful, and a prey to intercurrent physical difficulties, as well as psychically depressed. The writer does not refer, in citing these patients, to those women who have a malposition of the uterus, or to abnormal conditions within the uterus itself, such as fibroids, polyps, or an endometritis. As I have seen them they have been the rounds of physicians to obtain relief, not infrequently a slight malposition of the uterus has been held responsible for all the untoward symptoms which they show, and they gladly submit to various operative procedures in the hope of obtaining relief. Curettage is frequently done, and occasionally with some benefit for a month or two. But the vicious circle of events returns and recurs with all too regular frequency. This condition of affairs is occasionally seen in young women under twenty years of age. As a rule, the writer sees them somewhat older than that and with a history of some years' standing. Probably no event in a woman's life causes her so much physical and mental distress, and a cycle of events of the character described produces a great psychic depression that extends to some extent even during the nonmenstrual weeks of the month. In some instances they show a kind of sullen resignation toward being a woman, accompanied by an earnest hope for an early menopause. Other symptoms of hypothyroidism are usually lacking.

Although profuse menstruation is generally classed as a hypothyroid manifestation, and the writer has observed it in many instances, yet in far advanced degrees of hypothyroidism the menstrual function is entirely suspended. With the mild degrees of hyperthyroidism the menstrual period is shortened. With the severe degrees of thyroid overactivity menstruation may be entirely suspended for several months. Clinically, therefore, there seems to be a rather marked contrast between the menstrual periods in the mild hypothyroidism compared with the mild hyperthyroidism conditions. The general physical health of the patient, of course, suffers markedly from these recurring hemorrhages. The administration of the usual tonics does not seem to be of much benefit. Some medicines commonly in use may temporarily check the flow, but do not relieve the other physical manifestations, and in no way do they modify the psychic and emotional disturbance which occurs at this time.

The writer became interested in this phase of medicine by observing how frequently these profuse menstrual hemorrhages occurred in the mild hypothyroid cases. The administration of thyroid extract in the usual forms may afford some relief. This relief, however, in no way compares with the relief to be obtained by the administration hypodermically of human thyroid extract. There may be medicines that work as effectively in these conditions as human thyroid extract, but the writer is not acquainted with them. One typical instance may serve as an illustration. Patient was a young woman, twenty-five years of age. At the age of twenty years, when she was a student in college, she indulged in active physical exercises, and it was believed at this period she suffered a malposition of the uterus, as shown by a marked retroversion. Her menstrual difficulties had begun a year before the time when it was believed the uterus was displaced, and in spite of the physical weakness which developed as a result, she continued her physical work, much to her disadvantage. When she was twenty-one the uterus was replaced in its normal position, she had a vacation in the country, and took various tonics to build up her general condition. Finally she received a prescription containing fluid extract of ergot in order to control the profuse hemorrhages. Neither rest nor medical treatment served to alleviate the situation, and at the age of twenty-five, some years after these previous experiences, she came under the writer's observation. She had lost weight during this period, her menstrual disturbances began six or seven days before the actual onset of the flow, she had headaches, gradually increasing in severity, was sleepless, psychically very much depressed, so that during these days thoughts of suicide were continually recurring; she occasionally had severe nausea and vomiting a day or two preceding the flow. A few hours before the hemorrhage started she had severe uterine cramps and backache. This train of symptoms was usually relieved to some degree after the first twenty-four hours. The flow continued very actively during seven days, with progressive physical weakness at its termination. She was dizzy on walking around, her physical strength would not permit her to have much if any physical activity for the next four or five days, during which she gradually regained vigor and color. On some occasions, after the flow had stopped and she was resuming activity, she fainted at inopportune times. A physical examination revealed no malposition of the uterus, and while the patient was rather weak and flabby, no organic disease was discovered. Hemoglobin was sixty-five per cent. and the red blood count a little below 4,000,000. Ten days before her next menstrual period was expected, she began the hypodermic administration of human thyroid extract. One injection was given each day, each injection containing one c. c. of 0.50 per cent. solution. The first period occurring after the institution of these injections was marked by a complete freedom of headaches, backaches, psychic and emotional disturbance. She had some uterine cramps during the first twenty-four hours of the flow, which continued on this occasion for a period of five days. During these five days it was as profuse as it had been formerly. The afterperiod of weakness was not as pronounced. The same program was instituted ten days before the next period, with the result that there was the same relief as before, with the added effect of diminishing the flow to a period of three days. During these three days the flow was not as profuse as it had formerly been. She recovered fairly promptly and was in good spirits, with the hemoglobin at the end of the period eighty-five per cent. Since that time, a period now of more than a year, she has taken the thyroid extract in diminishing amount, until at present it is found that a single injection given before the onset is sufficient to control the situation. She is now about twenty pounds heavier than at the beginning of the treatment, is a healthy, active woman, whose blood conditions are absolutely normal. She continued vigorous physical activity without discomfort during the menstrual period.

This kind of relief has been obtained in so many cases at different ages that it has become in my experience comparatively easy to control the situation in the type of case described by this means of treatment. The same method of treatment has been used in some instances during the menopause when the uterine hemorrhages, as is known, may continue for two or three weeks at a time and may recur at irregular intervals. The writer has repeatedly seen a prolonged period of this kind cut short within twenty-four hours by one or two injections.

Those whose practice leads them constantly into contact with patients of this sort may have other means of effectively controlling the situation as that described. The writer is not familiar with them, however, and has not found the usual lines of treatment described in literature effective with such patients. In this instance the menstrual function seems to be a toxic manifestation which seriously influences the patient in addition to a very marked loss of blood. The writer is aware that he is describing a therapeutic method which cannot have wide application under present conditions. Nevertheless, the question arises whether it is not possible for many physicians to make use of this method to the benefit of their patients. The preparation of the extract is not a difficult matter to one who is familiar with laboratory procedure, but of course the main difficulty is in securing the human thyroid glands which serve as the basis for the extract. In large cities this should not be an insuperable difficulty.

MODE OF PREPARATION.

The method the writer has followed in preparing this extract is as follows: The glands are carefully freed of all connective tissue, then ground to a fine pulp in a machine. The pulp is suspended in a physiological salt solution of eight to ten times the volume of the gland pulp. The extraction is carried on in the cold for a period of forty-eight hours, when the extract is filtered through gauze and finally through paper. The filtrate is made faintly acid with acetic acid and brought to a temperature on a water bath of 44° C. The nucleoproteid and globulin are separated promptly by this process and washed by decantation. The protein is dissolved by making its suspension in salt solution very faintly alkaline with sodium bicarbonate. This solution is filtered again through paper and the filtrate again precipitated by making faintly acid with acetic acid. Again the precipitated proteid is washed by decantation. The washed protein is now dissolved in a smaller quantity of faintly alkaline salt solution and nitrogen determinations are made. It has been found that if this protein solution, faintly alkaline, is heated to boiling it does not coagulate nor does the heat destroy the physiological action of the protein. Therefore, instead of filtering through a Berkefeld filter as we have done for a number of years in order to sterilize this solution prior to its injection, we have sealed it in sterile ampoules and then sterilized the sealed ampoule by heating to boiling temperature for a period of fifteen minutes on each of three days. Such a solution is absolutely sterile and causes no irritation when injected and is physiologically as active as we have observed the solution to be when it has been prepared for injection by filtration through a Berkefeld filter. This modification simplifies the process a great deal because passage through a Berkefeld filter is slow and tedious, and while we have done it for a number of years, still we have found the present method superior in every way, and have substituted it for the older method.

THE SYNDROME OF ASTHENIA, OF MENTAL ORIGIN.

By Meyer Solomon, M. D.,
Chicago.

It is well known that peculiar bodily feelings, in fact pronounced bodily reactions, may be induced or aggravated by the mental attitude of the patient. Feelings of asthenia, comprising a syndrome of pseudasthenia or false asthenia, not of a genuine nature, may thus arise, or, having been superinduced by other factors, may be aggravated, or prolonged, or continue to exist after the original inciting agents have ceased to be operative; this aggravation is due to definite mental factors, as in hypochondriasis and in many cases of neurasthenia with its multiple origin.

In these cases we find autosuggestion and heterosuggestion playing a decided role, combined with morbid introspection and selfabsorption, a general state of increased or prolonged emotionalism, with anxiety, watchful expectation, apprehension or fear usually an integral part, permitting suggestion to play freely, and producing an enhancement of the symptoms. Once the symptoms have appeared, there is a veritable vicious cycle—the emotionalism with suggestion increasing the symptoms, in degree or number or both, and the accompanying symptoms increasing the emotionalism and suggestibility. Déjerine and Gauckler have elaborated this viewpoint in their excellent work recently translated from the French by Jelliffe.[1]

Acute emotionalism of itself, especially if prolonged, may cause temporary periods of asthenia or fatigue, as not infrequently occurs after pronounced anger, fear, and similar depressing or exhausting emotions; but the syndrome of asthenia of mental origin which I wish to discuss is not of this simple origin. It is of a more indirect nature, yet the mental factor, the emotionalism, is the specific and original inciter of the vicious cycle, and the asthenia syndrome is definitely present, being a reality. Of course, after the onset of the condition, worry as to its origin and nature—its meaning—may lead to disturbing mental reactions, and may be the beginning of a superadded psychoneurotic state of one sort or another.

The cause of the condition here considered is emotionalism. Worry, anxiety, apprehension — in fact fear or any of its lesser manifestations is the specific provocative agent. This instinct of fear is fundamentally related to self preservation, phylogenetically and ontogenetically, but under the special circumstances of any particular case may be attached to, or arise as a reaction to any of the aspects of modern life in general. Thus the worry may be over the possible effects of the past or present practice of masturbation, of nocturnal emissions, or of interrupted coitus, of the possible effects of illicit sexual relations (venereal disease, pregnancy), business worries (expected failure, results of bankruptcy proceedings, etc.), of possible dissatisfaction with one's career (artistic, scientific, etc.), scruples of one kind or another (religious, moral, ethical), superstitious fears, anxiety concerning the outcome or significance of some physical ailment (heart disease, diabetes or the like), worry over the death of a relative or friend; and so on. The fear, then, is a reaction to desires, wishes, hopes, aspirations, inclinations or dreams, or to conduct or ideas, past, present, or even projected into the future.

PATHOGENESIS AND SYMPTOMS.

It is well known that almost any source of mental unrest, of slight or great degree, may lead to sleeplessness or light sleep with many dreams (which are especially apt to have some connection, distant or remote, with the cause of worry). It is not unusual for a normal person to be so disturbed at night for a few nights or more. Insomnia, therefore, is the result; and as most physicians appreciate, insomnia is frequently due to mental factors.

The degree and duration of this insomnia will vary with the nature of the inciting cause for worry on the one hand, and the makeup of the individual or his tendency to worry on the other. It is thus seen that it is not so much the absolute intrinsic value of the exciting cause or provocative agent, but its relative value to the patient. It is the patient's attitude toward any particular situation, the manner in which he regards it, the significance he attaches to it, which is all important. A relatively insignificant incident or situation may therefore lead to a pronounced reaction, with prolonged worry, especially when the victim is lying in bed preparatory to falling asleep.

Any one who has suffered from insomnia for even a few days should be well acquainted with the symptoms. We can then well imagine a multiplication of these symptoms, in degree and number, in one who has prolonged insomnia plus continual worry. The condition would not be so serious if the person so affected worried for a time over the inciting factor and then ceased. But a person in such a plight too frequently ceases to worry about the original situation, be it what it may, only to begin to worry about the physical and mental condition in which he soon finds himself, with insomnia and a host of other symptoms. As the newer situation with its many disabling manifestations is more annoying than its predecessor, it strikes more directly at the health and welfare (self preservation) of the patient, and so displaces or represses the former fears and attaches itself more readily to the general fear reaction. The new state of affairs now becomes the great concern and source of worry for the individual, leading to increased insomnia. Where insomnia is much feared, fear and expectation of it at bedtime lead to more decided insomnia.

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[1] *The Psychoneuroses and Their Treatment by Psychotherapy*, Philadelphia, 1913.

Now insomnia, if at all prolonged, is the cause of many symptoms; it leads to a host of complaints and greatly aggravates the condition already present. Prolonged insomnia, combined with worry, produces physical, intellectual, and emotional instability. Let us first take up the physical symptoms. Insomnia soon leads to headache, spots before the eyes, dazed feelings, dizziness, sleepiness, loss of appetite, dry mouth, coated tongue, constipation, and a general state of fatigability and exhaustion. Asthenia is one of the most prominent manifestations. Chilly feelings, paresthesias, tremors of the protruded tongue and extended fingers, increased knee jerks, a tired, worn out expression, frequently anxious and drawn, with general aches, weak back, shortness of breath, cardiac distress, sometimes pallor, rapid pulse, frequently lowered blood pressure, with general malaise, lack of strength and endurance, and some loss of weight.

Intellectually the patient begins to show lack of concentration, inability to pursue his work for any length of time, a tendency toward inactivity, and an avoidance of his usual work (as a natural consequence of his general physical and intellectual fatigue). Added to this is emotional instability, with irritability, crankiness, easily aroused anger, grouchiness, with an increasing degree of dissatisfaction, pessimism, mental depression, and a marked tendency to anxiety, apprehension, and worry. Women more than men are apt to cry on slight provocation or for apparently no reason, but really owing to the emotional instability, the general disturbed state, and feeling of unhappiness and depression. The hyperemotional state, consisting of depressing emotions, plays a considerable role in the production and continuance of the visceral and other symptoms.[2]

The patient himself may complain only of the most prominent and disturbing symptoms, such as headache or insomnia or weakness or vague, general complaints. Only by careful questioning are all the symptoms elicited. Frequently the physician, in looking for a physical cause, may neglect to unearth the history of the case, with the demonstration of the worry over a certain situation in life as the original cause of the insomnia and its added symptoms, the forgetting of this primary cause and the subsequent worry concerning the general physical and mental condition. In too many of these cases no cause can be found by the physician, who may then label it "nervousness" and let it go at that. This lack of knowledge of the cause of the condition, with the continuous presence, even exaggeration of the symptoms, added to the conviction that the symptoms are real and not imaginary (for they certainly are as real as any symptoms primarily due to toxemia or other physical factors), leads to increased worry on the part of the afflicted one concerning the nature and meaning of his trouble. Not knowing the meaning, he may indulge in speculation and interpretations based on whatever knowledge he has previously acquired, and it is therefore not astonishing that he gradually begins to fear the onset of insanity, apoplexy, tuberculosis, heart disease, or what not. The examining physician, failing to follow the trail of the mental factor, neglecting the knowledge which as a rule he can so easily obtain by analyzing the case and tracing its history, may, in his examinations for physical factors, by his actions or remarks, suggest various possibilities to the patient.

Sometimes the patient himself, especially in the early stages, vaguely, at other times clearly, recognizes the real cause of his present condition. Such patients are fortunate and help to put the physician on the right track.

It is seen that we already have a full fledged so called neurasthenia or rather so called neurasthenic state, primarily of mental origin. I know that some physicians would even call the earliest stages of the condition here described nothing other than so called neurasthenia. Perhaps I would be willing to label it abortive, incipient so called neurasthenia, or a *forme fruste*. It is not until the latter stages, when the mental condition becomes more characteristic, that the stamp, neurasthenia, may be given to the condition. In predisposed persons so called hysterical and psychasthenic reactions may appear. Full blown hysteria may be aroused even by the extreme emotionalism, and so called psychasthenic states (doubts, fears, scruples, tabooes, anxiety states, and the like) may here have their first setting or resurrection. We must also not forget that the first cause for worry may have been an actual physical disorder. For example, telling a patient in the course of a physical examination for some other purpose (life insurance, entrance to a lodge or fraternal organization, etc.) that his heart is rapid or irritable, or that he has a functional or true heart murmur, may be responsible for the evocation of the sort of reaction described above. Or the knowledge of gastric disorder, heart trouble or the like may lead to uncontrollable worry concerning possible effects. Or the presence of some physical defect may not be a source of anxiety until the asthenic state resulting from worry over external factors or social relationships has been produced.

Just as such a state may eventually lead to so called hysteria or psychasthenia, so may manifestations in the latter conditions lead to worry and a resulting asthenia syndrome, even to a mature so called neurasthenia. As an end product, local manifestations may make their appearance in the gastrointestinal tract, cardiac system, genitourinary organs, or elsewhere, but in such cases we have a typical neurosis of one or more organs. Suggestion, with fixation of the attention upon particular organs, abetted by emotionalism, and supported by the particular susceptibilities or reactional trends, physical and mental, determine the subsequent development of the localized manifestations or false organopathies or organ neuroses. Anxiety states are very commonly present.

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[2] Although this aspect cannot be elaborated here, an understanding of the *modus operandi* may be had by a study of such works as William McDougall's *Introduction to Social Psychology*, Sherrington's *Integretative Action of the Nervous System*, Darwin's *Expression of Emotion in Man and Animals*, Pavloff's *Work of the Digestive Glands*, Crile's *Origin and Nature of the Emotions*, Cannon's *Bodily Changes in Pain, Hunger, Fear, and Rage*, Stanley Hall's *Synthetic Genetic Study of Fear*, and the illuminating studies on the vegetative nervous system and the ductless glands. The mental aspects of these cases can be understood by a study of the writings of such psychopathologists as Dubois, Déjerine, Prince, Sidis, and others.

PROGNOSIS AND TREATMENT.

The prognosis of this disorder varies with the duration and treatment. It has been mentioned that a true psychoneurosis or minor psychosis may blossom forth. The debilitated condition may predispose to tuberculosis or bring such a latent condition to the fore. Likewise the general resistance to physical disease (influenza, etc.) may be lowered. In all, the individual makeup, its type or reactivity, is exceedingly important. If the condition has not been permitted to advance to these complications, the prognosis is excellent in all cases, provided that proper treatment is instituted.

A thorough knowledge and understanding, to be sure, is essential. A thorough and satisfying examination is not only a desideratum, but is necessary. The history of the case and its evolution having been unearthed, and physical causes excluded as the original factors, the matter is thoroughly gone over with the patient and the origin and evolution as elaborated earlier in this paper are explained to him so that he understands and believes it. Although hypnosis and the hypnoidal state may be here added to our therapeutic armamentarium, I have not found it necessary to resort to it in these cases. The patient must understand that you realize that his symptoms are real, not imaginary, but that they are due to insomnia plus worry concerning his symptomatology —in other words, emotionalism; that this worry tends to reproduction and maintenance of his symptoms, and the latter to increase his emotionalism; that the insomnia and some of the symptoms first made their appearance because of the worry about another situation, which, having been disclosed, is now reviewed with him, and which in the course of time was displaced and forgotten; that not having understood the historical background of his present trouble, nor having seen the relationship between the first cause and his present condition, it was but natural for him to endeavor to explain his condition by certain vague fears and anxieties; that if he now endeavors to control his useless worry and emotionalism, the symptoms will be gradually lessened until they disappear. You must, however, assist him by medication. The insomnia must be prescribed for, one of the usual hypnotics being employed. I do not believe in withholding hypnotics in these cases when they are clearly indicated, since the insomnia is the main cause of the other symptoms. Of course the diurnal emotionalism plus the toxic state resulting from disturbed digestion and general metabolic upset are also potent factors to be considered. Hence hydrotherapy, rest, plenty of food and water, treatment for the constipation, headache, and the like may be called for. It will be found, however, that a thorough understanding of the condition, with treatment of the insomnia, will soon, in a week or more, varying with the case, lead to rapid improvement. If a true psychoneurosis has come into being, the treatment is so much the more difficult.

A condition similar to that here described occurs in the early stages or in the course of the major psychoses, such as dementia præcox, manic depressive psychosis, and general paresis, this being frequently due to insomnia or becoming a part of the general picture of toxemia, as, for example, in general paresis.

If the patient himself realizes the cause of his condition, whether vaguely or clearly, the treatment is so much the easier and results are so much the more rapid.

DIAGNOSIS.

Such states of asthenia with its symptom complex as have been here mentioned should in all cases be differentiated from the syndrome of asthenia due to other causes—tuberculosis, arteriosclerosis, syphilis, etc. For this the history is of the greatest service and may be the means of preventing us from making many unnecessary laboratory and clinical tests. In some cases, where the history is not positive and is of too long duration, such tests may be indicated and indeed should be instituted when the least doubt or suspicion exists.

CONCLUSION.

Worry over somatic or external factors may lead to insomnia and the syndrome of asthenia. Worry concerning these symptoms may now take the place of the original causative factor, the patient as a rule not appreciating the relationship. This may be the starting point of true psychoneurotic states. The diagnosis is easy, with the aid of the history and the exclusion of physical disease as the primary cause. Prognosis in uncomplicated cases is most favorable, treatment being simple and results prompt. The mental factor should be thought of, investigated, and weighed in every case of the asthenia syndrome, especially when no apparent cause exists. Insomnia is most potent in producing symptoms and must be boldly and unhesitatingly treated by drugs and otherwise. In these cases successful treatment means that we are frequently aborting or nipping in the bud, so to speak, psychoneuroses and minor psychoses.

Owing to lack of space specific case histories are not here cited. In typical cases, however, it will be found that the brief description of the evolution and symptomatology of the syndrome given is typical and accurate and applicable to practically all such cases. Naturally, there is considerable variation in symptomatology, depending upon the age of the patient, the duration, the special circumstances of the case, and the type and severity of reaction, physical and mental, of the person affected.

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DR. S. WEIR MITCHELL.*

A Short Sketch of His Life,

By W. A. Boyd, B. S., M. D.,
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Silas Weir Mitchell was born February 15, 1830, in Philadelphia. He was the son of Dr. John Kearsley Mitchell and Matilda Henry, and came of sturdy Scotch stock who had lived in Virginia before moving to Pennsylvania. His father was a professor in Jefferson Medical College for many years. Weir Mitchell's preliminary education was obtained in the grammar schools of Philadelphia and in the University of Pennsylvania. He left the latter in his senior year on account of ill health.

He felt himself, that in his early studies he was ill taught. He developed slowly and his lessons were a wearisome task. In his *Autobiography* he has recorded that his education began and almost ended in the books of the Philadelphia Library. There he was taken by his father after his mother had locked up the copy of the *Arabian Nights' Entertainment,* which he found and which she discovered him reading.

It was his father's influence which carried him through his teens and enabled him to break the bar of physical weakness and to lay a foundation for the strength of the future in four years spent in a boat with rod and gun upon the rivers near Philadelphia.

He graduated, in 1850, after two years' study at the Jefferson Medical College. His medical education was such as was customary at the time and in no way remarkable. His graduating thesis was entitled *The Intestinal Gases.* His father desired him to become a surgeon, but the idea at first was horrible to him and he fainted so often at operations that he began to despair; but by continually assisting at the surgical clinics he overcame by degrees his horror of blood and pain.

He studied in Paris in 1851 and 1852, and although interrupted much by illness, it was a broadening experience. The decade following his return from Europe was devoted to a growing, but not too engrossing general practice.

In 1852, at the age af twenty-three years, he published his first medical paper. In September, 1853, he was elected a member of the Academy of Natural Sciences, and, in 1857, was one of the founders of the Pathological Society.

In 1862, he entered the army as an assistant surgeon and served until the end of the war. Soon after the war broke out Surgeon General Hammond, at Mitchell's suggestion, established some special hospitals, and during the Civil War Mitchell was in charge of Turner's Lane Hospital, Philadelphia, where he established a special ward for nervous patients.

He contributed much to medical literature. His first book, entitled *Gunshot Wounds and Other Injuries of Nerves,* was written in collaboration with Keen and Moorehouse, and published in 1864. His work, entitled *Injuries to Nerves and their Consequences,* was published in 1872, and his classical monograph, *Fat and Blood,* in 1877; the latter has been translated into French, German, Italian, and Russian.

In 1859, with Hammond, he investigated the arrow poisons, corroval and vao, and was the first after Abbé Fontana and Bonaparte to investigate serpent venoms. With Edward T. Reichert, he isolated the diffusible globulins of the venoms, his studies having an important bearing upon the more recent work of Fraser, Calmette, Keyes, and Flexner and Noguchi. In 1869, he pointed out the coordinating functions of the cerebellum, and with Morris J. Lewis demonstrated that the knee jerk can be reinforced by sensory stimulation.

His book, *Injuries of Nerves and their Consequences,* contains the earliest distinct accounts of ascending neuritis, the treatment of neuritis by cold and splint rests, and the psychology of those who have suffered amputations. He was the first to describe erythromelalgia or red neuralgia, and postparalytic chorea, and, with William Thompson, was the first to emphasize the importance of eye strain and astigmatism as causes of headache. In 1875, he introduced a treatment of nervous disease by prolonged rest in bed, with such adjuvants as optimum feeding, massage, and electricity, the so called "Mitchell rest cure." He was also the first to study the effect of meteorological changes upon traumatic neuralgias, particularly in old amputation stumps.

He was twice president of the College of Physicians and Surgeons, Philadelphia, and was a member of the leading medical and scientific societies both in this country and abroad. He received many honorary degrees, among them being an honorary M. D. from Bologna, and LL. D. from Edinburgh, Toronto, Harvard, Princeton, and Jefferson Medical College.

In 1882, he entered upon his career as a writer of fiction. Some of his novels are *Hugh Wynne, Dr. North and His Friends, Circumstance, When All the Woods are Green, Ronald Blake, The Red City, Far in the Forest, Florence Trescott, The Case of George Dedlow, The Autobiography of a Quack,* and *Westways.* He also wrote several books of verse, among them being *Herndon, The Physician, The Birth and Death of Pain,* and *A Doctor's Century.* His writings, both scientific and imaginative, are fascinating, his style is polished, and his diction finished.

Dr. Charles W. Burr, in his memorial notice of Doctor Mitchell in the *Transactions* of the American Medico-Psychological Association, writes: "The three great qualities of Weir Mitchell were his clearness of mental vision, his emotional sanity, and his capacity for work."

In the Memorial Addresses and Resolutions, Dr. William H. Welsh writes: "Many of his novels contain descriptions of doctors, patients, epidemics, and of historical events which are of distinct medical interest and value." In the same volume, Dr. James C. Wilson says:

> He was certainly the most accomplished physician of our times. In science, poetry, letters, history, and every grace of social life he achieved unusual distinction. He

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*Read before the Baltimore Neurological Society, April 20, 1916.

served his country and mankind by brilliant original investigations during the Civil War, and from his earliest days devoted himself to original research, and by example and suggestion inspired others to engage in similar work; but it was as a practitioner of the art of medicine that he manifested those qualities of mind and heart that enabled him for nearly half a century to command the admiration and affection of grateful patients and appreciative professional colleagues in almost every civilized country.

Doctor Mitchell was twice married. He died, January 4, 1914, of influenza after an illness of about one week. He was eighty-four years old.

114 West Franklin Street.

SPASMUS NUTANS.*

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Case I. Raymond M., ten months of age. No history of epilepsy, convulsions or mental disorders in family. Both parents healthy. Patient was first child, full term, normal delivery, breast fed every two hours; for past five months had also been getting potatoes and bread. Weight not known at birth. First tooth erupted at six months of age; first sat up at six months, began to creep at seven; no history of convulsions or aural discharge. Mother had noticed that for the past two months, the child shook his head from side to side almost continually during the day. She had not noticed it while the child was asleep. The stools varied from day to day, being green and curdy at times, while the child was constipated occasionally.

Examination showed a well developed child, weighing twenty-three pounds. Head was well shaped, normal in size, anterior fontanelle open; mouth showed three teeth. Eyes did not show nystagmus; accommodation of pupils to vision and light was sluggish. There was a nodding of the head from side to side. The spasms were rhythmical and about forty or fifty to the minute. Occasionally they would cease for a minute or two, but would soon be resumed. Spasms of both hands, of the same character as of the head, were also present. The child was conscious. The reflexes were normal. General examination was negative, except for enlargement of the epiphyses and a distended abdomen.

The mother was advised to wean the baby, as an examination of her milk showed it to be of poor quality. The child was placed on oatmeal gruel, orange juice, white of egg, and whole milk. He also received thyroid extract, one tenth grain twice a day. This was continued for ten days, when elixir of the glycerophosphates of lime and soda, one half dram three times a day, was substituted for it. The thyroid extract was gradually increased until one grain three times a day was given. The lime and soda was given on alternate weeks. The child gradually improved and in about six weeks the spasms ceased. The mother was instructed as to the proper diet and told to return for observation. Six months later, the child was brought to the clinic by the mother, who reported that the spasms had not returned, that the child had gained in weight, and that he then had eight teeth.

Case II. Iris S., fifteen months of age. Family history negative as to syphilis, chorea, epilepsy, or convulsions. Normal delivery at full term; breast fed. Teething began at eight months; child sat up and crept at about the same time. Was just starting to walk. Examination showed a colored child with typical rhachitic symptoms. Head was enlarged, anterior fontanelle open, enlarged epiphyses, pot belly; chest showed rhachitic rosary; child had eight teeth. There were no perceptible tender spots anywhere.

There was a lateral nodding of the head, rhythmical and slow in time. The mother had noticed these spasms for several months. No nystagmus was present. Reflexes were normal.

The mother was advised to wean the child and add fruit juices, cereals, and whole milk to its diet. It also received the compound syrup of hypophosphites. No further history was obtainable, as the child was not returned to the clinic.

Case III. Horace A., two years old, youngest of nine children; no history of syphilis, epilepsy, chorea, or similar disease in family. Full term, normal delivery, breast fed for one year. First tooth appeared at five months of age; did not walk as yet; had been creeping since eight months old. Mother said child was restless at night and that it shook its head when looking at objects. The nodding was not present when the child was asleep. It sweat about the forehead at night.

Examination showed a poorly developed boy, head slightly larger than the normal for his age, anterior fontanelle not completely closed; mouth showed twelve teeth. No lateral nodding of the head was seen until the child's attention was drawn to a particular object. As the child tried to accommodate vision and concentrate its attention upon the object, which in this instance was a pencil, there was a slow rhythmic nodding from side to side, accompanied by a nystagmus of both eyes. The spasms ceased when the pencil was removed from the child's field of vision. The nystagmus was observed to be coincidental with the spasm of the head and at no time was seen independently. There were no spasms noticeable in other parts of the body. The reflexes were normal. General examination demonstrated a typical case of rickets. Heart and lungs were normal. Abdomen was enlarged, spleen normal, liver enlarged, epiphyses enlarged, legs bowed, cervical glands enlarged.

The child's diet was regulated. He was also placed on thyroid extract grain one half twice a day, alternating every week with elixir of glycerophosphates of lime and soda, one dram three times a day. The thyroid was increased gradually to one grain three times daily. The spasms ceased in about two months.

Spasmus nutans is a rare functional neurosis found in children, which consists of an almost continual nodding or shaking of the head. It is also known as head shaking, head jerking, head rotating, nodding spasm, and gyrospasm. It was first observed, in 1850, by Henoch and Romberg, but it was not until Raudnitz had made an exhaustive and detailed study, that the complete clinical picture was appreciated. There have been some later contributions to the literature on the subject, but these are meagre and have not supplied any additional knowledge.

In a recent compilation of 4,000 general cases coming under the personal observation of the writer at the Polhemus Memorial Clinic, which has not as yet been published, the foregoing three cases are the only ones of this type of nervous hyperirritability found in children. The age incidence is between six months and three years. The majority of cases reported have been in children between six and twelve months of age. Cases in the female sex predominated.

In children with this condition, we find a slow rhythmic shaking or nodding of the head, the direction taken being either from side to side or up and down. In some cases there is seen a rotary movement of the neck. Each nodding revolution has the regularity, precision, and time of the pendulum of a clock. Generally, there are no other rhythmic movements or other phenomena of nervous irritability, though in some cases, as in one of our series, there may be an accompanying spasm of an arm or leg. The mentality of the child is not impaired. During the attack there is no loss of consciousness, differentiating this condition from epilepsy and similar convulsions of childhood. The spasms may be continuous for some variable length of time, cease, and then be resumed. In many instances, attacks are brought on by the child turning its head, or concentrating its attention, in an endeavor to look upon a particular object, or in a certain direction.

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*Read before The Brooklyn Pediatric Society, April 26, 1916.

In the majority of cases reported, nystagmus has been associated with the spasm of the head. Some observers, among them Raudnitz, consider this more than a coincidence and hold that nystagmus is present in every case of spasmus nutans, and that their contentions can be proved if every case is seen long enough and studied minutely. In two of the cases of our series, nystagmus was not observed. In the case that was studied through practically the entire course, this eye condition was not seen by either the mother or the writer.

There is a difference of opinion among observers as to whether spasmus nutans is a separate clinical entity. It is accepted, however, that it is in no way connected with or related to epilepsy, tetany, or any tetanoid hyperirritability of the nervous system.

Raudnitz lays great stress upon dark rooms and poorly lighted dwellings as being of important etiological significance, asserting that this condition is due to an overexertion of the eye muscles produced by insufficient or bilateral illumination. He explains that under these bad hygienic conditions the child, in order to look at any particular object, has to turn the eyeballs upward or to one side so as to get the proper angle of light. He demonstrated that the spasms disappeared upon bandaging the eyes. While this theory has been accepted in part by others, it is contended that the child must primarily be poorly nourished and physically below par. It has since been proved that in the majority of instances the children affected are rhachitic.

Stamm has demonstrated that there is a "mechanical irritation of certain portions of the cerebral cortex due to a hyperemia of the internal periosteum of the skull resulting from rhachitis." Hochsinger also arrived at the conclusion that the condition is due to rickets, because in fifty cases that he had studied, he found rhachitic changes in all. He is of the opinion, therefore, that the condition should be classified as one of the hyperirritability convulsions of childhood associated with rickets. In each of the three cases reported in this paper, we had to deal with a rhachitic child.

Spasmus nutans is insidious in its onset, and may not be noticed in the first stages. There may be an occasional shaking of the head several times during the day, or perhaps the child is noticed nodding its head after some excitement. Gradually, the spasms appear oftener, the intervals between them shorten, and the active nodding lasts for a longer period. In some instances, the spasms do not appear unless the child's attention is directed to some particular object, and as the child endeavors to concentrate its vision, shaking of the head supervenes.

The course of the condition varies; the longest period in which it persisted was reported to have been two years. No deaths have ever been reported so far as the writer could ascertain in his perusal of the meagre literature on the subject. Our knowledge of definite pathological findings is limited. It is generally accepted that it is purely functional during an irritation of the nervous system subsequent to rickets. The prognosis, therefore, is very good as to the ultimate cessation of the spasms.

The treatment should be directed toward the primary cause. The malnutrition should be corrected, the diet regulated, and if the illumination of the dwelling is at fault this should be remedied. Fresh air and sunshine are imperative. The rhachitic condition can best be treated by the usual remedies. We have found thyroid extract efficacious. This may be given alone or in conjunction with calcium lactate. The elixir glycerophosphates of lime and soda may be given alternately with the thyroid.

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PRIMARY PERITHELIAL SARCOMA OF SPERMATIC CORD.

With Report of a Case,

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The comparative rarity of new growths of the spermatic cord and the paucity of information in the literature on the subject warrant reporting such cases as come under observation. The textbooks on surgery and pathology make only brief mention of these highly interesting growths. Among 110,000 male patients admitted to the London Hospital in twenty years, Howard collected only sixty-five cases with neoplasms of the spermatic cord. C. Ciaccio also speaks of the extreme infrequency of this condition and cites the statistics of Patel and Chalier as the best. They collected altogether 110 cases, of which thirty-seven were lipomas, seven myomas and myofibromas, twenty sarcomas, and fourteen of mixed type, one carcinoma and eighteen of indefinite variety. Von Schutter reports two cases of tumors of the spermatic cord and emphasizes the scarcity of these growths.

Various types of tumors have been found in the spermatic cord. They include lipoma, fibroma, myoma, myxoma, myxolipoma, myxofibroma, sarcoma and carcinoma. Of the benign growths lipoma is of most frequent occurrence, and sarcoma takes first rank among the malignant neoplasms. Malignant growths of the spermatic cord may develop at any age—one case of a boy of fifteen years is on record—but middle aged and elderly men chiefly exhibit these growths.

Very little is known of the etiology of spermatic cord neoplasms. Recent injuries are credited with being the causative factors in a small percentage of cases, and it is denied that venereal disease plays a provocative role. It is stated by many authors that neoplasms of the spermatic cord usually develop secondarily to such growths in the testicle, but it is conceded by some that the primary origin of the tumor may be within the cord itself.

The case reported here is of interest because the growth seems to have had its origin in the spermatic cord, and because a venereal disease with an unusually severe complication manifested itself only a short time prior to the detection of the neoplasm itself.

Case. The patient, a young man of twenty-eight years, had no previous illness, except a left sided inguinal hernia, for which he was operated on at the age of fourteen years. He contracted his first urethritis two weeks before coming under observation. This affection seemed to have been very mild and received little attention till swelling, accompanied by severe pain, set in in the right ankle and in two of the finger joints of the left hand.

When he presented himself for examination, the findings were a slight mucopurulent discharge from the urethra, showing under the microscope the Neisser organisms and pus cells. The testicle on the right side was normal, that on the corresponding side smaller, round, and hard. The epididymides, spermatic cords, prostate, and seminal vesicles were negative. The right ankle was considerably enlarged, very sensitive to the touch, and locomotion was attended by excruciating pain. Two finger joints of the left hand were also affected, but in a milder degree. There was some elevation of the temperature and gastric distress —the latter no doubt due to the ingestion of fairly large doses of oil of santal.

The patient was confined to bed under treatment, and six weeks later, was walking around with considerable ease and had no demonstrable evidence of his urethritis. Urgent business at this time called him out of town for a few days, during which he indulged in a great deal of walking. Upon his return to the city the left testicle became swollen and painful. He was again put to bed, with appropriate treatment, directed toward the affected organ. In spite of numerous measures instituted to reduce the inflammation of the testicle, the process did not abate; the pain increased in severity to such an extent that slight relief and very little sleep could be induced only by the administration of opiates. A septic temperature set in, and it became evident that a radical procedure would have to be adopted.

Under general anesthesia an incision over the affected side of the scrotum revealed a foul smelling soft mass occupying the entire left scrotal cavity. This was removed, the cord ligated as high up as possible, and the cavity packed. The patient made very good progress after this and left the hospital two weeks later. The mass removed was submitted to Dr. Louis Heitzman for examination, and he reported as follows:

> The most striking gross appearance is that of hemorrhagic extravasation, pervading practically the entire testicular structure. Upon microscopical examination hemorrhagic areas are found everywhere, both in the interstitial connective tissue and within the seminiferous tubules, while here and there variously sized blood clots are present. Beside this hemorrhage both the connective tissue and the tubules are infiltrated with inflammatory corpuscles, so much so that the epithelia of many tubules are destroyed, being replaced by pus corpuscles. These changes are more or less universal, including the tunica albuginea, the corpus Highmori, and the different seminiferous tubules. Nowhere is there any evidence of caseous degeneration as seen in tuberculosis or of malignant formation. Diagnosis: Hemorrhagic and suppurative orchitis.

For a year the patient went about his business and then returned, complaining of a mass in the left side of the scrotum, which was giving him slight pain at times and much anxiety. This growth, he stated, became evident about two months after the orchidectomy and was increasing in size.

At this examination the patient's general physical condition was entirely satisfactory and there was no trace of his former urethral troubles. As the scrotum was visualized it appeared to contain two testicles; palpation, however, showed a normal organ on the right side and a mass about the shape and size of a small egg in the stump of the left spermatic cord, adherent to the scrotal wall and painless to manipulation. The glands in anatomical relationship with the part under consideration were not enlarged; a rectal examination showed no abnormal changes and a Wassermann reaction on the blood was negative, as was also a tuberculin test.

A diagnosis of tumor of the spermatic cord was made and the growth was removed. The cord beyond the mass was not involved, and the stump was cauterized with pure phenol. The scrotal cavity showed no signs of suppuration and the incision was closed up, leaving only a small space for drainage. The patient made a rapid and uneventful recovery, leaving the hospital one week after admission.

Dr. Douglas Symmers, of the University and Bellevue Hospital Medical College, who examined this tumor, says, "Specimen consists of an egg shaped mass. On section numerous areas of necrosis are evident and in fact the mass is so soft that frozen sections cannot be made. Paraffin sections, however, reveal the presence of malignant growth, the prevailing cell of which is distributed radiately around thin walled bloodvessels and is perhaps best provided for under the designation of perithelioma or perithelial sarcoma." He assumes that the primary growth was in the testicle, but ends by saying, "The fact remains, however, that the growth now under consideration is malignant. Diagnosis: Perithelial sarcoma of the spermatic cord."

The interesting question here is the primary origin of the neoplasm. Had there not been a pathological examination of the removed testicle, the assumption that the growth had its inception in that organ and that the spermatic cord was only secondarily involved, would be warranted in view of the fact that this is the usual mode of development of these tumors. However, since a very thorough examination of the removed testicle by a pathologist of unquestioned ability, failed to show evidence of malignancy, it must be argued that in this instance the spermatic cord was the primary seat of the growth.

Another salient point in this case is the etiology. Since recent injuries are looked upon as the causative factors in the production of tumors of the spermatic cord in about twenty-five per cent. of the cases, might it not be assumed that the suppurative process in the testicle and the surgical intervention acted the role of trauma in the subsequent development of the neoplasm in the spermatic cord?

More than two years have elapsed since this growth was removed, and the patient is enjoying excellent health and does not show signs of recurrence. From the standpoint of the patient's age—only twenty-nine years at the time of the operation—his illness before the tumor developed and his subsequent good health, the case is unique.

The writer takes this opportunity to thank Dr. Terry M. Townsend and his associate, Dr. Julius J. Valentine, for their kind help in the first operation, Dr. Louis Heitzman for his examination of the first specimen, and Dr. Douglas Symmers for the examination of the tumor removed from the stump of the spermatic cord.

24 East Forty-eighth Street.

HEART DISORDERS IN CHILDREN.

By J. Epstein, M. D.,
New York.

Disorders of the heart in early life differ from disorders of the heart in later life in their etiology, pathology, symptoms, and signs. A conception of cardiac diseases and disturbances in the child based solely on a knowledge of cardiac abnormalities in the adult will frequently lead to errors in diagnosis.

Infancy and early childhood is the age of congenital heart lesions, as a result of malformations or endocarditis during intrauterine life. Youth is the age of inflammatory heart lesions due in the majority of cases to rheumatic infection. Adult life is the age of degenerative heart lesions which usually follow such chronic diseases as arteriosclerosis, chronic interstitial nephritis, syphilis, alcoholism, plumbism, and chronic bronchopulmonary affections. Functional cardiac disorders are more frequent in early life, while structural cardiac changes are more frequent in later life.

The subjective symptoms of cardiac diseases and disturbances such as faintness, tiredness, palpitation, dyspnea on exertion, and precordial pain or distress are not as significant in the diagnosis of heart diseases in children as in adults. Children, as a rule, pay little attention to their subjective feelings of discomfort or to symptoms of ill health, because they have little knowledge of the normal functions of the body and of the normal standard of health. The most important symptom of cardiac disease in children is the feeling of tiredness. These children, when observed, are found to get tired out on the least exertion. They are dull, apathetic, sleepy, and do not indulge much in play with other children. In cases of functional cardiac disorders, the children are usually bright, nervous, irritable, unable to sleep well at night, and they cry frequently.

In the diagnosis of cardiac disorders it must be primarily determined whether they are due to structural or functional abnormalities; the latter are more frequent. In every case the heart should be carefully examined for signs of endocarditis, myocarditis, pericarditis, and functional disorders. The mistake is frequently made in the routine physical examination that the heart is examined mainly for murmurs of endocardial origin, while signs of myocarditis, pericarditis, and functional derangements are entirely overlooked. The normal functions or attributes of the heart which are essential to a normal circulation are:

1. Stimulus production; the power of producing or originating a stimulus in the sinoauricular node which is the starting point for cardiac action and controls its rate and rhythm.
2. Excitability or stimulus reception; the power of the heart to receive a stimulus.
3. Conductivity or stimulus conduction; the power of the heart to convey the received stimulus from one part to another.
4. Contractility; the power of the heart to contract when stimulated.
5. Tonicity; the power of the heart to retain a certain amount of contraction even during cardiac rest or diastole.
6. Coordination of functions; the unity of action of all the cardiac functions.

One or more of these fundamental functions of the heart may become abnormal as a result of structural changes or nervous instability, and give rise to a group of disorders of which the most important are the following:

1. Sinus arrhythmia, tachycardia, bradycardia, auricular fibrillation, and auricular flutter.
2. Extrasystole.
3. Heart block.
4. Pulsus alternans.
5. Functional dilatation and functional murmurs.
6. Incoordination of functions.

Sinus arrhythmia, or youthful irregularity, or vagus irregularity is common in children. This irregularity arises in the sinoauricular node, which is the normal pace maker of the heart and is under the control of the vagus. It is characterized by rapid heart action during inspiration and slow heart action during expiration, normal rate on holding the breath or on very rapid breathing. There may be occasional missed beats or a long pause between normal beats. Tachycardia in children is frequent during emotion, excitement, pain, and fever. Bradycardia is usually present during convalescence from acute infectious diseases and in jaundice. Extrasystoles are present in children as a result of nervous irritability. Heart block and pulsus alternans are uncommon. Dilatation of the heart due to a loss of cardiac tonicity is not infrequent in children, and on percussion may be mistaken for a sign of endocardial or myocardial disease. Functional murmurs are common in children. The exact origin of such murmurs is not well known, but an atonic condition of the heart is probably the underlying cause in the majority of cases. The term, functional murmur, as commonly used to indicate that a certain murmur is not organic or valvular, does not mean anything. In order that a murmur may be called functional it must be assumed that it is caused by an abnormality of a certain cardiac function. Loss of that cardiac function called tonicity will give rise to cardiac atony, dilatation, and murmurs which may then be called functional or atonic murmurs. These murmurs are inconstant, soft, and short, limited in area of transmission, and systolic in time. There is usually no history of rheumatic infection, but there is evidence of malnutrition, anemia, or neuropathy. A functional or atonic murmur should never be considered as a sign of any local or systemic disease. It has no diagnostic value beyond the fact that it indicates a general loss of muscle tone in which the cardiac muscle shares. The organic murmurs are persistent under all conditions of rest and exercise, loud, harsh, well conducted, and either systolic or diastolic. There is usually a history of rheumatic or other infection. The congenital murmurs are present during infancy and early childhood. They frequently have no exact relation to the normal sounds of the heart and are loud and rasping. The right side of the heart is usually enlarged, and there may be general cyanosis and clubbing of the fingers.

While a murmur may be a sign of heart disease, it may also be present in a heart of normal structure, and the absence of a murmur does not indicate a normal heart. A murmur in itself is of no significance, except in relation to the general condition of the patient, the size of the heart, the character of the normal heart sounds, and the condition of the pulse. The most important sign and symptom of cardiac health is its functional capacity as a working organ to carry on a normal circulation under conditions of rest and exercise.

In the adult, abnormalities of function are usually part of abnormalities of structure, while in the child a number of functional abnormalities may be present without structural changes, but due to an as yet unstable nervous system and lack of nervous control. Since functional cardiac disorders are common in children, and may give rise to the same abnormalities which are present in structural cardiac diseases, including dilatation and murmurs, it is of the utmost importance correctly to differentiate structural disorders due to anatomical changes from functional disorders due to imperfect nervous control and balance.

222 East Broadway.

GRAVES'S DISEASE.

A Case with Postoperative Amblyopia.

By Chester Henry Keogh, B. A., M. D.,
Chicago.

Case. In 1914, S. M., aged forty years, single, American, came under my observation. The following signs were present: Bilateral exophthalmos; enlarged thyroid gland; tachycardia, pulse about 130; marked tremor; dyspnea; dyscrasia. The patient complained of insomnia, and "extreme nervousness." Diagnosis: Graves's disease.

As at that time surgeons generally were insisting that all cases of goitre, including the exophthalmic variety, were properly surgical cases, and as the patient was then easily able "to walk around the block," an equivalent of four city squares, without excessive fatigue, a surgeon was consulted. After a reasonable period of rest in bed by the patient, a partial thyroidectomy was performed in October, 1914.

The results of that operation were not satisfactory to the patient, so without consulting the operator, and without my knowledge, she went to another surgeon, who performed a second operation upon that portion of the thyroid gland remaining, May, 1915. A psychosis, emotional instability, nausea, vomiting, severe headaches, and blindness immediately followed the second operation.

Quite recently the patient came again under my observation. Emotional instability had then practically disappeared, as had also the nausea and headaches. Nor was there longer in evidence goitre, tremor, or extreme tachycardia, though the pulse frequently then observed was about 104, and so continued. She complained of weakness and partial blindness. As she described her disability, "everything seemed hazy."

Surgeons have called attention to the frequent sympathetic or synchronous association of disordered hypophysis and thyroid gland, and with a thought of finding, perhaps, the hypophysis a cause of the blindness, the patient was sent to an x ray laboratory. Four skiagraphs, anterior, posterior, right and left lateral exposures, revealed nothing abnormal, except possibly a bending slightly forward of the right posterior clinoid process.

An ophthalmologist reported these findings: 1. Atrophy of the optic nerves. 2. Marked contracture of the fields of vision in both eyes; color fields contracted. A perimetric chart was made of the condition. 3. No evidence of existing choked disc or other signs of intracranial pressure.

Further observation of the patient provided the following data: Carbohydrate tolerance; levulose was given on several occasions, 100 grams, 110 grams, 125 grams, 150 grams. No trace of sugar was detected in the urine. Examination of feces showed no sugar. Temperature, 99.6° F. Blood pressure, 130 systolic. Pulse, 104. Weight, 140 pounds.

Of hyperpituitarism in this case, there is not the slightest evidence. Of hypopituitarism, it has been repeatedly pointed out that, while increased tolerance for carbohydrates may be a measure of hypophyseal gland activity, in hypopituitarism there has been noted, in addition, usually: 1. Lowered systolic blood pressure. 2. Slow pulse. 3. Temperature below 98.6° F. 4. Increasing weight of patient. Of hyperthyroidism, there is now no evidence, though it is interesting to note that Geyelin has recently pointed out a lowered carbohydrate tolerance in twenty-seven cases of hyperthyroidism.

Of hypothyroidism, or myxedema, many observers have pointed out the increased tolerance for carbohydrates, as in this patient, while Dr. J. G. Kiernan has repeatedly observed in purely nervous disorders increased as well as diminished tolerance for carbohydrates in certain unstable individuals. In this case the contracted fields of vision and the scotomata for color might be explained by the condition of simple emotional instability, were it not for the findings of the ophthalmologist, who pointed out the bilateral atrophy of the optic nerves; though, whether the atrophy is primary or secondary, he declines to express an opinion.

One competent observer, in his cases of hypopituitarism, has repeatedly referred to the presence of primary atrophy of both optic nerves, and in some of his cases in which primary optic atrophy was present, operation upon the hypophysis resulted in restoration or improvement of vision.

The optic nerves could not then have been really atrophied, or subsequent regeneration of these nerves must be accepted. Of the latter alternative it has been noted in toxic amblyopia from drinking methylated spirit, improvement in vision followed treatment by the ophthalmologist when optic nerve atrophy had been the accepted diagnosis.

From the foregoing premises, what reason is there to think that in the case of this patient, too, the vision may not have been affected by some form of very severe toxemia?

Intestinal toxemia has not been excluded as an etiological factor in disorders of the thyroid, and why may we not logically assume that most of the phases of the clinical picture in this case may be explained by the existence of some as yet definitely undetermined form of intestinal toxemia?

4346 Drexel Boulevard.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXIII.—How do you perform circumcision? (*Closed.*)

CLXXIV.—How do you treat ivy poisoning? (*Answers due not later than September 15th.*)

CLXV.—How do you treat furunculosis? (*Answers due not later than October 16th.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXII has been awarded to Dr. J. Otis Carrington, of Malden, Mass., whose paper appears below.

PRIZE QUESTION NO. CLXXII.

THE RESUSCITATION OF PERSONS APPARENTLY DROWNED.

By J. OTIS CARRINGTON, M. D.,
Malden, Mass.

Keep all crowds away to allow as much air as possible. Loosen, or better, remove all clothing or constrictions about the neck, chest, and waist, and try to rid the air passages of any water, mud, or mucus present. Clear the mouth of any foreign bodies like false teeth, etc., and see that the nares are not occluded. Pull the tongue forward and fix it there by passing a band around under the chin. Then turn the patient over, face downward, with a roll of clothing under the abdomen. By making firm pressure upon the loins, water from the lungs or stomach will be expelled. If the patient does not breathe after repeated efforts of this kind, resort to artificial respiration.

The pulmotor or lung motor should be the first thought as a means to resuscitate a person apparently drowned, and every effort should be made to obtain one. It should be used diligently and persistently until respiration becomes established. Oxygen should be used in conjunction, when available.

When means for mechanical resuscitation is not at hand, waste no time in waiting for its arrival, as every minute counts. Proceed at once with artificial respiration.

Schäfer's method. Place the patient on his abdomen with his face turned to one side and his tongue fastened to prevent choking. The physician then kneels at one side of or astride the patient, and placing his hands on the floating ribs so that the heel rests at about the posterior axillary line, presses upon the thoracic walls. This drives out any air in the chest and any fluid or mucus which may obstruct the upper air passages (expiration). Pressure is then removed and the natural elasticity of the chest wall causes inspiration. Repeat the movements about sixteen times a minute.

Sylvester method. Lay the patient on a hard or flat surface, kneeling behind his head. Grasp the arms at the elbows, bringing them upward and outward, so that they follow the plane on which the body is extended. This movement causes expansion of the chest or inspiration. After a moment's pause the arms are lifted toward each other, and then, while still approximated, are pushed down upon the floating ribs, upon which they are pressed. This drives the air out of the chest—expiration. Repeat these movements about sixteen times a minute. In this method the patient lies prone, the tongue is held to one side of the mouth and protruding, and a roll of clothing is placed beneath the shoulders.

Laborde's method is rhythmic traction of the tongue. Grasp the tongue with forceps and pull it well forward and upward from ten to fourteen times a minute until voluntary respirations occur. Such a movement causes the sensory nerves of the tongue to carry impulses to the phrenic nerve, which in turn causes the diaphragm to contract. This method is very successful and is most worthy of trial. When one tires physically of the Schäfer or Sylvester method, in the interim employ Laborde's method. It saves time and may bring success.

Artificial rhythmic compression of the heart, in addition to the various methods of artificial respiration, is a great help.

Never give up a patient so long as there is the faintest cardiac action. Pulsation may be obtained by deep pressure over the abdominal aorta just below the ensiform cartilage when it cannot be obtained elsewhere.

When breathing has become established, carefully remove all wet clothing and rub the body thoroughly dry. Wrap the patient in dry, warm blankets with heat to the extremities and restore circulation by friction to the limbs. When the patient is able to swallow, give small quantities of hot coffee, whiskey, or brandy as stimulants. Keep in bed, in a quiet, well ventilated, cheerful room, avoiding too many visitors for a while, and give a nutritious diet and tonics.

Dr. L. K. Hirshberg, of Baltimore, observes:

In fifty-seven water accidents between June 1 and July 1, 1916, in and around New York, forty-nine persons were drowned and only eight were resuscitated. Proper treatment and aftercare would have saved several of the others, and compulsory swimming lessons in childhood would have perhaps saved nearly all. Prevention and preparedness, however, are commonly absent.

Universal and compulsory swimming lessons for all school children, universal training in the prone pressure, manual method of artificial respiration for all grown ups, will in the first instance prevent drowning, and in the latter accomplish more for resuscitation from drowning and other kinds of asphyxiation than is possible by any kind of lung motors, pulmotors, or other mechanical apparatus. Professor Yandell Henderson, head of the department of physiology of Yale University, vouches for this.

Nevertheless, while this is true as a universal method of training for drowning emergencies, artificial respiration with apparatus of a mechanical type surpasses the manual method in that the device is able to furnish the normal volume of pulmonary air, while the hands are not thus capable. Be this as it may, the quick and immediate application of a poor method is better than the delay of two or more minutes necessary at times for a perfect mechanical contrivance, such as the pulmotor or lung motor. The very fact that these devices are available and only five minutes away has resulted in the neglect of hasty and helpful hand pressure respiration. The mechanical devices, therefore, should never be farther than two minutes away from possible drowning accidents. Moreover, since all that any kind of a mechanical aid yet invented affords is artificial respiration with air rich in oxygen, it should be so simple as to produce no undue expectations of efficiency or magic. Physicians as much as nonmedical laymen are given to exaggerate what can be accomplished with these devices.

When the victim is taken from the water, not a second's delay, much less a minute or more, should be allowed to elapse before the prone pressure method is applied. To carry the nearly drowned or supposedly drowned person for some distance on shore or to a temporary hospital, instead of treating him at once, is perhaps to take away his life. Men or animals fished out of water in a drowning condition often have the heart still beating. If this is so and respiration has ceased from the waterlogged condition of the lungs, there is even a better chance of restoring the victim than if the heart has stopped. Even the latter contingency, however, does not present a hopeless problem. The first point is to work against time. This gives the operator the aid of the muscles of the body before they begin to lose their tone and elasticity. After five or ten minutes the tone of the chest and abdominal muscles is very low.

The Sylvester method supplies artificial respiration sufficient to keep the heart beating for twelve minutes, whereas the Schäfer method surpasses this by six to nineteen minutes. The heart will beat from eighteen to thirty-one minutes. Each fraction of a minute which elapses after respiration has ceased in drowning, reduces the chance of restoration by just so much. Beyond ten minutes, according to Professor Meltzer of the Rockefeller Institute and the resuscitation commission, restoration is practically impossible.

The Sylvester method demands that all rough usage be avoided. If respiration has not ceased, irritate the nostrils with pepper or snuff, or even tickle the nose. Splash cold and hot water alternately on the chest and back. If there is no respiration or other sign of life, lay the victim on his back, while one person loosens all clothing. The operator takes his place at the head, with another at his side. The victim is turned then face downward and one or two sharp blows are struck over the shoulder blades. Now the mouth, throat, and nostrils are cleaned of mucus, dirt, and water with a handkerchief, and the patient is turned again on his back, and his tongue is pulled forward and tied to the jaw, so that it will not fall back. All this is to be done quickly, in a few seconds of time. A roll of clothing or a pillow is placed under his shoulder blades, and the operator grasps the arms below the elbows, and draws them upward and outward above the head until they are fully on a line with the body. Held here one second, they are moved back again and pressed firmly against the side and front of the chest for another second. This imitates natural breathing, to wit, about fifteen movements to the minute. Friction of the skin over the legs, arms, and body, toward the heart, is simultaneously carried out and is part of the aftercare. The powers of swallowing are tested by a teaspoonful of warm water and, once established, wine, brandy, soup, and coffee are administered. Sleep is encouraged after the patient is in bed. Hot flannels to the stomach and hot water to the armpits, soles of the feet, and thighs are also helpful.

The Schäfer method is superior to the Sylvester method. The patient is put face downward on the ground and the lifesaver places himself on his knees astride the victim. He places his hands flat over the lowest ribs on each side and then steadily throws the weight of his own body forward on to the ribs in order to cause firm pressure, which must, of course, be gentle and not too powerful upon the victim's chest. In this way water is driven out of the lungs. At once, when it is accomplished, the operator lifts his body slowly away from the ribs to relieve the pressure, but he does not take the flat of his hands from the ribs. The upward and downward motion is repeated each five seconds. In fine, the swaying slowly up and down of the life saver occurs from twelve to fifteen times a minute. This is to be continued for at least a half hour, or until natural respiration returns. While one is doing this, others should be preparing hot flannels, hot water bottles, hot bricks and rubbing of the skin. Professor Schäfer admonishes *against* removing wet clothing or administering restoratives by the mouth until normal breathing has returned. Obviously, the Schäfer method, both in its immediate treatment and in the aftercare, is more certain and should be practised on drowned animals by every one. Nowadays, there is no excuse for either drowning or ignorance of methods.

Dr. Charles C. Henin, of Springfield, Mass., writes:

The treatment of an apparently drowned person consists in removal from the water, freeing the mouth and nostrils, removing foreign bodies, loosening clothing that binds the neck, chest, or waist, squeezing water out of the lungs and stomach with the body partly inverted, and cleansing the base of the tongue from the larynx, either by pressing forward the angles of the jaw or by drawing the tongue forward out of the mouth. The body may then be laid out flat on the back, with a shawl, folded blanket, coat, or block of wood high under the shoulders so as to cause the front of the neck to be put on the stretch.

Now artificial respiration may be tried, and warm blankets, hot bottles or bricks and necessary medicines sent for in the meantime. The simplest way to perform artificial respiration is for the operator to place himself on his knees above the head, seize the arms near the elbows, and sweep them around horizontally away from the body and over the head until they meet above it, when a steady, strong pull may be made upon them for about three seconds. The arms may then be returned to the position alongside the chest and strong pressure now made against the lower ribs for several seconds. These movements should be made at a rate of about sixteen to the minute, should be maintained for one half to three quarters of an hour, and abandoned only when the heart has ceased to beat. Deep pressure just below the end of the breast bone may reveal pulsations in the aorta when they cannot be found elsewhere. As natural respiration begins, the artificial respiration should be timed to it. Ammonia or smelling salts may stimulate it or hot water may be dashed on the chest. Continued rubbing of the body and limbs toward the heart will aid the circulation and produce warmth. Hot bottles, plates, bricks, stones, or even boards will help to give warmth to the body. Twenty to thirty minims of ether may be given hypodermically. As soon as it can be swallowed, teaspoonful doses of brandy or whisky in a tablespoonful of hot water may be given every minute until danger is passed. Use the pulmometer if it is at hand. Weak tea or coffee, or beef tea, should be given after consciousness has returned. Removal requires great care, the head being kept low and respiration constantly watched.

Contemporary Comment

Needless Pets.—Dogs, cats, rats, and mice are the mediums through which much disease is scattered. People are constantly making war on rats and mice from economic necessity, is the timely comment of the *Texas Medical Journal* for August, but they seldom think of them as disease carriers and germ spreaders. There is no possible good that can come from rats and mice. It is more expensive to maintain a few of them about a place than to feed another person, aside from the harm they do in spreading sickness. They should be exterminated even by National, State and municipal action, if that is necessary. New Orleans and some other cities are endeavoring to do this for two reasons: that they are expensive to maintain and that they are responsible for some of the public scourges. The time will come when a city will be ashamed to admit that it has rats or mice in it.

But what about the dogs and cats? They are even worse than the rats and mice, for they are the favorite household pets of the country. They not only have free access to many homes, but are taken into the arms of the women and children of the family, and fondled and caressed, often when they are loaded with disease germs. Dogs and cats are inordinately filthy. Nothing is too dirty for them to get into with their feet and mouths; no place terrifies them because of the diseases that may be lurking there. They delight to roam about questionable places, especially at night, and expect to receive their customary caresses the next day. They are expensive to feed and dangerous to have around. Why will sensible people keep them? This may be regarded as a subject foreign to the scope of a medical journal, but it is written in the hope that the physicians of the country may interest themselves in exterminating these useless household pests.

Prevention of Anterior Poliomyelitis in Indiana.—Dr. J. N. Hurty, secretary of the Indiana State Board of Health, has announced that printed circulars and letters dealing with the prevention of infantile paralysis had been sent to about 600 health officers in Indiana, observes the *Lancet-Clinic* for August 19. The letter, in part, says: "In face of this danger every physician should inform himself in regard to infantile paralysis and in making diagnoses should make a special study of each case, having the disease in view. Advise your people to give special attention to preserving the health of the children. Daily bathing, plenty of fresh air, plain food, exercise and play, plenty of sleep, attention to the bowels; all these make for prevention."

Vital Statistics.—In spite of the almost universal recognition that the registration of vital statistics is imperatively necessary, this country has no reason to be proud of its record in the collection of such data. European countries have kept far more complete and accurate records of births, deaths, marriages, and diseases. The *Lancet-Clinic* (August 19, 1916) asserts that one reason for this has been the pioneer conditions that obtained as civilization marched westward. But now no such excuse is acceptable.

As aids in sanitation and hygiene, the collection of vital statistics is a duty of government no less important than the far less neglected function of collecting taxes. Dr. Cressy L. Wilbur, director of Vital Statistics of the New York State Department of Health, aptly says:

> As people come into closer contact in our crowded communities, vital records are of increasing importance to protect the rights and insure the privileges of the individual. Schools are overcrowded; child labor must be prevented; widows with minor children receive pensions from the State—perhaps old age pensions are coming; in a multitude of ways the State is entering into the daily life of the people and requiring records of births and marriages and deaths for the interest of the individual.

The American Medical Association might well devote some of its surplus energy to agitating for an enlarged vital registration area in these United States, and each individual member, in addition, might well support the sanitary administration of his community by making prompt returns to the officials in charge. Possibly within a decade European countries would not then be so far in advance of us in the keeping of trustworthy records.

Editorial Notes and Comments

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NEW YORK, SATURDAY, SEPTEMBER 2, 1916.

EFFECTIVE SEWAGE DISPOSAL.

Like the poor we have the sewage disposal problem always with us, at all events in the neighborhood of New York. The condition of the Passaic River, for instance, is a long standing disgrace to a civilized community. It was told not long since in one of the daily journals that two men, escaped from a prison, in order to get away had to swim this notorious stream. They began to swim, but had not gone far when they were overcome by the foulness of the water, returned, and gave themselves up, saying they preferred a long term of imprisonment to such a fearful ordeal. But the Passaic River is by no means the only example of the indifference with which the question of sewerage is regarded by the health authorities and the inhabitants of many towns in the vicinity of New York. Moreover, Manhattan itself has been aptly defined as an island completely surrounded by sewage, and yet public interest has not been awakened to the vile and dangerous contamination of its rivers and harbor.

There are within easy reach of this city several conspicuous concrete examples of the carelessness and ignorance of the citizens and of seeming disregard for the public health on the part of the authorities. In many of what may not inaptly be termed suburban towns of New York, containing populations of ten thousand and upward, there are still hundreds of old fashioned privy middens. It is obvious that these are a constant menace to the health of the public at large, beside being an anachronism in a country which prides itself upon being up to date in all that relates to the material well being of its inhabitants.

The privy is dangerous for more than one reason. As it is cleaned out only at intervals, the soil around, especially if porous, becomes permeated with possibly infected excreta. In some instances, the water supply may become infected and if vegetables are grown in the neighborhood, these may also be infected. More than one epidemic of typhoid fever has been traced to vegetables infected in this way. A more likely means of the open privy becoming a source of infection is by the agency of flies. It is now freely recognized that the fly is a factor of supreme importance in the conveyance of disease, and the privy affords it unequalled opportunities for the display of its sinister powers.

The question may be asked, how does it happen that in progressive American towns, such relics of the dark ages are allowed to exist? The answer is, that in many towns sewage systems are in the hands of individuals, who manage them for profit and not in the interests of the health or comfort of their neighbors. From every point of view this is obviously a short sighted policy, but where gain is in question man is frequently blind. From every conceivable standpoint then, from that especially of decency and health, the privy should be abolished by law, that is, where facilities exist for a water carriage system which is after all the cheapest, cleanest, and most convenient, but requires careful management for its success. Municipal ownership of the sewage system is indicated in fair sized towns and, in any event, the open privy should be interdicted as a distinct menace to health as well as a slur on the good name of any self respecting community.

It has been suggested that where a water carriage system of sewage is not available, the dry earth closet should be substituted for the privy midden. This system is vastly superior to the privy in that it is neither an offense to the sense of smell nor apparently a detriment to health, but there are difficulties in the way of carrying out this plan, and it does not remove the chief objection to privies, that is, the retention of excreta in the neighborhood of houses.

In the case of towns in the environs of New York where water carriage with proper sewage filtration is easily obtainable there is no excuse for the existence of devices for getting rid of excreta so crude and objectionable. It is curious, but true, that America with all her boasted advances, lags far behind Europe in many matters relating to sanitation and health.

The need in this country is to educate the people with regard to sanitation, to teach them that the occurrence of typhoid fever is a crime because it is preventable and that typhoid fever and other preventable infectious diseases will continue to take heavy toll of the population so long as the ordinary citizen is ignorant of the simplest essentials of good sanitation. Arouse the public to a sense of the danger of neglecting proper sanitation and instil into the minds of all citizens their responsibility in allowing epidemics to rage and they will insist that known and effective precautionary measures be enforced.

WAS TOOTHACHE THE CAUSE OF THE REVOCATION OF THE EDICT OF NANTES?

The revocation of the Edict of Nantes, which meant the abjuration of Protestantism by the Huguenots, was signed by Louis XIV, October 17, 1685. All Protestant conventicles in France were, by this document, ordered to be immediately demolished, and the Protestants were prohibited from assembling anywhere for the exercise of their mode of worship on pain of forfeiture of life and goods. Louis XIV had long felt some scruples with regard to the violation of the engagements of his grandfather, Henry IV, as consecrated in the celebrated Edict of Nantes, but in a secret consultation with some of his clergy he had been persuaded that he not only might, without injury to his conscience, revoke that great act, but that it was his duty to do so. When the two Colberts, Seignelai and Croissi, and even the young Dauphin, counseled delay, the King spoke in such a tone that all opposition was silenced. It was at this juncture that Croissi remarked that the King was suffering from toothache and had best be let alone.

Louis XIV, whose father died of consumption; who suffered from intestinal trouble in his youth; who was addicted to exhausting pleasures; who was perpetually exposed to all kinds of mental annoyance; and who certainly performed a large amount of hard work; happened, nevertheless, to live through the longest authentic reign ever recorded, namely, seventy-two years. His teeth were unsound, and, before middle age, all those in the upper jaw had been lost or reduced to scraggy stumps. As the king had a huge appetite, and could not masticate his food, he was subject to severe dyspepsia. Throughout the whole of the memorable year, 1685, he suffered from an inflammation of the upper jaw bone, following the extraction of a stump beneath which there existed an abscess. On one occasion his stumps gave him so much trouble that the royal dentist remained all day with his patient, and for the relief of the pain the actual cautery was used fourteen times. The great king had, in his toothache alone, quite enough to try his patience; and it is not astonishing that to this dental affliction may be attributed the evil state of mind which caused him to sign the revocation of the Edict of Nantes.

WANTED, A CONTROL.

If we were endowed with vision into the past we should be astounded at the immeasurable floods of fluid extracts and elixirs, at the mountains of powders and pills that trail off toward remote periods of time. Truly, if all but a minute portion of these were dumped into the ocean, as Oliver Wendell Holmes suggested, it would not only be worse for the fish, which would all be killed, but indeed we should have an ocean of drugs but little diluted by sea water. The variety as well as amount of these pharmaceutical products would be not only appalling but even pathetic to contemplate.

In the bacterial products, now made or in process of making, we are likely to have from present indications an equally startling exhibit and one likely to prove about as effectual, in comparison with its size, in the cure of disease. The foundation for the use of most of these new preparations is certainly more precarious than for most drugs, although we have, or ought to have, a more precise notion of what we are dealing with. Just as in the use of chemical curatives, however, because one or two persons recover from some ailment in the time in which we would expect them to recover no matter what the treatment, we are asked to believe that a certain serum or vaccine which was used is worthy of our purchase at no small cost, and of our abundant and confident use. We are startled at the evident ignorance, gullibility, or slavery to the use of something or other, displayed by the profession, for where there is smoke there is fire, and where bacterial products are marketed in such quantity they must be used by physicians.

The practitioner needs now, as he always has needed, a control for testing therapeutic means, reports, and advertisements of therapeutic agents, and that control must be his knowledge of the fundamental facts of medical science. He needs to keep in mind the expected behavior of the body in the given disease, and the expected behavior of the bacteria producing the disease; he ought to ignore the report of a few cases which "seem" to do well under a certain treatment, and he should always beware of the overenthusiasm which colors in rosy tints so many of our clinical reports.

Then we must not forget the mental effects wrought upon the patient by the use of a new agent, an effect which a remedy with which he is more familiar cannot possibly have. The results obtained by one person but not by another in the use of the same therapeutic agent often seem to be wholly mental and the result of common enthusiasm on the part of patient and physician.

At present—and they have had a fair trial—the results of the use of vaccines and serums in a general way is exceedingly disappointing, the more so because we expected so much from them. This fact serves to emphasize again the overwhelming value of prophylaxis, the fact that the body is usually fully equipped to meet disease, and that we must be cautious in our attempts to offer aid. We hope that bacterial products may be made more efficient in the future, but at present we need to be conservative and not allow the too enthusiastic to overcome our scientific sense of what is of real and not imaginary use.

THE SCHICK REACTION AND DIPHTHERIA CONTROL.

According to the New York city department of health (*Weekly Bulletin,* February 19, 1916), there was little reduction of the death rate from diphtheria after the marked fall which attended the introduction of antitoxin. Even with antitoxin diphtheria is twice as fatal as scarlet fever and three times as fatal as measles. It is a proved fact that if antitoxin is used in sufficient quantity on the first day of the disease, there is practically no mortality. Antitoxin is an equally effective preventive. The New York department of health therefore made the only tenable conclusion, that physicians do not treat diphtheria properly and promptly enough with antitoxin. Early diagnosis with early and adequate treatment on the one hand, combined with segregation of patients and suspects, will lead to a further reduction in diphtheria mortality as striking as that which followed the introduction of antitoxin. The lowering of the death rate with antitoxin marked a lessened mortality rather than a decreased case incidence.

The control of diphtheria has been greatly facilitated by the introduction of the Schick reaction as a specific test of immunity. The New York health department urged the use of this reaction on physicians as of prime necessity. Its particular advantages were discussed by Park and Zingher (*American Journal of Public Health,* May, 1916) who based their conclusions on the worth of the test when properly performed. They believed that a negative reaction after the age of two or three years indicated protection indefinitely against diphtheria.

The longer immunity conferred by injections of a toxin-antitoxin mixture, is best measured and controlled by the Schick reaction performed at intervals of one, three, six, and twelve months later, as a positive result shows that not sufficient antitoxin has been developed to inhibit the reaction. Park and Zingher emphasized the value of this reaction in establishing the diagnosis in cases which are doubtful clinically. It is sometimes difficult to decide whether a given case exists in a diphtheria carrier or is a beginning acute diphtheria. A negative Schick test excludes diphtheria, although a positive reaction is not conclusive for it. The authors illustrated this point by showing that a streptococcus tonsillitis in a diphtheria would be considered diphtheria from cultural examination alone, but that a negative Schick reaction here would show that there was no danger from the disease.

By use of the Schick test it has been shown that antitoxin administered intravenously up to six hours after absorption of the diphtheria toxin by the tissues, will partly neutralize the toxin and thus prove of benefit in late cases. This calls attention once more to the extreme importance of administering antitoxin before the toxin has been bound by the tissues, in other words, a few hours may make the difference between recovery and death. One special advantage of the Schick reaction is in determining persons among diphtheria contacts, especially in institutions and homes, who are susceptible to diphtheria. Park and Zingher advised the routine administration of 1,000 to 2,000 units of antitoxin to all contacts who give a positive Schick reaction.

The ability to determine accurately persons susceptible to diphtheria promises to stimulate interest in active immunization against it, and the authors cited above believe, apparently with good reason, that it will lessen and eventually eradicate the disease.

HEAVY DAMAGES FOR ILLICIT DRUG TRAFFIC.

A widow in the State of New York has secured a judgment against a firm of druggists because of the sale of heroine to her son, a boy about eighteen years of age. The jury allowed $2,000 compensatory damages and $1,000 punitive damages, according to *Public Health Reports* for June 16, 1916. In affirming the judgment, Judge Howard, of the New York Supreme Court, said: "During the time when these defendants were supplying this drug to the young man he became a vagabond, an idler, a drug fiend, and a criminal, undutiful to his mother, worthless to himself, dangerous to the community. The jury was right in concluding that all this was the result of the illicit traffic carried on by these defendants, and that they should be punished for their reckless disregard of the rights and welfare of this boy and his mother."

The opinion is published in full on page 1563 of the *Reports*.

CAUTION IN USING IODINE ON THE ABDOMEN.

A. Ernest Maylard writes to the *British Medical Journal* for July 15, 1916, of the danger of using iodine to sterilize the skin before abdominal operations. Propping and Bertelsmann have reported in *Zentralblatt für Chirurgie* (19 and 26) the production of abundant fibrous agglutinations in dogs from the injection of a mixture of twenty drops of tincture of iodine in eighty c. c. of salt solution into the peritoneal cavity. Walker and Ferguson in the *Annals of Surgery* (February, 1916) reported the densest adhesions to be caused by touching the peritoneum lightly with a gauze pledget dipped in half strength iodine. Maylard states that carbolic lotion, one in forty, followed by the same, one in twenty, may well replace iodine in sterilizing the abdominal skin; strong alcohol is also excellent.

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Obituary

ERNEST WATSON CUSHING, M.D., LL.D.,

of Boston.

Doctor Cushing died at his home in Roxbury on August 27th, in the seventieth year of his age. He was born in Boston and received his preliminary education at Chauncey Hall School. Subsequently he graduated from the academic department of Harvard University in 1867 and studied in the medical department until 1869, completing his professional studies at the College of Physicians and Surgeons, New York, in 1871. In 1894 he received the honorary degree of LL. D. from Tufts College. Doctor Cushing studied abroad after graduation, and was interested in the development of abdominal surgery due to Lister's discoveries. On his return to this country, he was one of the first to experiment with Koch's tuberculin. In 1887, he became editor of the *Annals of Gynecology and Pediatrics* and, in 1890, he translated Martin's *Diseases of Women*, applying the halftone process to photomicrography for the first time in the illustrations. He was one of the founders and for twenty years surgeon to the Massachusetts Woman's Hospital, and was professor of gynecology and abdominal surgery at Tufts College medical school from the day of its foundation until, some four years ago, when he was made professor emeritus. Among other accomplishments, Doctor Cushing counted familiarity with eight languages, the latest being modern Greek, which he had been studying for three years at the time of his death. He is survived by a widow and five daughters.

News Items

Yellow Fever on a Steamship.—Surgeon Corput, of the United States Public Health Service, reports that two patients suffering from yellow fever were taken off the Danish steamship *Borglum* three days out from Progreso, Mexico.

Personal.—Dr. Charles K. Mills, of Philadelphia, has been appointed consulting neurologist to the Philadelphia Hospital for Contagious Diseases.

Dr. C. D. Rilance, of Denver, who is a native of Canada, has gone to Quebec to join the Canadian army medical corps.

American Association of Obstetricians and Gynecologists.—The twenty-ninth annual meeting of this association will be held in Indianapolis, September 25th, 26th, and 27th, under the presidency of Dr. H. G. Pantzer, of that city. Dr. E. Gustav Zinke, of Cincinnati, is secretary, and will be glad to furnish further information regarding the meeting to all who are interested.

American Association for Clinical Research.—The eighth annual meeting of this association will be held in New York, September 28th, 29th, and 30th, with headquarters at the Hotel Majestic. There will be three sessions each day, morning, afternoon, and evening. Clinics will be held at the Flower, Metropolitan, and other hospitals. Dr. Daniel E. S. Coleman, of New York, is president of the society, and Dr. James Krauss, 419 Boylston Street, Boston, is permanent secretary and will be glad to furnish further information regarding the meeting.

High Death Rate in Poliomyelitis Epidemic.—The health department reports that the death rate of infantile paralysis has almost doubled during the past seven weeks, and is now greater than that of any other outbreak of the disease of which there is any record. During the week ending August 29th the rate was 31 per cent., and the average rate for the entire epidemic up to the morning of August 30th was 23.89. The weekly death rate during July and August was as follows: Week ending July 11th, 18 per cent.; July 18th, 16 per cent.; July 25th, 27 per cent.; August 1st, 23 per cent.; August 8th, 23 per cent.; August 15th, 23 per cent.; August 22d, 27 per cent.; August 29th, 31 per cent. The epidemic which occurred in New York in 1907 had an average death rate of 10 per cent.

The Aftercare of Infantile Paralysis Patients.—The health department has formed a Committee on Aftercare, composed of trained social service workers, to look after the welfare of the convalescent poliomyelitis patients. With the termination of quarantine at home, or with the discharge of a patient from the hospital, a printed notification is handed to the parents, pointing out the importance of proper aftercare. One side of this printed slip contains information for the parents and on the other side is a list of orthopedic hospitals and dispensaries in the city, together with the consultation hours. Where braces or other forms of apparatus are required and cannot be supplied by the family, they are furnished by the committee, a fund for the purpose having been contributed by citizens. Dr. Donald E. Baxter, 289 Fourth Avenue, is director of the committee.

Poliomyelitis in Adults.—The department of health has tabulated in age groups the ninety-four persons over sixteen years of age who are in the hospitals or quarantined at home with poliomyelitis. By boroughs they are as follows:

Manhattan: Women—One 23 years old, four 17, two 19, two 28, one 26, two 32, one 33, two 35, one 36, one 37. Men—Two 17, one 19, one 20, one 21, two 22, one 23, two 24, one 25, two 26, two 27, one 28, one 29, one 30, one 31, one 37, one 38, one 42.

Brooklyn: Women—Two 16, three 17, one 19, one 21, three 22, one 23, one 25, one 26, two 28, one 29, one 30, one 32, one 37, one 40. Men—One 17, three 18, one 21, one 24, one 25, two 26, one 27, one 29, one 30, one 32, one 34, one 37, one 46, one 52.

The Bronx: Women—One 19, one 20. Men—One 20, one 26, one 32, one 35.

Queens: Women—One 16, one 22, one 29. Men—One 25, one 35, one 46.

Richmond: Women—One 25, one 30. Men—One 17.

The death rate among adults is much higher than that for children, being about 40 per cent.

Compulsory Vaccination of School Children.—The Board of Health of Jefferson County, Kentucky, recently issued an order requiring that all children attending schools in School District No. 46, Highland Park, Ky., must be vaccinated, excepting such children as had been successfully vaccinated within seven years. The board of trustees of the school district resisted the enforcement of the order, but the Court of Appeals of Kentucky decided that the board was authorized by the Kentucky laws to take the action, and that the order must be complied with. The opinion is published in the August 11th issue of *Public Health Reports.*

Work of the Health Department in the Diagnosis of Venereal Diseases.—The work done by the diagnosis laboratory of the Department of Health of the city of New York in the examination of specimens from cases of suspected venereal infection, during the first quarter of the year 1916, is shown by the following figures, compiled by the department: Syphilis (complement fixation test), 13,419 specimens examined, 3,730 positive, 8,042 negative, 1,112 doubtful, and 535 received but not examined; gonorrhea (complement fixation test), 2,711 specimens examined, 248 positive, 1,841 negative, 281 doubtful, and 341 received but not examined; gonococcus (microscopical), 2,055 specimens examined, 321 positive, 1,220 negative, 410 doubtful, and 104 received but not examined; treponema (microscopical), 6 specimens examined, one positive, and 5 negative. The large proportion of negative reports indicates that physicians are making considerable use in diagnosis of the laboratory facilities of the department.

Domestic Animals and Poliomyelitis.—In order that exact information may be obtained whether poliomyelitis occurs in domestic animals, and if so, whether the latter play any part in the transmission of the disease, all the nurses in the health department now visiting cases of poliomyelitis have been instructed to make a special inquiry regarding animals. If they find anything suspicious they will report the matter immediately and the suspected animals will be removed by the department of health for observation. A veterinarian will be sent to examine the animal and if the suspicion is justified, the animal will be killed and an anatomical examination made. In addition, arrangements have been made whereby a veterinarian of the department will visit the shelter of the Society for the Prevention of Cruelty to Animals to see whether any suspected cases of animal infection are there encountered. In this investigation the Bureau of Preventable Disease will have the cooperation of the Bureau of Laboratories and of the United States Public Health Service.

Michigan State Medical Society.—The fifty-first annual meeting of this society was held in Houghton, Mich., August 15th, 16th, and 17th, under the presidency of Dr. A. W. Hornbogen, of Marquette. The meeting was well attended and was said to be the best in every way that the society had held for twenty years. An interesting feature of the meeting was the passing of resolutions recommending universal military training and requesting the Michigan congressional delegation to exert itself to bring about effective legislation to this end. The society also adopted the report of the committee recommending the passage of a State eugenic law requiring that every applicant for a marriage license shall submit to a medical examination before marriage. Dr. Andrew F. Biddle, of Detroit, was elected president, and other officers were elected as follows: First vice-president, Dr. J. G. Turner, of Houghton; second vice-president, Dr. J. J. Mersen, of Holland; third vice-president, Dr. O. A. Hart, of St. Johns; fourth vice-president, Dr. J. A. Nye, of Port Huron. The house of delegates conferred the following honorary memberships: Nonresident, Dr. F. M. Albee, of New York; resident, Dr. W. A. Whitney, of Big Rapids; Dr. George W. Jones, of Inlay City, and Dr. William Blake, of Lapeer. Nonresident honorary memberships are conferred on members of the society who by reason of age are about to retire from active practice. The delegates approved resolutions, later to be prepared by Doctor McMillan, of Detroit, on the death of Dr. John B. Murphy, of Chicago, an honorary member of the society.

Prevalence of Communicable Diseases in the United States.—The United States Public Health Service has published a series of tables showing the prevalence during the year 1915 in cities of the United States with a population of over 100,000 of the following diseases: Diphtheria, gonorrhea, malaria, measles, epidemic cerebrospinal meningitis, pellagra, poliomyelitis, rabies in men, rabies in animals, scarlet fever, smallpox, syphilis, tuberculosis, and typhoid fever. These tables have been compiled from data obtained from the health departments of the respective cities. They include the number of cases reported, indicated case rates in a thousand of population, and indicated fatality rates in one hundred cases. The pamphlet is Reprint No. 347 from *Public Health Reports* and copies, at five cents each, may be obtained from the superintendent of documents, Government Printing Office, Washington, D. C.

A Conference on Poliomyelitis.—A conference of State and Territorial Health Authorities with the United States Public Health Service for the consideration of the prevention of the spread of poliomyelitis was held in Washington, D. C., August 17th and 18th. The conference was called to order by Surgeon General Blue, of the Public Health Service. The general poliomyelitis situation was presented, each delegate giving a brief statement of the situation in his State. The program included a discussion of the following topics: The prevention of the interstate spread of poliomyelitis, the research problems in poliomyelitis, symptomatology of poliomyelitis, epidemiology of poliomyelitis, general principles of control, and the relation of the community to the aftercare of poliomyelitis patients. The following committees were appointed and each committee made a report which was adopted by the conference: Committee on measures for the prevention of interstate and intrastate spread of poliomyelitis; committee on minimum requirements for the control of infantile paralysis; committee on blanks. A complete report of the transactions of the conference will be issued at an early date.

Opinion Rendered at the Request of the Medicoeconomic League on the Subject of Pay Clinics.—You state that you are informed that certain large charitable institutions of this city contemplate the establishment of night pay clinics for medical and surgical treatment of persons, on a general basis of one dollar a visit. This is a matter which may be considered when occasion arises. Unless facts are presented showing the character of the dispensary and the manner of fixing the charge and the disposition of such funds, it is impossible to pass upon the question. I have no hesitancy in stating, however, that a charge even of one dollar, if made in accordance with the provisions of Section 290 by a dispensary which fully complies with the standards, requirements, and purposes of Section 291 of the State Charities Law, would be lawful. Whether a person who pays one dollar for treatment at such a dispensary is a proper object of charity, depends entirely upon the circumstances in each individual case. If all that patient can afford to pay is one dollar, and he may obtain treatment by a specialist for that amount at a dispensary, while treatment by the same specialist at the patient's home or the physician's office would be entirely above his means, I do not see why such patient cannot avail himself of the services of such specialist. There are many physicians and specialists of great skill and high professional standing who give time to dispensaries to treat just such cases. It is their generous contribution to the general welfare of the community. The advantage of a dispensary is that the patient will there find a coordinated group of specialized physicians, surgeons, and pathologists, working together in a comprehensive organization. I see no danger of the use of dispensaries being abused by persons who can afford to pay the full quota of specialized surgical or medical treatment, for Section 296 of the State Charities Law provides that

> Any person who obtains medical or surgical treatment on false representations from any dispensary licensed under the provisions of this article, shall be guilty of a misdemeanor and on conviction thereof shall be punished by a fine of not less than ten dollars and not more than two hundred and fifty dollars.

I feel that dispensaries of the standard conducted by the institutions named should be encouraged.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

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THE MANAGEMENT OF ENURESIS.*

By Harry Apfel, M. D.,
New York,
Instructor in Diseases of Children, New York Post-Graduate Medical School and Hospital.

The fact that wetting the bed could, in many instances, be attributed to the carelessness with which the child has been reared during the early months of its existence, does not forego the conclusion that a given case may not be due to a severe pathological condition, either in the urinary tract or nervous system, or in the chemical makeup of the urine. Some cases are of nocturnal type, others of diurnal type, occasionally the two types coexist.

No disorder in the whole category of child ailments is so persistent and so annoying as a protracted case of enuresis, and nothing is more gratifying to parents as well as to the physician as to have a case which has existed and persisted for months and years clear up under proper management. Here the word *management* should be emphasized, for we do not mean treatment by means of drugs exclusively, rather do we have in mind a proper régime as to diet, hygiene, etc.

Etiology. Under ordinary circumstances a child between two and three years of age has its inhibitory centres well enough developed to be able to control the bladder function. Obviously, this age limit is arbitrary; there are not a few exceptional children that have not wet themselves from the time they reached the first anniversary of their birth, a feat not to be credited so much to the cleverness of the child, as to the intelligence of the nurse or mother. One patient assured me that her baby had not wet the napkin since she was six months of age — an exceptional case, but possible. Here, as in other conditions in the field of causation, the simplest points will usually be overlooked unless a complete physical examination plus a most painstaking history is made at the very first visit. Next in order of importance is to get acquainted with the child's habits, as to taking water, tea, or coffee, at bedtime. The practice of taking the heaviest meal in the evening, when the older folks return from business, incidentally makes the child carry with it to bed an overloaded intestinal tract which is conducive to a desire to empty the bladder during the next two or three hours, when the child is sound asleep.

Constipation has long been recognized as a common factor; anemia and chlorosis also hold important places as causes. Pin worms are very frequently overlooked, unless the mother calls attention to the presence of small threadlike pieces that she has noticed while making child's toilet. A neurotic or hysterical child frequently suffers from enuresis; furthermore, epilepsy sometimes manifests itself by no other symptom than by attacks of wetting the bed at night. A urine loaded with urates or oxalates may account for the trouble; also a lesion of the central nervous system, i. e., idiocy, cerebral palsy, meningitis, tumor of the brain, forms of myelitis, and injuries to the cord, any one of which is a very unfortunate occurrence. Last but not least to be mentioned, and not infrequently overlooked, is an adherent clitoris in the female; or a long and narrow prepuce in boys; also a vesical calculus or cystitis, the last of which is very rare.

The management may be grouped under the following subdivisions: 1. Instructions to mother; 2, a diet list; 3, correct any existing pathological conditions; 4, endeavor to obtain the cooperation of the child; 5, drugs.

1. The mother should be told the proper time for the child's bath, play, exercise, and time of meals and time for going to bed and rising. Dwell somewhat on the importance of a properly ventilated room where the temperature should not exceed 65° F. The child should not be made too comfortable in its bed. The mother should be reminded to keep the child's bowels open daily. In a few words, explain to the mother the plan of your entire campaign and ask her for assistance.

2. We give to the mother a written diet list, specifying the hour for each meal, eliminating spicy food articles as well as tea and coffee. We should lay special emphasis on the point that the child receive no liquids after five p. m. If it is very thirsty, water by the teaspoonful only may be allowed. In highly acid urine, eliminate strongly acid fruits; limit pastry as well as red meats.

3. We start with the supposition that a physical examination has failed to reveal pathological lesions of the central nervous system, also that there is no adherent clitoris or long and narrow prepuce, or a vulvovaginitis or calculus in the bladder, and that the patient has not hypertrophied tonsils or adenoids; if any such condition does exist we should correct it if possible.

4. Next we direct our attention to the child himself and attempt to get his confidence and cooperation, which means everything if our treatment is to be a success. We give the child a vessel and ask him to urinate right in our presence, and at the word of command make him stop and then start again; in other words, we train the power of control of his bladder sphincter (Pisek). We tell the mother to repeat this with the child once a day. Then we give the child a blank sheet of paper, on which we note the days of week, and the little patient is asked to keep his own record by simply noting every morning *yes* or *no* alongside of the day. If too young to write, use an x under wet or dry, depending on whether he has been found wet or dry. This, we find, makes a great impression on the little patient's mind, especially if we offer a prize for a complete negative chart at the end of the month.

In older children, especially in obstinate cases, passing a cold sound may help a great deal when other methods fail.

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*Read before the East New York Medical Society, May 5, 1916.

5. As to drugs: notice that we have left that part for the last, for we believe it of less importance than the things mentioned above. At any rate, the value of drugs has been greatly overestimated.

Of all drugs which were given a trial, atropine sulphate still holds first place for efficacy, *if used properly*. It is best given in an aqueous solution containing half a grain of the atropine sulphate to the ounce. Of this give drop doses for two days, t. i. d.; then increase to two, to three (Kerley), watching for dilated pupils and flushed cheeks, unless results are noted sooner.

In anemic children, iron, especially the albuminate, is recommended. In strongly acid urine, potassium citrate should be given.

If the urine contains colon bacilli, that should be corrected with hexamethylenamine. In extremely nervous children, especially those prone to attacks of petit mal, the bromides should be given in large doses.

A great deal of patience and perseverance is required by both patient and doctor, for in many cases the wetting stops, only to return as soon as we cease treatment. It is therefore well to continue treatment in every case for some time after an apparent cure has been brought about, in order that the patient may overcome the effect of habit, of which he may not always rid himself easily.

Thyroid extract and glandular therapy generally has been tried, but it is questionable how much good it does, except in cases of hypothyroidism. A patient I now have under treatment in our clinic came in for ichthyosis, from which she had been suffering since birth; upon examination she showed all symptoms of hypothyroidism plus enuresis. On thyroid treatment she promptly stopped wetting herself.

327 PENNSYLVANIA AVENUE, BROOKLYN.

THE THERAPEUTICS OF A PHARMACOLOGIST.

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Thirty-fifth Communication.

SCARLATINA.

Until a satisfactory serum shall be developed the principal lines of treatment in scarlet fever must be to ward off complications and to support the vital processes. In this endeavor less may be gained by drugs than by the persistent use of simple hygienic measures.

Middle ear complications are best prevented by frequent careful cleansing of the nasopharynx; for this purpose nothing excels normal saline solution rendered alkaline with borate or carbonate of sodium; the addition of traces of menthol or eucalyptus may be of some inhibitory value through a slight antiseptic effect, but simple home made solutions are fully as satisfactory as the various expensive ones on the market. Keeping the nasopharyngeal mucosa well cleansed is the best way of preventing extension of the inflammatory process into the Eustachian passages.

In controlling the fever great care must be exercised, inasmuch as cool applications may easily interfere with the normal development of the eruption. Bathing to reduce fever should be with water only a few degrees lower than the existing body temperature, and the process should be conducted in a room sufficiently warm to admit of no sense of chilliness to the patient. But for treatment of the nervous symptoms cooler applications, by means of the cold coil or even the ice bag, may be made to the head. Frequent bathing for purposes of cleanliness is also desirable to further skin activity in toxin elimination. The older idea of frequent inunctions to prevent dissemination of the desquamata may well be discarded as not conducive to cleanliness. The exfoliated scales are adequately removed in the bath, while evidence of the contagiousness of the scales is lacking, the theory of such means of propagation having been largely abandoned by modern investigators.

The use of some of the coal tar series for antipyresis may be mentioned to be condemned. There is ever present in scarlet fever a tendency to cardiac complications, and we can ill afford to increase it by giving any drug which has a direct toxic effect on the heart.

The tendency to irritation nephritis is best combatted by frequent stimulation of the eliminative function of the skin, by washing of the blood stream, by complete rest in bed, and by limitation of the diet to simple nourishing liquids. The skin is capable of rendering much assistance to the kidneys, and this potentiality should be fully utilized. Hot air, dry or moist, will accelerate perspiration; at the same time copious hot drinks must be taken, or resort made to full saline enemata, as it is essential that the specific gravity of the blood be not raised but rather lowered. The diet must be reduced to the minimum for present metabolic efficiency, and administered in a form calling for the least amount of digestive effort.

In robust children, in whom there is an unduly marked reaction of the heart, as shown by high pressure tension and by excessive rapidity of the pulse, the heart may be advantageously brought temporarily under aconite control, great care being taken that there is used only the minimum amount required to obtain the desired effect and that the ensuing reaction is carefully kept under observation. Powerful drugs should always be administered well diluted, and diligent discretion should be exercised.

In later stages of severe attacks, cardiac feebleness develops not infrequently; this may be treated symptomatically with caffeine for the sake of its stimulating effect on the heart, and with strychnine for its heightening of the sensory reflexes of the cord; but the physician must strive energetically at the same time to eliminate the causative toxemia.

Postscarlatinal anemia may require prolonged treatment with iron, in which case the old fashioned carbonate or the newer citrate constitutes the best preparations.

MEASLES.

With some slight exceptions the treatment of measles is nonmedicinal. The patient, being always extremely sensitive to light, should be kept in a darkened but well ventilated room. The same cleanly care should be taken of the skin as in cases of scarlatina, but there is seldom need for special measures in temperature reduction. The nose and nasopharynx, however, need the same scrupulous care and attention as in scarlatina, frequent cleansing with alkaline solutions being a leading indication. The cough, if too troublesome, may be treated with steam inhalations medicated with oil of eucalyptus, or the oil may be dropped on a handkerchief and then inhaled. If the cough proves intractable to the foregoing treatment, resort may be had to a reflex depressor, such as codeine, exhibited in elixir of wild cherry; but the use of codeine should be sharply limited, both in amount and duration.

During convalescence, nourishment should be pushed, and the patient kept as much as possible in the open air, but amply protected from draughts.

Treatment of Septicemia.—Lorrain Smith and Ritchie (*West London Medical Journal,* July, 1916) report two cases treated by intravenous injections of eusol. Eusol is the name given to an aqueous solution of 0.5 per cent. strength of free hypochlorous acid, prepared by shaking twenty-five grams of a mixture of equal parts of chloride of lime and boric acid in a litre of water and then filtering. For intravenous injection, 8.5 grams of salt are added; 100 c. c. were administered in one case and 120 c. c. were administered in the other. The results were favorable, the temperature in one case falling from 160° to 96° in twelve hours.

Treatment of Cancer of the Uterus.—Donald C. Balfour (*Texas State Journal of Medicine,* July, 1916) advises early cauterization in early cancer of the uterus, followed immediately by a total abdominal hysterectomy. In a small percentage of the cases the condition of the patient may demand a vaginal hysterectomy as the wisest procedure. For moderately advanced cases the use of heat by the Percy method is best. From the results of this treatment the surgeon must decide whether a total abdominal hysterectomy is advisable and, if so, when. If the patient is a serious operative risk, vaginal hysterectomy should be considered. In advanced cases a determined effort should be made to ameliorate the symptoms and prolong life by heat, radium, etc. This treatment, at times, is rewarded by a result which permits radical operation.

Clinical Results with the Tungsten Lamp.—A. B. Cottell (*Brit. Med. Jour.*, July 29, 1916) reports that sinuses and indolent ulcers caused by frostbite, and other forms of resistant lesions have invariably responded favorably to treatment by the tungsten lamp. They have healed much more rapidly than under other methods of treatment, and the scar left was soft and closely resembled the normal skin. Lupus and other forms of tuberculous ulceration also healed quickly and with soft scars. The same was true of a phagedenic ulcer. Other conditions were also benefited, such as asthma and some forms of stiff joints. The first exposure to the light should be for only one minute, which can be increased later to from two to five minutes depending upon the local reaction. No subsequent exposure should be given until the reaction from the previous one has passed off. The eyes of both patient and operator must be shielded from the rays.

Treatment of Simple Prurigo.—P. G. Unna (*Berlin. klin. Woch.*, Feb. 14, 1916) reports that ichthyol acts both as a symptomatic remedy for the swelling, and as an etiological remedy against the causal infection. The most rapid results may be secured by first rubbing the affected area with sandpaper, and by following this with an application of an antipruritic and antiparasitic powder containing ten per cent. of paradichlorbenzol. This causes some temporary burning, but when this passes off the itching will have been relieved. Then a varnish containing ten per cent. of ichthyol in gelanth should be applied. [Gelanth is a water soluble varnish made from gelatin and tragacanth.] In obstinate and recurrent cases the addition of one or two per cent. of chrysarobin to the ichthyol varnish is very helpful, and the application of this should be preceded by a lathering of the parts with ichthyol soap.

Acidosis in Children.—J. M. Grantham (*Jour. Florida Med. Ass.*, July, 1916) considers that the alimentary tract should be thoroughly emptied by a dose of castor oil or by repeated doses of one-tenth of a grain of calomel until evacuation. The colon should also be irrigated. During the first day the food should be a seven per cent. solution of milk sugar and later a one per cent. barley water, to which milk sugar is added. If nausea or vomiting prevents the taking of food by mouth a five per cent. glucose solution may be given by rectum. Medicinal treatment consists in the administration of alkalies until the urine has become decidedly alkaline in reaction. For this purpose a saturated solution of sodium bicarbonate is the best, and of this a tablespoonful in some ice water may be the initial dose, to be repeated hourly day and night with an increase in the dose if the patient will stand it. In very severe cases one or two drams of a four per cent. sodium bicarbonate solution may be given intravenously and repeated as required.

Treatment of Carriers of Amebic Dysentery.—H. H. Dale (*Lancet*, July 29, 1916) describes a number of cases in which a course of the usual hypodermic emetine therapy produces only a temporary disappearance of cysts from the stools. Such cases relapse into chronic cyst carriers. The use of ipecacuanha by mouth seems to have given better results in this class of cases, but it is often impossible to give a thorough course of treatment in this way, owing to the production of nausea and vomiting. A double iodide of emetine and bismuth has been prepared recently and furnishes a salt from which the emetine is liberated only after passage into the alkaline intestinal fluids. Three grains of this salt represent one grain of emetine and are equivalent to sixty grains of ipecac. This preparation was tried by Dale in a small series of chronic carriers with strikingly favorable results. In the majority the cysts were promptly and permanently removed from the stools. In a few of the patients some nausea was observed, but this could often be prevented by administering the dose with, or immediately after a meal. The daily dose ranged from two to four grains administered in capsules. It is suggested that this new preparation might be employed in small doses repeated every few days as a prophylactic for those exposed to infection.

X Ray Treatment of Superficial Dermatoses.—E. Kuznitzky (*Berlin. klin. Woch.*, Feb. 14, 1916) comments upon the controversy which has been waged for some time between the advocates of large doses of filtered hard rays and of small doses of soft rays. A middle ground between the two can be taken, for the author has found that moderate doses of medium hard, filtered rays are entirely satisfactory and without danger. He uses a medium tube and a filter of one half mm. of aluminum. An initial dose of half an erythema dose is given, and at ten to fourteen day intervals two doses of one third erythema strength are administered. This plan of application has proved entirely successful in psoriasis, chronic infiltrated eczema, etc., and entirely avoids the dangers of erythema, burns, or epilation.

Note on Serum Treatment of Poliomyelitis.—Simon Flexner (*Journal A. M. A.*, August 19, 1916) states that experiments with powerful strains of the virus of this disease have shown that in monkeys the administration of immune serum will prevent or greatly delay the onset of artificial infection, or that if given soon after an inoculation of active virus will abort the disease. It has also been shown that the serum has marked curative properties in these animals. The use of immune serum in man was first tried by Netter in a short series of cases, with apparently good results. The experimental results would seem to indicate its value in man, and its use is worthy of an extended trial. Owing to the fact that the infection is chiefly localized in the spinal meninges, the serum should be given intradurally through lumbar puncture after the removal of some of the spinal fluid. The dose should probably range from five to twenty c. c., and the serum should be tested by the Wassermann reaction before use. It should be given as early in the course of the case as possible, and repeated daily if needed.

Suggestion as to the Prevention of Infantile Paralysis.—W. Stewart Whittemore (*Boston Medical and Surgical Journal*, August 17, 1916) was so impressed by a report made by Hektoen and Rappaport about a year ago on the use of kaolin to remove bacteria from the nose and throat that he began to use it on himself and on members of his own family in the treatment of coryza and tonsillitis, later on other patients, with good results. The method employed was to dust finely powdered kaolin into the nose six or seven times a day at two hour intervals by means of a powder blower, after the patient had cleared his nose by blowing it thoroughly. Hektoen and Rappaport found that in this way they were able to remove diphtheria bacilli, and practically all bacteria from the nasal mucous membrane in three or four days. By applications to the throats of diphtheria carriers, the bacilli were permanently removed in from two to four days. In scarlet fever the kaolin removed streptococci from the nose very promptly. Although we are still in great ignorance as to the mode of transmission of infantile paralysis, it is agreed that the most common avenue of infection is through the mucous membrane of the nose, so it seems logical in combating the disease to use a substance which has been shown to be capable of practically sterilizing the nose and throat, and is, moreover, free from any irritating effect. Far from being a chemical poison, it can be swallowed in large amounts without any poisonous effect upon the taker. Its action is peculiar in that it seems to owe its efficiency in bacterial infections to its action in depriving the bacteria of a suitable medium, while mechanically burying them alive. For these reasons the writer urges the use of kaolin as a prophylactic measure in the case of every child or adult who has come in contact with any possible source of infection of infantile paralysis, as it has been shown that healthy persons in whose households the disease occurs seem to be carriers. Kaolin should be used also by patients suffering from the disease, and by those who have recently recovered from it, because swabs taken from the nose have demonstrated the presence of the virus in such persons long after recovery.

Röntgen Treatment of Epithelioma.—John H. Edmondson (*American Journal of Röntgenology*, July, 1916) begins treating cutaneous malignancy with bipolar fulguration, cauterization or coagulation. This has a threefold effect: 1, The most superficial and a great number of deeper cells are destroyed; 2, it renders the field more accessible and amenable to treatment; 3, it closes metastatic channels. Immediately following this an exposure of about ten to twenty units of a No. 6 Benoist unfiltered ray is given to the neoplasm only; the next day a second exposure of four to five units from a No. 8 or a No. 9 Benoist, filtered through three mm. of aluminum. At this second exposure about one half inch of the surface immediately surrounding the growth is included. The patient is then dismissed until the reaction subsides. He is told to return for observation. If any manifestation of the condition remains, the same technic is repeated. If not, another exposure of about four units is given in order to destroy any unobserved manifestations.

Prevention of Deformities in the Healing of Burns.—Charles A. Parker (*Jour. A. M. A.*, August 19, 1916) states that however extensive they may be, in third degree burns so long as they are compatible with life, the healing should be secured without deformity and with the preservation of good function. It is chiefly in the burns about the neck and involving the extensor surfaces that difficulty is encountered in preventing deformity and loss of function, or its impairment. The burn itself should be regarded as an ulcer, and should be treated appropriately by skin grafting or other methods, the most satisfactory of which is the covering of the wound with overlapping strips of adhesive plaster which are allowed to remain *in situ* until they begin to separate from their attachments to the normal skin. This requires their renewal about twice weekly. Over the adhesive plaster dressing dry absorbent gauze should be applied, and this can be changed daily, or as the absorption of the secretions demands. This form of dressing constitutes essentially a wet dressing in which the moisture comes from the patient's own serum and lymph. Combined with this direct treatment of the burns themselves, the parts should be placed and maintained in a suitable position to prevent deformity. This is usually one of extension in the case of the joints of the extremities, of abduction when the burn is in the axillary region, and of elevation and rotation of the chin to the opposite side in burns of the neck. The position must be maintained by the application of suitable plaster splints which can be removed for the dressings and reapplied at once. These must be used continuously during the entire healing and for some time thereafter, and then may be left off during the day, but worn for some time longer during sleep. The persistent use of the night casts is essential for the complete prevention of deformity.

Feeding in Infancy.—F. P. Gengenbach (*Texas State Journal of Medicine,* July, 1916) concludes that mother's milk is the best food for an infant. If the mother's milk fails, or, if after a prolonged trial it does not agree with the child, a wet nurse is preferable. If a wet nurse cannot be obtained artificial feeding should be attempted. Whole milk mixtures are preferable because of their simplicity. Boiled milk is better borne than raw milk. The use of sodium citrate and of cereal diluents frequently proves helpful. Raw milk should be substituted gradually for boiled milk, and where an intolerance for raw milk exists other foods should be added to the dietary.

Marfan's Epigastric Puncture in Rheumatic Pericarditis with Effusion.—P. Lereboullet (*Paris médical,* July 1, 1916) deprecates the prevailing tendency to avoid paracentesis of the pericardium in rheumatic pericarditis. In some of the more severe cases this procedure is absolutely necessary to save life. He recommends Marfan's epigastric method, which has already proved satisfactory in cases of pericardial effusion due to tuberculous infection or Bright's disease. The Marfan procedure permits of exploring or evacuating the pericardium with less risk of injuring the heart muscle than in the thoracic procedure. The patient should be in the semi-sitting posture in bed. The puncture is made with the small trocar of Potain's apparatus, connected with the aspirator, or with a strong and rigid lumbar puncture needle, connected with a glass syringe. The needle is introduced exactly in the midline just below the xiphoid appendage, directed backward and upward, and as it enters is carried more and more in an upward direction, so as to graze the posterior surface of the xiphoid and bony sternum. When the point has traveled four centimeters in children and five or six centimeters in adults, it should lie in the pericardial sac. Through its entrance in the midline the needle avoids the peritoneum—traveling in the subperitoneal cellular tissue—and the muscular fibres of the diaphragm. In a case of acute rheumatic pericarditis in a young man of twenty-two years with endocarditis, cardiac dilatation and constant dyspnea, a position intermediate between that of orthopnea and the kneechest posture being assumed by the patient —followed by constrictive pain at the base of the chest, a thready pulse, and marked cyanosis, epigastric puncture was performed with Potain's aspiration apparatus and 180 grams of serofibrinous fluid was removed. Next day there was distinct improvement, the patient abandoning his peculiar posture, the heart beating more strongly, and the pericardial friction rub resuming its former intensity. Dyspnea later increasing again, three additional punctures were made, but without obtaining fluid. Recovery from the pericarditis, however, soon followed, though a mitral murmur persisted. In spite of the relatively small amount of fluid removed in this case, the puncture, as was manifest to all those present, saved the patient's life. Similarly, in a case of gonococcal pericarditis treated by Robin and Fiessinger, in which a small effusion was sufficient to bring on marked dyspnea, removal of only fifty c. c. of fluid by epigastric puncture completely modified the respiratory condition. The Marfan procedure is advantageous in that, even if the heart should be reached by the needle it is penetrated in a tangential and not a perpendicular direction. In purulent pericarditis, pneumococcic pericarditis in particular, it is only an exploratory measure, and should be followed by pericardotomy and drainage. It is contraindicated where there is tympanites so marked as to obscure the xiphoid and in "funnel breast." It may also fail in the rare cases of chiefly posterior pericardial effusion, in which a misleading "dry tap" may be obtained; in these cases radioscopy is of diagnostic value.

Tunnels and Large Cavities in Bone.—Norman F. Lock (*British Journal of Surgery,* July, 1916) summarizes the treatment of the foregoing conditions as follows: 1. The presence of tunnels and large cavities in bones as the result of gunshot wounds, as well as from other pathological conditions, is a common cause of persistent sinuses, which continue to discharge practically indefinitely. 2. Tunnels occur in cases where a long bone has been perforated and fractured by a bullet, and where, in treating the septic condition associated with these compound fractures, a drainage tube has been passed right through the middle of the bone, the bone uniting around a central cavity. 3. The delay that takes place in the healing of the sinus is due to the fact that a chronic infection is present with which the tissues are unable to deal, since they are unable to obliterate the tunnel, the rigid walls of which will not collapse, so that the sinus which leads down to the tunnel continues to discharge indefinitely. 4. Attempts at sterilization of these cavities and tunnels by scraping and the use of disinfectants are almost uniformly unsuccessful, and, therefore, the use of such materials as bismuth paste or iodoform paste is doomed to failure. 5. The treatment advised is the subperiosteal resection of one wall of the tunnel, access being gained by longitudinal incisions down to the bone, at right angles to the length of the tunnel, so as to convert the tunnel into a shallow trough or groove; the trough so made is drained through the more dependent incision, and the bridge of soft tissues is pressed down into the bone by firm bandaging. 6. Large cavities in bone are treated in a similar way, bone being removed subperiosteally so as to convert them into shallow troughs. They are drained by a suitably placed counterincision, and the bridge of soft tissue is pressed down into the trough so as to obliterate the cavity.

Miscellany from Home and Foreign Journals

Ateleiosis.—F. Parker Weber and G. F. Stebbing (*British Journal of Children's Diseases,* July, 1916) reports a case of ateleiosis, a kind of general and symmetrical dwarfism and infantilism which is due to more or less complete bodily and mental arrest of growth and development. It is not confined to any portion of the body. The whole body is affected. These dwarfs differ according to the period at which relative or absolute arrest of growth and development has occurred. It is probably of endocrinic origin. The sexual glands are usually hypoplastic and defective. The family history of the case reported is negative, both as regards the mother's and the father's family. Thyroid was given without improvement. The administration of thyroid seemed to make the patient worse mentally.

Carbon Monoxide Poisoning.—Yandell Henderson (*Journal A. M. A.,* Aug. 19, 1916) states that extensive investigation of this common form of poisoning has shown that this gas is physiologically inert, with the single exception of its affinity for the hemoglobin. Through its union with the hemoglobin it prevents the carriage of sufficient oxygen to the tissues, and it is this which leads to the symptoms in the acute stages, and the damage done which accounts for the persistent symptoms. Contrary to general belief the compound of carbon monoxide with hemoglobin is not permanent, and is broken down fairly rapidly after removal of the patient from the atmosphere. This restoration of oxyhemoglobin may be hastened by the administration of oxygen. Bleeding and transfusion of blood are more likely to be harmful than beneficial. Since there is a marked acidosis in this form of poisoning, the administration of alkalies would theoretically seem to be indicated.

Herpes recurrens.—H. G. Adamson (*British Journal of Children's Diseases,* July, 1916) points out that herpes febrilis is present in forty per cent. of the cases of lobar pneumonia and malaria and often in such conditions as cerebrospinal fever, scarlet, influenza, typhus, diphtheria, typhoid, relapsing fever, smallpox, and nondiphtheritic angina. The nerve disturbance causing herpes febrilis may be due to some toxin common to the infections with which herpes febrilis is associated, this toxin having special affinity for nerve tissue and the sensory ganglia. At times the specific germ is found in the vesicles; pneumococci and diphtheria bacilli have been isolated from these vesicles. In recurrent herpes of the face the eruption usually appears for the first time at the age of three or four years and affects the left cheek more often than the right. The etiology is obscure. Recurrent herpes of the gluteal region has been considered to be a manifestation of latent or declared gout. As to the treatment, any source of reflex irritation such as adenoids, dental trouble, defective eyesight and intestinal worms, should be remedied. Two to five grains of quinine at the beginning of an attack may cause it to be aborted, as also the local application of collodion before the vesicles have matured, or calamine lotion if they have already formed.

Irreparable Paralysis of the Median Nerve.—G. Axhausen (*Berlin. klin. Woch.,* Feb. 14, 1916) reports the case of a soldier in whom there was complete severance of the median nerve beneath the supinator brevis muscle where the nerve divides into its several branches. Since the nerve could not be sutured at this point, tendon transplantation was performed. The tendons of the paralyzed extensor muscles were united to those of the flexor carpi ulnaris, and those of the extensor and abductor pollicis to the flexor carpi radialis. The union was made through the interosseous membrane. Lateral chiseling into the wrist joint was done to procure a limitation of mobility of this joint. Eight weeks after the operation the patient had power of actively extending the fingers, and he learned to use his hand satisfactorily for a variety of purposes.

Laparotomies in Gunshot Wounds.—G. H. Stevenson, J. J. M. Shaw and C. Mackenzie (*Lancet,* July 29, 1916) have learned from a fairly wide experience that success in the treatment of gunshot wounds of the abdomen depends largely upon the length of time elapsing between the injury and the operation; the shorter this interval, the better the chances. A second point of importance is the early recognition of the presence of an intestinal injury. In this connection it was observed that injury to the intestine occurred at times, even when the missile had not penetrated the peritoneum. The best results were secured when the laparotomy was associated with saline lavage of the abdominal cavity and thorough excision of the tissues forming the walls of the wound. The intraperitoneal use of ether as an antiseptic was abandoned except for localized infections, on account of the great shock it caused.

Influence of Altitude on the Nervous System.—George A. Moleen (*Journal A. M. A.,* August 12, 1916), discussing the widespread belief that great altitude tends to increase nervousness and nervous irritability, cites evidence in support of this belief. Many persons, othewise normal, manifest a hyperexcitability at great altitudes which may involve the motor, sensory or psychic spheres or any combination of them. Such manifestations, however, are uncommon and are not encountered in persons truly normal, but only in those sufficiently abnormal to fail to became acclimatized. From a review of the studies made upon the physical effects of great altitudes we find physiological reasons for the development of the nervous symptoms. At great altitudes there is an increased demand for the oxygen carrying elements of the blood which is met in normal individuals in three to five weeks by an increase in both the hemoglobin and the number of red cells. The want of this power of adaptation or some deficiency in it occurs in certain persons, and it is these who are affected by the increased nervous hyperexcitability. By removal of such persons to a lesser altitude and the administration of iron in a form which will lead to an increased production of hemoglobin, they may be cured in many cases.

Fibroids.—John Bland-Sutton (*Brit. Med. Jour.*, July 29, 1916) offers the following useful suggestions, based upon an experience of over 2,000 operations for fibroids. The differential diagnosis is often difficult between solid tumors of the ovary and large subserous fibroids, and between uterine fibroids and tubal swellings. It is unwise to express an opinion on a pelvic swelling without a vaginal examination, or on a hypogastric swelling without passing a catheter. Fibroids should not be removed in any case without excluding the presence of diabetes, for coma will often follow the operation in a few days. Urinary retention in a barren woman thirty-five to forty-five years of age is almost certainly due to a uterine fibroid. When a fibroid suddenly becomes painful during pregnancy, with symptoms resembling those of tubal gestation, rotation of an ovarian tumor, or acute appendicitis, the fibroid will be found in a state of red degeneration. Mistakes in differentiating fibroids and pregnancy usually occur before the fetal heart is audible. Subserous fibroids may be simulated by cancer of the pelvic colon. When, in a young woman, there is doubt whether a uterine enlargement is due to fibroids or to pregnancy, we should wait a month and make a reexamination. Fibroids are more dangerous than ovarian tumors in pregnant women, on account of their liability to become septic. When a fibroid is removed from a woman in her procreative period, she is more likely to acquire more fibroids than to conceive successfully. The operation of partial hysterectomy for troublesome fibroids is nearly devoid of danger, and there were no deaths in the author's last consecutive 200 operations.

Diagnosis of Functional Heart Murmurs.—P. E. Weil (*Paris médical,* July 1, 1916) states that the maximal intensity of functional murmurs on auscultation does not correspond with that of the recognized organic murmurs; they are but slightly, or not at all, transmitted; they are generally superficial, soft, and veiled; they are almost always systolic in time, but generally begin before the first sound and end before the second; they are very variable at different times or even during a single examination, are most marked in recumbency, are sometimes attenuated by deep breathing, and are greatly enhanced by excitation of the heart through emotion or physical effort. The ordinary soft, superficial, and untransmitted functional murmurs are readily recognized. In the differentiation of the more intense, harsh, and transmitted functional murmurs, but little influenced by postural changes and deep breathing, Weil has found that compression of the eyeballs, which acts as a sedative on hearts in a state of erethism and causes functional murmurs to disappear, is of great diagnostic value. Organic murmurs, on the other hand, are rendered stronger or more distinct by ocular compression. In the normal heart, ocular compression causes usually a slight slowing of the heart beat—ten beats per minute on the average—though occasionally the rate is slightly accelerated, and rarely remains unchanged. Hearts with functional murmurs all react in a special manner, the rate being immediately or within ten or twenty seconds lowered from eighty, 100, or 120 to eighty, sixty, or even forty a minute; the rhythm, previously regular, becomes irregular when the rate is greatly slowed; the murmurs, meanwhile, at first attenuated by the maneuvre, later become inconstant and disappear. The murmurs may be made to reappear, more clearly than before, by having the patient run. Renewed ocular compression is then even more effective than before, the rate dropping from 120 or 140 to as low as twenty-five. By the use of this test the authors readily cleared up a series of complex cardiac conditions. Many supposed instances of pulmonary or aortic stenosis or of mitral insufficiency were found to be nonexistent, and it was learned that rather frequently functional and organic murmurs coexist, ocular compression causing, for example, loud basal or apical exocardiac murmurs to disappear, only to reveal a mild mitral regurgitant murmur, previously inaudible. By combining with the ocular test Martinet's procedure of investigating circulatory functional efficiency by recording the pulse rate and blood pressure during rest and after exertion, Weil was markedly successful in differentiating functional cardiac disorders, insignificant in their bearing on general physical resistance, from organic disease.

Disturbances of the Visual Apparatus in Traumatism of the Orbit by Firearms.—Lagrange (*Bulletin de l'Académie de médecine,* June 27, 1916), from observation of 179 cases of fracture of the orbit without destruction of the globe, is led to formulate five axioms relating to the eye disorders resulting from such wounds. 1. When the projectile passes above the orbit, striking the frontal bone and the anterior cerebral region, it entails radiating fractures which react, at the optic foramen and the sphenoidal fissure, on the special sense, motor, and sensory nerves of the orbit; the eyeball, however, remains uninjured. 2. When the projectile passes below the eyeball, without entering or fracturing the orbit, it causes lesions due to concussion reacting on the eye in the macular region; this is the main cause of central disorders of vision. 3. When the projectile has fractured the orbit, driving in its wall more or less deeply without touching the eyeball, it produces in the latter grave lesions due to concussion, including macular disturbances and ruptures of the choroid; the macular lesions are distinct whether it be the outer, inner, or inferior wall of the orbit which has been injured, while the choroid lesions are found opposite the fractured wall. 4. When the projectile has passed through the orbit without touching the eyeball, the same disorders are produced, and such disorders as result from laceration of the structures contained in the orbit; the optic nerve is often cut, the pupil being in this case lacerated, as though torn out. 5. When the projectile touches the eyeball tangentially, without rupturing it, disturbances occur immediately opposite the torn point, e. g., chorioretinal tears with detachment of the retina and proliferating retinitis; the macular region is, in these cases, often involved in these disturbances, but is not separately affected, as in 2 and 3. Lagrange presents histories of cases showing the solidity of the principles he enunciated.

Radiodiagnosis of Appendicitis.—George Vilvandre (*Archives of Radiology and Electrotherapy*, July, 1916) reports a case in which the diagnosis of paratyphoid and cholelithiasis had been made. The right iliac fossa was investigated with the x ray and a concretion was found, which made the diagnosis of appendicitis positive. In making the differential diagnosis between ureteral calculi and calculi of the appendix, it is important to remember that ureteral calculi are situated more internally. An error of interpretation will be possible only when the appendix lies in the three o'clock position, over the psoas and hanging over the brim of the pelvis. In order to do this the appendix must be much elongated. Impacted gallstones, or one in the lower end of the common bile duct, will appear at a higher level. There is no added risk entailed in radiographing just before operation. Another advantage of taking an x ray picture is that the appendix is localized and the surgeon need not hunt for it.

Appendicitis Complicating Pneumonia. — J. Allan (*British Journal of Children's Diseases*, July, 1916) cites the history of a case admitted to the hospital with the diagnosis of acute appendicitis. The symptoms were entirely abdominal and the spot of greatest abdominal pain was in the right iliac region. Examination showed general abdominal tenderness on palpation, particularly over the area of the appendix, and the abdominal muscles in that region were distinctly rigid. There was marked tenderness over McBurney's point. The examination of the lungs was negative. The appendix was removed and it was found to be inflamed, and to contain a blood clot. A mixture of chloroform and ether was used as the anesthetic. The following day a troublesome cough developed and the temperature at 6 a. m. was 103.6° F. Two days later the temperature fell from 103.6° to 96° within thirty hours. This was clearly a case of pneumonia complicated by appendicitis, the infection of the appendix being probably caused by the pneumococcus.

Trench Diarrhea.—F. Rathery and L. Bisch (*Presse médicale*, July 6, 1916) discuss the etiology of trench diarrhea, and assert that many instances of it are merely cases of dysentery. Systematic serum diagnosis for dysentery bacilli and examination of the stools for amebas has frequently shown this to be true. At times, however, as exemplified in four cases which the authors report, no amebas can be found, and yet emetine hydrochloride is remarkably effective. These cases, though apparently mild at first, are in reality serious, becoming complicated by large, typical liver abscesses. In the four cases reported surgical treatment of the abscess uniformly resulted in recovery. Chocolate colored pus was evacuated which was entirely sterile and free of amebas, as were also fragments of the abscess wall. Nevertheless the cases are considered to have been instances of true, but larval, dysentery. In many other cases of dysentery efficiency of emetine, in spite of the absence of amebas from the stools, was observed. In the four cases reported the signs of hepatic involvement were not marked, consisting merely of a slight dullness anteriorly or posteriorly, without polynuclear leucocytosis. The diagnosis was chiefly based on x ray examination.

Localized Osteospondylitis.—Willis C. Campbell (*Journal A. M. A.*, Aug. 19, 1916) states that this disorder does not seem to have been generally recognized, and that the literature contains no reports relating to it. The condition is sharply localized to a single pair of vertebræ, and is an osteoarthritis, producing lipping of one of the affected bones and more or less complete union with its neighbor, so that the two vertebræ become immovable upon one another. In the acute type, the symptoms resemble those of spinal tuberculosis, and in the subacute or chronic type, pain is the chief symptom. The pain is usually referred, so that the condition is often mistaken for some form of abdominal visceral lesion. Thus one patient was operated upon several times for one or another form of abdominal lesion, and another had the diagnosis of renal calculus made. The diagnosis of the condition can be made only as the result of careful radiography which reveals the presence of lipping or the formation of a complete ring of new bone surrounding a single intervertebral cartilage. The etiology seems to be the same as that of other forms of uniarticular osteoarthritis. In one of the cases it was due to pneumococcal, and in another probably to gonococcal infection. Relief was permanently secured in the three cases, treated by more or less prolonged immobilization of the spine through extension on a Bradford frame.

Sinoauricular Block Due to Tobacco Poisoning.—S. Neuhof (*Archives of Internal Medicine*, May, 1916) states that while it has long been known that overindulgence in tobacco causes cardiac arrhythmias, the exact nature of these has not as yet been determined with the aid of the modern graphic methods. In his own experience he has known of several cases of extrasystoles (premature beats), one of auricular flutter and one of auricular fibrillation due to tobacco poisoning. In a recent case, however, that of a man of twenty-eight years who had been smoking uninterruptedly since the age of fifteen years and used three cigars and three pipefuls a day, a condition of sinoauricular block—standstill of the entire heart—was revealed, one beat in every three to five beats being completely missing, with entire absence of the heart sounds. The length of most of the pauses was somewhat less than two normal beats. There was no evidence of organic cardiovascular disease in this case, and no symptoms were produced by the arrhythmia. In another case, that of a man of fifty-seven years averaging thirty cigarettes daily, ventricular extrasystoles and sinoauricular block were both present, together with slight myocarditis and nephritis. Under cessation of smoking and moderate doses of bromides, the sinoauricular block disappeared in three days, but the extrasystoles persisted, only to disappear, in turn, under digitalis, theobromine, and the Karrel diet, compensation having been fully restored. A different origin of the two forms of irregularity is thus strongly suggested. The sinoauricular block is ascribed to excitation of the vagus by the tobacco, this inhibiting the cardiac "peacemaker" in the sinus region of the heart Such an action accords with observations of the action of nicotine on the vagus in experiments on animals.

Proceedings of National and Local Societies

AMERICAN PEDIATRIC SOCIETY.

Twenty-eighth Annual Meeting, Washington, D. C., May 9 to 11, 1916.

The President, Dr. Rowland Godfrey Freeman, of New York, in the Chair.

(*Concluded from page 428.*)

Some Early Symptoms Suggestive of Protein Sensitization in Infancy (*Continued*). — Dr. Oscar M. Schloss, of New York, had made a large number of skin tests in infants with inconclusive results, in chronic nutritional disorders. He stated that sensitization from the absorption of unaltered foreign protein had not been proved to occur regularly in human beings, as in animals. He thought that the idiosyncrasy of some infants to foods that they had never before ingested might be explained by inheritance. In four cases of asthma that had a definite relation to food, he had accomplished desensitization with good results.

Dr. Fritz B. Talbot, of Boston, believed the condition of anaphylaxis giving rise to symptoms of asthma to be a relatively rare one. In looking through the hospital records, he had found very few such cases that might have been of anaphylactic origin, but had found more among the skin cases. Of the respiratory symptoms, he thought that wheezing, when there were no rales in the chest, with no fever and nothing else to explain it, might be of anaphylactic origin. Croup might also be in a few instances, and likewise some digestive disorders, he said.

Early Morning Vomiting in Children.—Dr. Thomas S. Southworth, of New York, directed attention to the vomiting of children, which not infrequently occurred in the early morning either before or soon after the first feeding. This he believed to be of toxic origin, since the vomitus after the long night period contained no food residue unless a morning feeding had been given. It was sharply distinguished, he said, from the vomiting of undigested and fermenting food from failure of gastric digestion, which usually occurred later in the day. The cases, one of which was related as typical, had neither the characteristic histories nor clinical symptoms and course of recurrent vomiting, which was another toxic type. He believed that in the recurrent type the toxemia was probably of gradual and cumulative evolution brought to a head by constipation or some unusual factor. Elimination, he stated, was slow and vomiting prolonged. Fever was not constant. In the type under consideration with early morning vomiting fever was a usual accompaniment, often rising sharply, and there was an acute putrefactive process in the intestine with absorption and attempted reelimination by the gastric mucous membrane. He assumed that this toxic material accumulated in the stomach during the hours of slumber when reflexes were more or less deadened and asserted its presence in vomiting after awakening. Purgation resulted in foul stools often containing mucus. After the stomach was emptied by one or two acts of emesis at short intervals there is not the same tendency to recur which pertained to the recurrent type. He believed that the extreme caution in the resumption of feeding often displayed after attacks of recurrent vomiting frequently led to undernutrition in children whose attacks occurred at rather short intervals, and said that slightly greater care was demanded in the acute toxic type of intestinal origin, especially in the summer months, because of the intestinal condition. With care, however, he thought that reasonable feeding might promptly be inaugurated. The author believed early morning vomiting without food residue from the previous day to be a sign of value as indicating an acute toxemia arising in the intestinal tract.

Dr. DeWitt R. Sherman, of New York, asked whether Doctor Southworth had had an analysis made of the material vomited in the early morning. He thought that such an analysis might afford an indication as to whether there was hyperchlorhydria.

Doctor Talbot asked whether the urine had been tested for acetone in the early morning.

Dr. Isaac A. Abt, of Chicago, was inclined to be skeptical as to the gastrointestinal nature of the vomiting, which, he said, occurred in a great many conditions outside the gastrointestinal tract; for instance, nasopharyngitis.

Doctor Southworth said that he had not made any tests, but thought it probable that some of the children might have had hyperchlorhydria. While a great many children with gastrointestinal disturbances had an odor of acetone in the breath, Doctor Southworth stated that he had made no examination of the urine in these cases. He felt sure that the gastrointestinal condition was the cause of the symptoms in his cases, as these all subsided when the gastrointestinal tract was cleared out. There had been no cough or nasopharyngeal mucus.

A Study of the Etiology of Chorea.—Dr. John Lovett Morse, of Boston, as the result of his investigations, concluded that syphilis played no part in the production of chorea. No microorganisms were found in the spinal fluid, but various bacteria were found in the blood. None except a streptococcus would produce lesions in animals. This organism did produce lesions of chorea in rabbits. The organisms found in the different cases were different. There was a local infection in all the cases in which cocci were found in the blood, so these organisms might have had nothing to do with the chorea. Doctor Morse did not, therefore, consider the bacterial origin of chorea as proved. He thought, however, that chorea must be intimately connected with rheumatism and endocarditis.

Dr. Henry Koplik, of New York, had made a number of cultures for syphilis in cases of chorea with negative results. He thought that there might be a bacterial invasion at first, the bacteria disappearing and leaving behind them the toxin causing the symptoms.

Doctor Abt considered chorea to be the expression of a state of the nervous system occurring in a variety of conditions. He had collected 225 hospital cases, and had found that the majority of the patients had had chorea for a definite time without any history of a previous infectious disease that could be connected with the chorea.

Dr. B. S. Veeder, of St. Louis, had never been able to get a change in the colloidal bone reaction, indicating that chorea was not a primarily bacterial condition.

Dr. Abraham Jacobi, of New York, announced the forthcoming publication of a paper by Dr. A. L. Goodman on the subject of a new treatment for chorea by which he was able to cure the cases within a few days. The method consisted in injecting into the child some of the serum from its own blood.

Doctor Morse stated that thirty-seven per cent. of the children had had rheumatism in the past or with the chorea, with acute endocarditis and with valvular lesions.

The Effect of Subcutaneous Injections of Magnesium Sulphate in Chorea.—Dr. Henry Heiman, of New York, had tried injecting a twenty-five per cent. sterile solution three times daily for fifteen days in five cases. In none of these was sufficient improvement produced by the treatment to warrant him in giving it a further trial.

The Prognosis and Treatment of Banti's Disease in Children.—Dr. Edwin E. Graham, of Philadelphia, reported a case that he had studied since last August. The child had been under treatment all of this time, and was practically in the same condition as when first seen, except for a slight improvement in the blood count. He was considering the advisability of performing splenectomy, which he thought the proper treatment for a case in this stage. The Wassermann test had been negative, and the patient had no ascites, no jaundice, and no changes in the liver.

Doctor Koplik said that he believed Banti's symptom-complex, if it existed at all, to be rare.

Familial Icterus in the Newborn.—Dr. Isaac A. Abt, of Chicago, related instances of this disease in two families, of five and six children, respectively. There was nothing in the history of either family to show the cause of the disease in these infants. Three children of the first family had died, one on the third day and two on the fourth. In the second family, two children had died of icterus on the third day. The last child had had the disease, but had improved on the fifth day and got well. Doctor Abt said that this disease was quite different from chronic familial jaundice, in which the patients might live to advanced age.

Dr. Wilder Tileston, of New Haven, said that yellow staining of the nuclei of the base of the brain and medulla was never encountered in jaundice in the adult, and that its presence indicated a powerful poisoning. He did not believe familial icterus to be a septic condition. He asked whether fragility of the red cells had been noted in either the mother or the child in connection with this disease.

Doctor Sherman wondered whether these cases of jaundice might not be due to the poison of chloroform, which might produce degenerative changes resulting in death some days afterward.

Doctor Abt stated that the blood had been examined in several of the cases, and no alteration had been found in the red cells. He thought that the mothers had received no chloroform, or very little.

Observations on the Endermal Injection of Diphtheria Toxin with Reference to the Schick Test.—Dr. David M. Cowie, of Ann Arbor, said that these endermal tests had been made in twenty-three infants, with ten positive and thirteen negative results. Negative reactions were frequent in infants under five months. Young infants, he said, are seldom attacked by diphtheria; and a large number of those under six months of age were immune. He thought that a delay in reaction meant that the individual had a certain amount of immunity. The toxin in minute amounts seemed to stimulate the formation of antitoxin, rather than to use up an appreciable amount of the antibodies already present.

Doctor Koplik emphasized the fact that the preparations of diphtheria antitoxin should be standardized, and said that a definite amount of standardized solution injected under the skin would produce a minimal amount of trauma, and thus practically eliminate pseudoreactions due to this. He had also succeeded in doing away with anaphylactic reactions by this means.

Doctor Hess said that these toxin-antitoxin mixtures would not confer immunity in all cases, a small percentage of children being unable to form antitoxin, as was the case with horses.

Scarlet Fever and Measles Occurring Simultaneously in the Same Family, the Other Children Acquiring Measles Only.—Dr. D. J. Milton Miller, of Atlantic City, said that when scarlet fever and measles occurred together, the diagnosis was extremely difficult, the eruption in measles often being so confluent as to resemble scarlet fever, and the eruption of scarlet fever so morbilliform as to resemble measles. They should be careful to make a diagnosis of double infection when this was present, as in one of the children of the family reported.

Dr. Matthias Nicoll, Jr., considered it impossible to make a certain diagnosis when these two diseases were thought to be present at the same time, because there were no absolutely typical forms of desquamation in these cases. He did not feel that the double character of the infection had been proved in the case of Doctor Miller.

Doctor Miller said that he had not seen the peculiar eruption of the skin and finger nails in any cases that were not scarlet fever, and had based his diagnosis largely on that fact.

Some Observations on Measles.—Dr. Charles Herrman, of New York, said that the deaths reported as due to measles did not give a correct idea of their real number; because a large number were put down as due to the complicating bronchopneumonia, which occurred especially between the ages of one and two years. He stated that infants under two months were absolutely immune, this immunity gradually disappearing, and being entirely absent at the age of eight months. The immunity was probably conveyed through the placental circulation.

Doctor Koplik stated that at the very outset, sometimes five days before the eruption, there was a febrile movement accompanied with the first appearance of the Koplik spots. When this phenomenon occurred, he was accustomed to isolate the children and wait patiently for the development of the rash.

Doctor Holt mentioned the fact that there was on record another case in a very young baby, five weeks old.

Doctor Hamill asked whether Doctor Herrman wished to imply that it was a good thing to expose children under five months to infection.

Doctor Herrman admitted that it was impossible to be absolutely sure that a baby under five months could not contract the disease, and did not wish to put himself on record as favoring the exposure of any child to a contagious disease; but he said that experience had shown that if these babies were exposed and did contract measles, it was of a very mild character.

Meningitis in the Newborn and in Infants under Three Months of Age.—Dr. Henry Koplik, of New York, believed meningitis in the newborn to be a primary infection in many instances, and ascribed the difficulty in making the diagnosis to the fact that the signs applied later in life could not be applied to newborn infants. Some of the characteristic symptoms could be found, however. He stated that the disease was not always caused by the meningococcus, but that all the cases seemed to be fatal, sooner or later. He considered that the infection might be produced through the methods often resorted to to resuscitate newborn infants.

Doctor Talbot wished to know how Doctor Koplik differentiated between the meningococcus and the gonococcus.

Doctor Miller spoke of a case of meningitis in a newborn baby in which the first symptom was conjunctivitis, wrongly diagnosed as of gonococcal origin. The meningococcus was found on ventricular puncture.

Doctor Herrman referred to the case that he had reported at the 1915 meeting, in which the child did not have even one convulsion. He thought that this indicated that cases in early life were not so infrequent as was believed. He said that in some instances the infecting organism was the colon bacillus.

Dr. J. H. M. Knox, of Baltimore, mentioned having reported a case in which a child only a year old, with beginning hydrocephalus, had been found with slightly turbid cerebrospinal fluid containing the meningococcus. There was only a very indefinite history of meningitis in the case.

Doctor Abt asked whether there was any difficulty in differentiating meningitis in the newborn from meningeal hemorrhage, cerebral abscess, or sinus thrombosis; and whether there was any difficulty in hospitals in making lumbar puncture in the cases of newborn infants.

Doctor LaFetra said that meningitis was frequent as a part of general sepsis in infancy, without the symptoms of meningitis. He thought that if lumbar punctures were done and autopsies made more frequently, more of these cases would be found. He referred to an interesting case in which pus containing the meningococcus was known to have developed in the cord within two days.

Doctor Koplik said that he did not know anything about the minutiæ of bacteriology. He stated that when there was a slight fever in the newborn, it was difficult to differentiate between meningitis and ordinary meningeal hemorrhage. He had not seen sinus thrombosis in any of these infants. The members of the staff at his hospital, he said, had no trouble in performing lumbar puncture. He hesitated to perform lumbar puncture in a newborn baby unless he felt that delay would harm the child and was not certain as to the diagnosis.

The Use of Salt Solution by the Bowel (Murphy Method) in Infants and Children.—Dr. Edwin E. Graham, of Philadelphia, considered this method of more value than was usually thought. He had had gratifying results from its use in cases of pylorospasm, erysipelas, and typhus fever. The enemata should be given slowly, trickling into the rectum at the rate of half a pint an hour. It should be kept at a temperature of 98° to 100° F.

Doctor McClanahan said that infants from two to six days of age often suffered with what was called "inanition fever."

Doctor Abt had not met with a great deal of success in keeping the tube in place, on account of there being considerable irritation around it. He thought that giving the child water to drink by rectum would cause it an increased amount of labor that might cost a weak baby its life.

Doctor LaFetra said that he used an inverted thermos bottle for holding the liquid, in order to keep it at the proper temperature.

Doctor Graham said that in his cases he had given the fluid by rectum because it was impossible to introduce it through the mouth and the stomach.

Pseudorubella in Infancy.—Dr. Thompson S. Westcott, of Philadelphia, had observed ten cases resembling mild rubella that had not been preceded by similar attacks or by rubella in other members of the family. The patients recovered promptly. All the children were under two years of age. The rash was lighter in color than that of true measles, and did not simulate the scarlatiniform type of rubella. It faded rapidly, leaving less pigmentation, and showed no desquamation. It was practically the only symptom of the eruptive stage, and the temperature fell as soon as the eruption appeared. Enlargement of the lymph nodes was the only glandular involvement. It was of independent origin, and not secondary to irritation of the skin surface.

Doctor Nicoll thought the fact that the disease was not contagious and that there was no wave of true rubella sufficient reason for not mentioning the name rubella in connection with it.

Doctor Westcott said that he had called it pseudorubella merely as a program title. He did not know what the disease really was.

The Energy Metabolism of a Cretin.—Dr Fritz B. Talbot, of Boston, had studied a typical cretin of three years and eight months in the Benedict respiratory chamber of the Massachusetts General Hospital, and had found that when the child was quiet, he produced thirty-nine to forty-two calories to the kgm. of body weight. This was relatively lower than in normal babies. The metabolism, estimated on the basis of body surface, was also relatively lower than that of two normal babies of eight and a half and ten months.

Doctor Sedgwick said that at Minneapolis they were doing work on creatin-creatinine in all the cretins they could get a chance to study, and had seven hundred unpublished records. In a case of hypothyroidism, they had given the child desiccated thyroid, and had found that the creatin-creatinine excretion jumped up markedly. This was considered as an evidence of increased metabolism.

Doctor Talbot thought there must be some connection between the creatin or creatinine and the amount of active protoplasmic mass in the baby, which also seemed to have an influence on the amount of metabolism.

The Dangers from Carriers of Diphtheria to Hospital Efficiency.—Dr. Samuel S. Adams and Dr. Frank Leech, of Washington, reported an epidemic of diphtheria at the Children's Hospital, due to the admission of a child with pneumonia who proved to be a diphtheria carrier. The wards had to be closed for the admission of new cases for three weeks, greatly crippling the hospital's efficiency. The speakers suggested that a ward should be provided for the detention of new cases until opportunity had been afforded to observe them. Visitors should be restricted to adults, and these should be admitted as infrequently as possible.

Doctor Graham thought that having a detention room and making cultures of the nose and throat would be of no use unless adequate provision was made to exclude not only children, but also adults, from visiting the wards. He said that at the Jefferson Hospital they admitted visitors to a balcony from which they could see the children through windows opening into their ward.

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Letters to the Editors

ADRENALINE PER OS.

Buffalo, *August 8, 1916.*

To the Editors:

Referring to the communication by Dr. Leland Boogher, of St. Louis, on this subject, I would say that in 1900 I used adrenaline by mouth quite a good deal as a circulatory tonic, with satisfactory clinical results, so that, for that period, I almost abandoned digitalis. On account of reports of the degenerative processes that might be caused by adrenaline and the general fear of high blood pressure, I discontinued this use of the drug. However, the former reports are mostly based on experimental work with local application of solutions of adrenaline to organs, and some of us are getting around to the idea that it is a good deal better to have too high than too low blood pressure.

I may confess that, at least since 1900, I have very frequently used adrenaline against gastric and intestinal hemorrhages, by mouth, usually with clinical satisfaction, though, as almost all authorities have denounced such administration as worthless, I have not cared to say much about it. However, for several years, I did not have the courage to admit that I could not get a small soft catheter several feet into the bowel without kinking, because every one else told how easy it was.

Directly or indirectly, adrenaline has many advocates as a local anodyne, though mainly when used externally. I cannot say that it has ever had any such effect in gastroenteric conditions, except after the healing of hemorrhagic conditions, and I do not see just how it could act to relieve pain in a spasmodic condition, such as accompanies gallstones. A. L. Benedict, M. D.

THE DEPARTMENT OF HEALTH AND ADRENALINE IN POLIOMYELITIS.

New York, *August 25, 1916.*

To the Editors:

I hope you will permit me some space in your Journal for the following brief remarks of a personal nature.

In my article entitled, The Treatment of Acute Poliomyelitis, published in your issue for August 19th, there are, on page 340, two footnotes which I wish I had omitted; I wish now to correct any erroneous impression which they may have conveyed. It has reference to the supposed inimical attitude of the department of health toward the treatment of poliomyelitis by adrenaline. If I entertained such a supposition before, I know now that I was mistaken, and I gladly apologize to the commissioner of the department for my incorrect public expression. The department was entirely impartial with regard to the choice of the method of treatment, and as far as the adrenaline treatment is concerned, I have the evidence in the fact that more than 100 cases of infantile paralysis were treated by the adrenaline method in the hospitals under the control of the department of health. S. J. Meltzer, M. D.

THE SERUM TREATMENT OF POLIOMYELITIS.

New York, *August 22, 1916.*

To the Editors:

Under the foregoing caption the issue of the *Weekly Bulletin of the Department of Health* for August 12th contains statements which require critical analysis. The statement which interests us chiefly reads as follows: "Among the various methods advocated for the specific treatment of poliomyelitis several deserve mention as being based on sound scientific principles. One of these consists of using the fluid withdrawn by spinal puncture for reinjections subcutaneously or intramuscularly into the same patient. This method is based on the assumption that the spinal fluid withdrawn from the patient contains the virus of the disease and that the virus injected subcutaneously or intramuscularly will stimulate the production of antibodies which will aid in overcoming the infection. In other words, the method is one of active immunization." Incidentally we may add that the same method of treatment is described in the New York Medical Journal for August 19th in an article entitled, Autotherapy in Poliomyelitis. I feel confident that not many discerning medical readers of the last named article will be inclined to say that the method is based on "sound scientific principles," and I doubt that this article could exert an extensive undesirable influence upon the therapeutics of poliomyelitis. It is different, however, with the statement in the bulletin; this bears an official stamp and the bulletin is very widely distributed among physicians of this city; many physicians may thereby be induced to employ this method, especially since its execution is comparatively simple. I regard it, therefore, as a duty to analyze this method critically with reference to two points: First, a minor question, whether the method is indeed based on "sound scientific principles," and, second, an important question, whether the method fulfills the cardinal requirement of all therapeutic measures, namely, that they should not contain elements of danger. As to the first question, superficially the method appears to be based on a few indisputable scientific premises. It is based on the assumption that during the active stage of the disease the spinal fluid of the patient contains live virus. This is indeed a fact, as is shown by the work of Flexner and his associates. It is further an established fact that a subcutaneous injection of live virus is often capable of setting up an infection of poliomyelitis. Finally, the method is tentatively based on the admissible assumption that by subcutaneous injections of ineffective doses of the virus, a state of active immunization in monkeys could be established. This is merely a supposition that has not yet been established by experiment; the active immunization which various investigators succeeded in establishing was made, as far as I know, by intracerebral injections. But as stated before, it is an admissible assumption. However, while these premises are thus undisputed, I am certain that the chief conclusion drawn from these premises is not "based on sound scientific principles." No experiments are on record in which monkeys *already sick were cured by subcutaneous injections of live virus.*

Now as to the cardinal point: Whether such experiments have been made or will be made on monkeys *it seems to me quite clear that such therapeutic experiments should never be made on human beings.* The first effect of an injection into a patient of a medium containing live virus, while the disease is still in an active stage, will not be an immediate active immunization, but *an additional infection, which might be sufficient to cause the death of the patient, or, if survived, to leave him with a greater degree of paralysis.* For a better understanding, let us compare the procedure under discussion in acute poliomyelitis with an injection of live typhoid bacilli into a typhoid patient, or with an injection of tubercle bacilli in a tuberculous patient. One of the following conditions is liable to result from such an injection: Either it may, by additional infection, cause the death of the patient after the first injection; or it may, if the added infection is very small, do neither good nor harm; and, finally, it may, after repeated injections with harmless single doses, cause occasionally, indeed, an active immunization with a consequent cure of the patient. On account of the possible fatal outcome, such a procedure is absolutely prohibited in the diseases mentioned. It ought not to be different in poliomyelitis. Assuming that infantile paralysis, which we treat by subcutaneous injection of spinal fluid, has a degree of infection which borders on the danger line—without further increase in the infection, there may still be a chance for recovery. But by the injection of a dose of live virus, be the dose never so small, some degree of a new infection is added and may turn the scales to the fatal side. Furthermore, in surviving patients, it could be asserted, that without the additional infection, there would have been no residual paralysis at all, or the paralysis would have been less extensive. We need not discuss the question whether such subcutaneous injections may sometimes do good; the evident fact that in some cases the subcutaneous injection of spinal fluid containing live virus is liable to do definite harm, prohibits this procedure absolutely in all cases of infantile paralysis.

On the basis of the foregoing analysis I come to the *conclusion that the treatment of infantile paralysis by subcutaneous injection of the spinal fluid withdrawn from the patient is not only not based on "sound scientific principles," but it is absolutely contraindicated and ought to be prohibited by those in authority.*[1]

From the above mentioned article, Autotherapy in Poliomyelitis, we get the information that the stimulus for using autotherapy in poliomyelitis was given by the supposed fact that cerebrospinal meningitis appears to respond readily to this treatment. Doctor Laidlaw is quoted there as saying that he thought he was the first to withdraw the spinal fluid in a meningitis case and inject it under the skin. It ought to interest Doctor Flexner to learn that Doctor Laidlaw "had been surprised at the number of apparent cases that *had a sterile spinal fluid, in which prompt improvement might follow its injection under the skin.*" But "*the bacterial cases he had had the misfortune to see late in the disease ended fatally.*" If I remember correctly, in dispensing the antimeningococcus serum, Doctor Flexner insisted that it should be injected only after finding Meningococcus intracellularis in the cells of the spinal fluid.

The other method which the bulletin considers as deserving of mention, "consists in treating the patients by means of spinal injections of blood serum derived from persons who have recovered from poliomyelitis." This method has been recently discussed by Doctor Flexner (*Journal A. M. A.*, August 19, 1916, p. 583). It may be recalled here that the favorable experimental results which gave rise to the use of this method in human beings were obtained only when the therapeutic treatment "was begun the next day or from eighteen to twenty-four hours after the infection"—that is, long before the onset of clinical manifestations. As far as I know the subject, no successful experiments have been reported in which the treatment was begun when the disease was already clinically manifest. In human beings we deal only with such conditions, and so far clinical observations do not yet permit a definite conclusion as to the actual value of this method. However, since the spinal injections of human blood serum apparently do no harm, and since there is experimental evidence that the spinal fluid probably contains some degree of substances capable of neutralizing the virus, this method ought to be used; the patients ought to receive the benefit of the doubt. But under these circumstances Doctor Flexner's warning deserves special attention, namely, that "in choosing the person who is to serve as the source of the blood from which the immune serum is to be derived, precaution should, of course, be taken to secure a healthy donor; it would be advisable to fortify the usual clinical examination by a Wassermann test." I would add: and by a tuberculin test.[2]

S. J. MELTZER, M. D.,
Rockefeller Institute.

BACILLUS BULGARICUS.

NEW YORK, *August 12, 1916.*

To the Editors:

I am a retired physician of over thirty years' practice in this city, and with the exception of the first few years, my services were always given gratis. My only regret now is that they were not always so given. I simply state this so that there need not be any inference of commercialism on my part in this matter. On account of this, however, I have always insisted on being governed by my own conscience and sense of right in preference to some one's else selfishness and self interest.

When Bacillus bulgaricus was first made known, I investigated it for myself as to its merits and found them to be such that I have never had any reason to think of the remedy in other than the highest terms. In fact, the results I have had from its use have been such that if anybody had told me of them, I should most certainly have not believed them. Now a young man of my acquaintaince has asked my advice in regard to putting on the market a preparation of this remedy in a strictly ethical way solely for the use of the medical profession and thus depending on them for its success. I have hesitated to give this advice until I learned the exact opinion of the voices of the profession—the journals. I have been sometimes led to think that there was some latent prejudice against this remedy, although for what reason I have been unable to fathom. That it is therapeutically a marvel I have assured myself from many years' experience in its use, but you know as well as I do what prejudice in the medical profession means and I would not want to advise my young friend to embark in anything that would not offer some chance of success or that would not be favorably received. Whatever information you gave me on this subject would be greatly appreciated. PERRY DICKIE, M. D.

[A number of excellent commercial cultures of Bacillus bulgaricus and similar lactic acid ferments are already on the market.—EDITORS.]

CAN POLIOMYELITIS BE TRACED TO POULTRY?

NORFOLK, VA., *August 22, 1916.*

To the Editors:

Poliomyelitis, which is rampant in the large cities of this country, has stimulated the medical profession to investigate the etiology and treatment of this contagious malady.

It is my theory that there is a disease among chickens which the farmers designate "chicken rheumatism," which closely resembles poliomyelitis. The chicken from all outward manifestations appears to enjoy good health, when without warning their legs give way and they become paralyzed. Should they not die in a day or two the paralysis is permanent. The contagion is especially noticeable among Plymouth Rocks and is largely prevalent during the summer months. Now it is my opinion that unscrupulous farmers kill these chickens and send them to the market and this is how the infection obtains its first grip on the victim.

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[1] I am very much pleased to state that since I wrote these lines I have received authoritative information that this treatment has been prohibited.

[2] If I understand correctly, the human serum which is used in the city of New York is prepared by the research department of the board of health in a way which is believed to make the tedious Wassermann and tuberculin tests unnecessary. To the serum, which is obtained from the blood of a human being, 0.3 tricresol is added and the serum is then passed through a Birkenfeld filter. The well known head of the research department is surely competent to judge whether this procedure eliminates the necessity for the tests mentioned and especially whether the tricresol and the filtration are apt to reduce the value of the antivirus substance in the serum.

Pathologically, the fowls have a high fever a day or two previous to the attack, and as a rule they are infected with chicken lice. This medium to my mind is largely responsible for the distribution of the infection.

A post mortem examination will reveal a livid appearance of the flesh and of the lice in the flesh. Their action appears to me the same as in phthiriasis corporis among the human family in producing typhus. Now I suggest the following as a treatment for this scourge.

Should the brain and the spinal cord contain the element of infection which produces this disease, would it not be well to make a serum of the brain and spinal cord from those that have survived and are immune from a second attack. Verification might be made microscopically and bacteriologically by inoculation of monkeys, etc.

The thoughts herein expressed are not made in any offhanded fashion, but are the result of careful study of this subject, and I believe the suggestion worthy of investigation. Benjamin I. Berman, M. D.

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Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Refraction of the Human Eye and Methods of Estimating the Refraction. Including a Section on the Fitting of Spectacles and Eyeglasses, etc. By James Thorington, A.M., M. D., Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine; Member of the American Ophthalmological Society; Fellow of the College of Physicians of Philadelphia, etc. Three Hundred and Forty-four Illustrations, Twenty-seven of which are Colored. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xiii-407. (Price, $2.50.)

As each of the writer's books, *Prisms, Retinoscopy,* and *Refraction and How to Refract,* appeared, it was commended by us as excellent, and it is not easy to add anything in regard to this one, into which these three have been combined. Some additions and some deletions have been made, and the combination has necessitated a considerable amount of rewriting, although no material changes have been noted. It forms a clear, concise, and sane presentation of its subject from the standpoint of a writer who believes cyclopegia to be *sine qua non* for refraction work. Much good advice is given on homatropine as a cycloplegic, concerning which the reviewer is heartily in accord with the writer, even though it is not in accord with the way in which many physicians employ the drug. The book is one that should be recommended widely for the instruction of students, as there is nothing precisely like it in ophthalmological literature.

Operative Midwifery. A Guide to the Difficulties and Complications of Midwifery Practice. By J. M. Munro Kerr, M. D., C. M. (Glas.), Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow; Hon. Fellow, American Gynecological Society; Professor of Obstetrics and Gynecology, Glasgow University (Muirhead Chair), etc. Third Edition. With 308 Illustrations in the Text. New York: William Wood & Co., 1916. Pp. xv-725. (Price, $6.)

The author begins this treatise with the statement that obstetrics should no longer be considered as a department of medicine, but rather as a branch of surgery requiring a knowledge and practice of surgical principles. Therefore stress is laid on the preparation of the operator's hands, the instruments, sponges, and in fact general surgical technic. Doctor Kerr prefers abdominal Cæsarean section to either symphysiotomy or pubiotomy early in labor. The method of applying the forceps with the patient in the left lateral position will seem strange to the American reader, as this position is not commonly used in this country. Axis traction forceps are unhesitatingly preferred to the ordinary style for all purposes. The work is based upon the writer's experience in the Glasgow maternity, and the illustrations of the operations were taken from actual cases.

Localization by X Rays and Stereoscopy. By Sir James Mackenzie Davidson, M. B., C. M. (Aberdeen), Consulting Medical Officer, Röntgen Ray Department, Royal London Ophthalmic Hospital, and X Ray Department, Charing Cross Hospital, etc. With Thirty-five Stereoscopic Illustrations on Special Plates, and Other Figures in the Text. New York: Paul B. Hoeber, 1916. Pp. xi-70. (Price, $3.)

A brief description of the x ray tube and the new Coolidge tube is followed by a chapter on secondary rays and the methods of protection employed against the x ray. Stereoscopy is then carefully considered, several forms of stereoscopes being described. It is shown how misleading a single picture may be. How to localize foreign bodies anywhere, but particularly in the eye and orbit, is carefully explained. In the appendix there are several chapters of interest—one describing the telephone attachment in surgery and another the electromagnet as an aid to localization. There are numerous illustrations of the various devices described in the text—also many beautiful skiagraphs.

Modern Medicine and Some Modern Remedies. Practical Notes for the General Practitioner. By Thomas Bodley Scott, Author of *The Road to a Healthy Old Age.* With a Preface by Sir Lauder Brunton, Bart., F. R. S. New York: Paul B. Hoeber, 1916. Pp. xv-159. (Price, $1.50.)

This little volume of 159 pages with a preface by Sir Lauder Brunton is written in a pleasing style and has only four chapters. The first is devoted to disorders of the heart, the second to arteriosclerosis, and the fourth to bronchitis and bronchial asthma. The third, on therapeutic speculations and doubts, treats, in fact, of the ductless glands, especially the thyroid and the suprarenals. It is a work of practical everyday use, and its simple style makes it easy reading.

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Interclinical Notes

"The faker ultimately is found out." These bold words are from a recent number of the *Christian Science Monitor,* according to *Leslie's* for August 10th, which also believes that the news columns of certain newspapers are not to be relied upon.

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In the *Outlook* for August 16th, there is an article describing the United States Public Health Service by a member, Dr. Ezra Kimball Sprague. Too little is known by the public of this remarkable body of physicians, picked men physically and mentally. They run great risks along the line of duty; eight have succumbed to tuberculosis. Before the secret of yellow fever was discovered, many were sacrificed to that disease. Surgeon General Rupert Blue, just reappointed, says, "by concrete example the people at large—not a few scattered counties—must be shown that tuberculosis, malaria, and typhoid fever are a needless drain upon their vitality."

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Meetings of Local Medical Societies

Monday, *September 4th.*—Utica Medical Library Association; Niagara Falls Academy of Medicine; Hornell Medical and Surgical Association.

Tuesday, *September 5th.*—Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society; Lockport Academy of Medicine; Syracuse Academy of Medicine; Ogdensburgh Medical Association (annual); Oswego Academy of Medicine; Medical Society of the County of Yates; Medical Society of the County of Tioga.

Wednesday, *September 6th.*—Bronx Medical Association; Elmira Academy of Medicine; County of Rockland Medical Society; Long Island Society of Anesthetists.

Thursday, *September 7th.*—Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

Friday, *September 8th.*—Flatbush Medical Society, Brooklyn.

Official News

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for two weeks ending August 26, 1916:

Cook, F. C., Surgeon. Ordered to the naval training station, Norfolk, Va.

Dunbar, A. W., Surgeon. Ordered to the Naval Academy, Annapolis, Md.

Humphreys, Lincoln, Assistant Surgeon, Medical Reserve Corps. Ordered to the Naval Hospital, Washington, D. C.

Kindelberger, C. P., Surgeon. Detached from the Naval Academy, Annapolis, Md., and ordered to duty as fleet surgeon, Atlantic Fleet.

Leys, J. F., Surgeon. Detached from duty as fleet surgeon, Atlantic Fleet, and ordered home to await orders.

McAllister, A. R., Assistant Surgeon. Detached from the Naval Station, Guam, and ordered to temporary duty, Navy Yard, Mare Island, Cal.

Mink, O. J., Passed Assistant Surgeon. Detached from the Naval Hospital, Puget Sound, Washington, and ordered home to await orders.

Neuberger, J. F., Assistant Surgeon, Medical Reserve Corps. Ordered to Marine Barracks, Port Royal, S. C.

Riggs, C. E., Surgeon. Detached from the naval training station, Norfolk, Va., and ordered to navy yard, Washington D. C.

Vogelsang, W. A., Assistant Surgeon. Detached from the *Marblehead* and ordered to the naval station, Guam, by the September transport.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 23, 1916:

Crohurst, H. R., Sanitary Engineer. Granted eight days' leave of absence from August 18, 1916.

Draper, W. F., Passed Assistant Surgeon. Directed to proceed to New York for duty in connection with studies of poliomyelitis.

Ebert, H. G., Surgeon. Granted one month's leave of absence from August 20, 1916.

Foster, M. H., Surgeon. Bureau letter dated May 22, 1916, amended to grant seventeen days' leave of absence from July 5, 1916.

Frost, W. H., Passed Assistant Surgeon. Directed to report to the bureau for conference relative to poliomyelitis.

Lavinder, C. H., Surgeon. Directed to report at the bureau for conference relative to poliomyelitis.

Lombard, M. S., Assistant Surgeon. Granted one day's leave of absence, August 14, 1916; relieved from duty on Coast Guard cutter *Tampa*, and directed to proceed to New York for duty in the prevention of interstate spread of poliomyelitis.

Magruder, G. M., Surgeon. Granted nine days' leave of absence from August 24, 1916.

Parcher, George, Passed Assistant Surgeon. Bureau letter dated July 14th, amended to grant one day's leave of absence, July 17th.

Perry, J. C., Senior Surgeon. Granted two days' leave of absence from August 21, 1916.

Pettus, W. J., Surgeon. Department letter dated June 27, 1916, amended so as to grant six days' leave of absence from July 17, 1916.

Reimer, H. B. C., Acting Assistant Surgeon. Granted seven days' leave of absence from August 21, 1916, under paragraph 195, Service Regulations.

Robinson, D. E., Surgeon. Bureau letter dated June 5, 1916, amended to grant twenty-five days' leave of absence from July 1st.

Safford, M. V., Assistant Surgeon. Directed to proceed to Boston to assist in the examination of Italian steamer carrying immigrants.

Scott, E. W., Assistant Surgeon. Directed to proceed to New Orleans Quarantine for duty.

Watkins, J. A., Passed Assistant Surgeon. Directed to proceed to New York for duty in connection with studies of poliomyelitis.

Wynne, R. E., Assistant Surgeon. Directed to proceed to Charleston, S. C., to deliver an address on rural sanitation.

Yarbrough, H. C., Assistant Surgeon. Granted one day's leave of absence, August 13, 1916.

Casualty.

Surgeon John Macauley Eager was born in New York city, April 14, 1862, and was graduated from the College of Physicians and Surgeons, Columbia University, in 1887. He was appointed an assistant surgeon in the Public Health Service (then the Marine Hospital Service), February 12, 1891, promoted to passed assistant surgeon, March 26, 1895, and to surgeon, December 19, 1907. He served at various marine hospitals and quarantine stations of the Service, at Naples, Italy, from 1901 to 1905, and as assistant surgeon-general in charge of the Division of Sanitary Reports and Statistics from 1905 to 1909. He was again assigned to duty in Naples, Italy, August 12, 1915, where his death occurred August 17, 1916.

Board Convened.

Coast Guard retiring board convened at the Marine Hospital, Detroit, Mich., at call of the president of the board. Detail for the board from the Public Health Service: Senior Surgeon H. W. Austin, president; Surgeon H. W. Wickes, member.

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Births, Marriages, and Deaths

Married.

Foster-Wentworth.—In Brockton, Mass., on Tuesday, August 15th, Dr. Arthur Neville Foster, of Dorchester, and Miss Amy Mildred Wentworth.

Leary-Hayes.—In New Bedford, Mass., on Wednesday, August 16th, Dr. Chrysostom J. Leary and Miss Mary S. Hayes.

Died.

Barrows.—In Worthington, Mass., on Wednesday, August 16th, Dr. Sterling Barrows, aged thirty-six years.

Buswell.—In Epping, N. H., on Saturday, August 12th, Dr. Albert C. Buswell, aged sixty-three years.

Elston.—In Corry, Pa., on Saturday, August 19th, Dr. Gabriel A. Elston, aged sixty-three years.

Emory.—In Saranac Lake, N. Y., on Tuesday, August 15th, Dr. Thomas H. Emory, of Manor Glen, Md., aged forty-five years.

Feuerstein.—In Brooklyn, N. Y., on Tuesday, August 15th, Dr. Elias Feuerstein, aged fifty-five years.

Flagg.—In Moreland Okla., on Friday, August 18th, Dr. Edward E. Flagg aged forty-two years.

Herndon.—In Walterboro, S. C., on Saturday, August 12th, Dr. J. P. Herndon.

Kerchner.—In Hagerstown, Md., on Sunday, August 20th, Dr. Edward Kerchner, aged seventy-seven years.

Lockhart.—In Freedom, Pa., on Sunday, August 20th, Dr. Clarence J. Lockhart, aged twenty-six years.

Morse.—In Centre Harbor, N. H., on Monday, August 14th, Dr. Howard F. Morse, aged thirty-seven years.

Powell.—In Los Angeles, Cal., on Friday, August 18th, Dr. Thomas Powell, aged seventy-eight years.

Pratt.—In Brooklyn, N. Y., on Sunday, August 27th, Dr. William H. B. Pratt, aged seventy-four years.

Roedel.—In Lebanon, Pa., on Saturday, August 19th, Dr. Henry H. Roedel, aged eighty-four.

Rowe.—In Flowery Branch, Ga., on Saturday, August 12th, Dr. William J. Rowe, of Buford, Ga., aged sixty years.

Ruth.—In Petoskey, Mich., on Saturday, August 19th, Dr. Oliver J. Ruth, of Keokuk, Iowa.

Ryan.—In Boston, Mass., on Tuesday, August 15th, Dr. George W. Ryan, aged forty-five years.

Smith.—In Coopersville, Mich., on Friday, August 18th, Dr. Frederick D. Smith, aged seventy years.

Waldron.—In Brooklyn, N. Y., on Thursday, August 24th, Dr. William Francis Waldron, aged forty-four years.

Winslow.—In Rockland, Mass., on Friday, August 18th, Dr. Julia A. W. Winslow, aged ninety years.

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Original Communications

TUBERCULOSIS IN RELATION TO FEEBLEMINDEDNESS.*

By Peter Bryce, M. A., M. D.,

Ottawa, Ont.,

Chief Medical Officer of the Interior, and Chief Medical Inspector of Immigration for Canada.

I am quite aware that my personal opportunities for collecting information are not such as to entitle me to express any dogmatic conclusions on the subject I have chosen to talk about for a few moments, and yet it is perhaps true that owing to my position as Chief Medical Inspector of Immigration for Canada I have had some phases of so many mental and physical conditions brought to my attention that I catch better the reflection from objects, suited to the eye at long range than if they were brought too near and the angle of incidence were too acute for proper vision.

In his chapter on The Causal Factors of Amentia, Doctor Tredgold, medical expert to the Royal Commission on the Feebleminded, says: "I believe that ancestral tuberculosis is but rarely the direct and sole cause of amentia; but my observations show that, like alcoholism, it has an important indirect and possibly also a contributory influence." He further states: "With regard to persons suffering from amentia I found a pronounced tendency to tuberculous lesions in the families of thirty-four per cent. of cases investigated." He further states: "There can be no doubt that the death rate from tuberculosis is very much higher (nearly four times as much) in the case of aments than it is in the nondefective population." Now at a first glance these statements would seem to prove beyond dispute that tuberculosis plays a very important contributory if not a directly inciting cause in feeblemindedness. Yet Tredgold himself states: "It is to be noted, however, that a history of antecedent tuberculosis rarely occurs alone; in four fifths of my own cases it was accompanied by a definite neuropathic inheritance, while in the remaining fifth, other conditions, usually alcoholism, were also present." It is apparent that statistics on the subject are quite inconclusive, since several possible factors seem to be so commonly present. Recent more exact study inclines to the conclusion that in most Anglo-Saxon communities, whether in Europe or America, the feebleminded of all degrees probably are not less than five per cent. in most; yet if the death rate from tuberculosis be put at 0.15 per cent., and the sick from the disease at ten times as many or 1.5 per cent. in all, we find that there seems statistically no relationship between the two. It must have been frequently forced upon the attention of those who have had much to do with the tuberculized, that one of the most obvious conditions present is what for lack of a better term we call a *nerve instability*. I remember that a good many years ago Doctor Mays, of Philadelphia, wrote many articles to prove that tuberculosis was in every sense a disease of the nervous system, and doubtless we have many clinical conditions during the disease in which nervous symptoms play a most important part. Dealing then with the broad aspects of the probable relationship between feeblemindedness and tuberculosis, we have to go back to that subject which has been for years, and is likely to be for years to come, the occasion of much discussion and investigation, viz., the immutability of *germ plasm*. Without entering into the discussion, I wish again to quote what Doctor Tredgold says after a quite full discussion of the subject:

> I hold that primary amentia is a manifestation of a pathological germinal variation which has been produced by the environment, and that the germinal change is of the nature of a vitiation, that is to say, *it consists of an impairment of the intrinsic potentiality for development, which may be widespread and affect the germ as a whole or which may be less extensive and confined to the neuronic determinant.* At the beginning in most instances the latter is probably the case and the central change is but slight. It shows itself merely in a diminished function stability and durability of the higher, and therefore an increased excitability of the lower cerebral neurones and is revealed clinically as neurasthenia, hysteria, migraine, and the milder forms of epilepsy. We may say in fact that these states are the first indications of the presence of the psychopathic diathesis. Should an adverse environment continue, or should a person so affected mate with one similarly tainted, then in the next generation the neuronic durability will be further diminished and the instability accentuated so that insanity, the graver forms of epilepsy, and early dementia make their appearance. If the process is further continued, the third generation will often be characterized by a tendency to defects of anatomical structure, and there will be a strong probability of one or more of the offspring suffering from amentia. Should this germinal impairment be accompanied by any untoward circumstances during the growth of the embryo, this probability will become a tolerable certainty. Degeneracy is here well established and the well known stigmata indicative of an extensive germinal change, are usually abundant. Finally, a condition of gross idiocy appears with complete sterility, and the family becomes extinct.

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*Read at a meeting of the Medical Staff, Otisville Sanitarium.

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The breadth of Tredgold's observation and the obviously sane and practical conclusions drawn, make them a convenient basis upon which anything I may say will be based. We all know of mountain valleys in Europe or old time settlements in America where through intermarriage has been transmitted at times a general cretinism or a general feeblemindedness so marked as to give their people special historic characteristics. The story of the Martin Kallikak family so well worked out by Goddard illustrates the fact, and others of us doubtless know family hereditary strains quite as marked although not so well worked out statistically. It is *à priori* quite remarkable that in every work dealing with what we may especially term social diseases, as distinct from the acute infections, viz., tuberculosis, alcoholism, syphilis, and feeblemindedness, we find them so often intermingled that it seems quite impossible to determine, which disease is the determinant or dominant one. For instance, I recall the history of a family, many of whose members have been known to me, and about whom speaking thirty years ago with my father we together in a few minutes counted eighty persons who had shown insanity of a catatonic type with mild delusions and periodical acute manifestations. The lists extended back through five generations known either to my father or myself. They were a family many of whom were noted for their beauty, having delicate complexions with golden hair, but in whom the neurotic manifestations were marked especially by mental instability and in a number of cases were associated with consumption. Speaking generally, the mentality of the various branches of the family was more than usually good, and in two distinct branches, descended from brothers intermarried in the second generations with strong stocks of different races, in two instances produced most favorable results in the fourth generation, in the offspring of two second cousins of the fourth generation who intermarried. In all except the last offspring, the four generations were country or village bred. We may hence fairly assume that the new blood and good rural surroundings have been building directly toward a neuronic stability, while had the high tension of urban life been allowed to exert its ordinary influence, the departure from the normal would continue. It is interesting to compare this family with the Kallikak family whose history is given with so much accuracy in Goddard's book. In this group the cases starting from a low type under adverse physical environment continue on the same or even a descending plane; but in all cases we revert to the same old question: What is the real underlying cause or causes of the phenomena in any given group of cases? Goddard states that of 1,200 cases of feeblemindedness in the Royal Albert Asylum, phthisis is mentioned in 291 families or twenty-four per cent. of the whole; but no evidence is given that the phthisis present in the children in these families was the cause of feeblemindedness. No close analysis evidently was made through an attempt to go farther in these cases. In 327 cases whose family histories have been studied by Goddard, we get a very interesting analysis made—

1. Certain heredity: 164, or 54 per cent.—many relatives feebleminded.
2. Probable heredity: 34, or 11.3 per cent.—some relatives.
3. Neuropathic ancestry: 37, or 12 per cent.—family histories showed various brain affections from apoplexy to blindness.
4. Accidental cases, 57, or 19 per cent.
5. Unaccounted, 8, or 2.6 per cent.

Speaking of tuberculosis as a causative factor in 324 cases, Goddard points out that cases of tuberculosis are scattered through families in all the four groups and their incidence is such as would be accounted for by contagion. Some of these families show many cases of tuberculosis "due to the low social order of these people," and a recent *Social Survey Report on Tuberculosis* in Cincinnati says regarding low wages and tenements: "Such a low subsistence level works like black magic in the spread of tuberculosis." After this statement follow notable statistics by Doctor Goddard, which give only 2.8 per cent. of all the 324 cases studied as being marked tuberculosis on the chart, while he states the percentage of tuberculized in the general population to be from ten to fifteen per cent. He then draws a somewhat remarkable deduction when he says, "This agrees with the view that feebleminded stock may be primitive and possessed of much animal strength and possibly some immunity from disease." The inference is based upon altogether too limited and imperfect data to be of real value, since we find in actual statistics for over 2,000 school children, that in the children of slum areas, largely British immigrants, the feebleminded are over five per cent. of the whole, while the prevalence of tuberculosis has long been known to be directly the measure of bad housing. As I have written elsewhere and as all other sanitary and social workers have observed, "tuberculosis is a disease of house life, not the disease of the pioneer shack town; it is the pest of the densely populated city with its slums, overcrowded work rooms, and factories." Remembering that the statistics do not note more than "the most clearly defined cases of tuberculosis of the lungs," as Doctor Goddard states, and as we further note that the great proportion of the feebleminded cases examined will have been among children in whom consumption is rare compared with other forms of tuberculosis, I think it may be taken for granted that we can draw but few definite conclusions from these data. The study of Goddard's cases shows much the same with regard to alcohol and leads him to the general conclusion that "everything seems to indicate that alcoholism itself is only a symptom that for the most part occurs in families where there is some form of neurotic taint, especially feeblemindedness." If the result of the careful examination of the antecedents of the feebleminded cannot associate them either with tuberculosis or with alcohol as the exciting cause, and leads us to infer that the feebleminded are for the most part descended from the feebleminded, we seem to be forced back upon the conundrum posed by Doctor Tredgold when, speaking of Weismann's, Davenport's and others' theory of *immutability* of *germplasm* which must be assumed to belong to members of the simian family, he says, "one cannot help wondering how their descendants evolved into human beings at all," and then goes on to say: "I very much doubt whether the phylogeny of civilized man was ever represented by a phase of evolution comparable with that of mental defect . . . In short, I regard the germinal variation present in these persons as a pathological one; as being of the nature of a vitiation, which instead of being of spontaneous origin *is really due to negation or diminution of spontaneity*. How, then, is this impairment brought about? I consider it is primarily due to the action of the environment."

We are thus brought fairly to the crux of our problem. What are we to understand by environment? We have what we call external environment, which is postnatal. The native from the Arctic circle to the equator in every part of the globe is subject to it. The Ojibway Indians of Champlain's time on the shores of Lake Superior are pictured as almost naked in their sun dances and as living on game, fish, and herbs; while the Iroquois had their villages and cultivated lands and great tribal federations. Similarly the Tasmanian bushmen of the southern hemisphere remained savages, while the Maoris of New Zealand nearby were a proud and intellectual race with federated organization and well developed ideas of land ownership. Evidently there is much in transmitted qualities in spite of mere climatic environment. On the other hand, if we compare Colonel Oglethorpe's settlements in Georgia of the people from the slums of London placed where the environment was negro slavery, with the thousands of the criminal class shipped to Australia, we must confess to the potential influence of environment both physical and human in each case. Indeed it is this latter to which we must lend our attention. Take city life with its persistent high tension, with its constant attacks upon the nervous system, both through business and pleasure, whether in high finance or in the competition of trade, whether in the pursuit of science or medicine, or even in the charities and other social work. It appears to me that we have to widen our outlook in order to observe the broad effects of modern urban life on the one hand, and on the other to endeavor to realize what internal environment means. Similarly there is *prenatal* environment. We understand the rapidity of cell multiplication and know that there is cell differentiation in the ovum. We further know that from the simplest particle of vital protoplasm through all the stages of cell evolution up to pyramidal brain cells and those of the ductless glands, such depend upon normal nutrition for their growth; while we learn from feeding experiments, as well as investigations into the antecedents of monsters in animals at birth of the distinctly injurious effects upon young chicks during incubation of irregular heating, deficient moisture, and impure air, as well as of the destructive effects upon the fetus of systemic poisons, whether mineral as in lead poisoning, or of infectious diseases as in smallpox, which often result in its death. But much more serious because more general are the hammering effects, to use a mechanical term, of urban life upon the nervous system. Every observant physician, taking stock of his female patients, endeavors to remove the prospective mother from an untoward environment when he notices the undue strain upon her nervous system. For multitudes of the poorer class, rest is impossible; but Nature with her resources has often, through their habits of labor, supplied the defence of an originally less impressible nervous system with a rugged nutrition, the outcome of physical labor. But to many women the noise, the rush, the excitement in their daily lives results either in a complete nerve exhaustion or in a neurasthenia, though occasionally, in a response of Nature to the demand for an extra output of energy when under physical pain or some great emotion, such as war, an abnormal resistance is developed through the sympathetic nervous system. But it is most true, as expressed by John Martin, that "appallingly common are the cases of girls with these nervous organizations and delicate brains, whose latent maturity has been rendered a torture by the exhaustion following on their conscientious obedience to the demands of school and college, of social work, or society life." The most noticeable gross effects are seen in the general reduction in the birth rate in all progressive countries where urbanization is going on rapidly. Thus Doctor Newsholme, chief medical officer, has estimated that had the birth rate of England and Wales been the same in 1914 as in 1876 there would have been 467,837 more infants born there in 1914 than actually saw the light. In a recent report to the Prussian Diet it was stated that there were 560,000 fewer births in Germany than would have occurred if the birth rate of 1900 had been maintained. It was further declared that the decline in birth rate in Germany in twelve years had been as rapid as that in France in seventy, and that births had dropped seventy-five per cent. more than deaths. The most important speakers at the society dealing with the problem, pointed out that the cause is essentially economic, the average marriage age for men being now twenty-nine and for women twenty-six years. Earlier marriage was urged as tending to lessen syphilis and illegitimacy. There are 180,000 illegitimate children born every year in Germany. The recognition of the serious effects upon the child, in its prenatal stage, as well as upon the mother, of disease and disturbed mental conditions, is illustrated in the very successful work being done in maternity hospitals through the care of the mother during this period. Thus in thirty-four mothers treated in Edinburgh during three months, seventeen had albuminuria, yet thirty-three were safely delivered; but there was forty-six per cent. of stillbirths, although eighty per cent. of the mothers were married. The need for antenatal clinics is thus made obvious.

We have thus illustrated the general effects of environment on prenatal health and may now revert to the direct influence of tuberculosis during this period. All will have noted how the progress of tuberculosis often for the time is stayed during pregnancy. Fetal life often greatly stimulates appetite and nutrition in the mother, only to be followed by a complete breakdown during lactation. During gestation, therefore, it may be that the toxic effects of the tuberculous process are lessened or that they may act as an immunizing factor in the child; but the large number of tuberculous cases, where the child apparently becomes inoculated directly from the mother after birth suggests that the amount of antecedent immunization must have been small. Regarding its direct effects in promoting feeblemindedness, Tredgold like Goddard says, "I believe that ancestral tuberculosis is but rarely the direct sole cause of amentia; but my observations show that like alcoholism, it has an important indirect and possibly also a contributory influence. This indirect effect is seen in its potency to produce the milder and initial forms of nervous instability in the offspring such as migraine, hysteria, and neurasthenia, a clinical fact which has been frequently noticed." It is very remarkable how in the works of the two great authorities on amentia cited, each constantly turns to the condition of neuronic instability, which finds its daily illustration and expression in the effects of modern urbanization. Let any family physician declare his experience, and he will tell that his chief energies are spent upon patching up systems, where there is anemia, malnutrition, functional disturbances of organs, inability to perform normal duties, and where some nerve whip or tonic is frequently required, much of this condition soon disappearing with rest under changed environment as at some rest cure. In many of this class certain common symptoms are observable, such as an actual dislike or even physical distress at the appearance of the older coarse forms of food such as fats, oatmeal, and so on, and a longing for sweet or spiced foods which excite appetite or stimulate the gustatory nerves. Indeed it is abundantly plain that the food of the well to do in America is usually very different from that of the sturdy immigrant peasant, whether Russian, Austrian, or Italian; while it is very probable that among the other vices of our civilization, that of an irrational dietary and of foods of imperfect nutritive elements due to the robbing our common foods, as the grains, of their salts and vitamines is not the least important. What we are assured of is that though the protective and preventive measures against the direct attacks of tuberculosis and other infectious diseases are being constantly multiplied by science and official supervision, yet the breaking down of the *nerve* defences proceeds constantly through the thousand and one modern influences hammering at our brain through the special senses, such as noises, "movies," and the dissipating effects of abnormal occupations and of irregular hours, which exhaust the physical powers and the ability to resist degenerative or malign causes operating against the normal physical and mental processes. We have observed the phenomenon of how in almost every country, certainly in North America, the urban population of fifty years ago was but twenty-five per cent. of the total, while in the United States and Canada at least fifty per cent. of the total population is today urbanized in cities of 5,000 or over, while probably twenty-five per cent. more are suburbanites and in small villages and towns, leaving but twenty-five per cent. actually engaged in agriculture. The effects of the change upon two succeeding generations are now becoming apparent, and we are seriously asking ourselves, whether phylogeny will disappear in its old normal developmental influences, to be replaced by some modern man-created eugenics, adequate to cope with the changed environment, including habits of life, housing, occupation, and education. We know that our total death rate as in New York has been cut in two in fifty years; but we likewise know that the saving is due almost solely to the application of what we may term artificial methods. To give some instances:

1. We have enormously limited the birth rate, leaving, we are told, just so much more time to care for the newborn.

2. The nursing mother has, however, almost disappeared, while much more time is occupied in the attempts to make the child of the neurotic mother with its hypersensitive nerve reflexes of the digestive organs, digest artificially prepared foods.

3. The child with no green pastures to run in beside the still waters, is at best conveyed from the flat to the nearest park by the typical nurse girl, although, indeed, most urban children are born and bred in the tenement and suffer from all its limitations.

4. The mental environment is artificial under all these conditions, and in northern climates the limitations caused by six months or more of our modern housing have produced and will produce a type which, as Dr. Creighton Browne says, "are distinctly more jumpy than we used to be."

5. My observations and the teachings of psychology based on physiology make it apparent that with the absence of a Nature environment at a time when the special senses are absolutely normal in their ability to receive impressions, the growth of mind, based upon artificial environment, will make it more difficult for each succeeding urban generation to wish to get back or to absorb normally even were the wish present, those elementary Nature impressions, which are still the underlying basis of the thoughts of the modern generation. Whether or not modern social processes will develop their physiological or pathological immunizing changes needed to meet the new life conditions being so rapidly developed under modern peace and war times, as regards urbanization, inventions, and artificial products of every sort, must remain to the future for proof. Meantime the degeneration of tissue or the wearing out process has become statistically recognized even in slow going England, while every hospital, sanatorium, asylum, refuge, and "home"—and their class is ever increasing—is filled with the casualties due to this modern war against normal natural processes.

The following table showing the growth of hospitals and patients in the Province of Ontario is both instructive and hortatory.

	Total Hospitals in Ontario.	Total Patients.	Total Population of Province.	Ratio of Patients in Population.
1880..........	12	5,237	1,926,922	1 in 369
1890..........	24	10,523	2,114,321	1 in 200
1900..........	52	20,761	2,189,947	1 in 72
1908..........	69	46,971	2,280,359	1 in 48
1910........	78	53,692	2,523,274	1 in 47
1915..........	91	85,750	2,598,320	1 in 30

If by artificial methods we may greatly limit tuberculosis, we still shall have a problem of feeblemindedness to attack, which will, for an unknown period under modern life conditions, give our legislators, educationists, clerics, and physicians ample occupation, if they are to solve the problem satisfactorily.

Department of Interior.

SOME THOUGHTS ON PROSTATECTOMY.*

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The operation of prostatectomy is a subject in which all genitourinary surgeons have taken a very keen interest in the last few years, and I can remember the time, only a few years ago, when the only relief for the suffering caused by a hypertrophied prostate and the retention of urine occasioned by it was to give the old man a catheter in his hand and let him live with it, or die from it, as was more often the case. Today we can remove the prostate surgically with but slight risk and add ten or fifteen years of comfort to his life.

We have found it convenient to adopt the classification made by Guyon, of the Necker Hospital in Paris. Guyon's classification divides cases of hypertrophied prostate into three groups:

When the prostate first begins to enlarge, the patient is said to be in the first stage or premonitory period. In this stage the symptoms are very slight—so slight indeed as to be hardly noticed by the patient. There is a little difficulty in starting the flow of urine, there is some deficiency in the force of the stream, and the calls to urinate are rather more frequent than they should be, especially at night. Now, throughout the day the frequency of urination is but slightly increased—perhaps not at all, but as soon as the patient begins to sleep at night he finds it necessary to get up every two or three hours, and sometimes oftener, to empty the bladder. The reason for this is that during the day the muscular activity keeps up the circulation through the muscles, but at night the muscles are quiet and the circulation slows down, venous stasis takes place, and a passive congestion of the prostate and trigone occurs. This has the effect of increasing the irritability of the bladder, so that the accumulation of a small quantity of urine gives rise to a desire to evacuate the organ.

There is also another condition which partly accounts for the frequent urination at night, and that is the condition of reflex polyuria. These old men with enlarged prostates pass an abnormally large quantity of urine. Instead of passing from forty-five to fifty ounces a day, they pass from eighty to ninety ounces, and that is particularly the case at night, because it is then that the greatest amount of secretion takes place.

During the first stage or premonitory period we pass a catheter into the bladder after the patient has urinated and find no accumulation of residual urine, indicating that the bladder is still capable of emptying itself. This, however, soon passes over into the condition of the second stage of insufficiency of the bladder, as it has been termed by Guyon, and this stage is characterized by partial retention of urine, and the frequency of urination increases by day as well as by night. The patient notices that he has to evacuate his bladder more frequently, and there is an unsatisfied feeling as if some urine remained behind in the bladder, and on introducing the catheter residual urine is found in more or less quantity. This condition of the second stage or insufficiency of the bladder may last for several years, but in the end it is bound to terminate in a condition of complete retention.

In the third stage, which is described as the period of incontinence, the bladder is incapable of emptying itself spontaneously and becomes enormously distended, reaching as high as the umbilicus and holding perhaps as large a quantity as two or three quarts. With this overtaxed, overdistended bladder, the sphincter relaxes every few minutes, allowing the escape of a few drops of urine, and when we question one of these old men about his urination, asking if he passes water frequently, and he says, "Yes, every few minutes—" that always means an overdistended and dribbling bladder. This condition has been described as paradoxic ischuria; that is to say, while there is retention of urine in the bladder there is a dribbling from overflow.

Up to this time the patient has been free from constitutional disturbances, but with an overdistended bladder, dilatation of the ureters, damming back of the urine on the kidneys, dilatation of the pelvis of the kidneys, and the added factor of infection, first of the kidney pelvis and then of the parenchyma, other conditions, namely, pyelitis, nephritis, and pyelonephritis, are established, and the patient begins to suffer from constitutional disturbances. That he has these disturbances is due to the absorption of toxic material from the bladder and kidneys, which gives rise to the condition described as urosepsis. The patient now seeks relief because he is sick. The old man comes into the doctor's office and tells you that he hasn't felt quite up to the mark lately. He complains of his stomach and of digestive disturbances. There is emaciation. He complains of being heavy, of not being alert mentally, and sits down in a chair to read the newspaper and drops off to sleep. You ask him as to his bladder and he tells you that he has to pass water frequently, too frequently—in fact, every few minutes; and, generally, you will notice a smell of urine about these old men from the wetting of the clothes, due to the escape of a few drops of urine at frequent intervals. On examining him it will be found that he has a slight rise of temperature, of perhaps a half or one degree. The tongue is dry and brown and exceedingly characteristic of the condition of urosepsis. On palpating the abdomen, the skin is found to be emaciated, dry, and scaly, and on placing the hand over the suprapubic region you find a big fluctuating tumor of an overdistended bladder. That is a typical picture of the third stage or period of incontinence of hypertrophied prostate in old men.

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*An address delivered before the Academy of Medicine of Northern New Jersey, April 19, 1916.

The diagnosis of these conditions is made by examination. Of course, the history in itself is sufficiently suggestive, and a man has an idea what to look for and expect when a patient of that type comes into his office. Now, the next thing is to make an examination in detail and find out what condition he is suffering from. We make a rectal examination. We palpate the prostate, and ordinarily we find a prostate which is enlarged, moderately soft, and freely movable in the pelvis. The next point to be determined is the quantity of residual urine and that is really the crux of the situation, because upon that factor depends the question of operation. The amount of residual urine is determined by asking the patient to void, and afterward passing a catheter and drawing off what is left; we may find two, four, six, eight, or ten ounces, or there may be two or three quarts.

Fig. 1.—Freyer's drainage tube for suprapubic prostatectomy.

The cystoscope is not indispensable in diagnosis, but sometimes it is very useful; there are times when we cannot make a diagnosis without it, and yet there are cases where it is not called for. That is where individual judgment comes in. The cystoscope, however, enables us to determine the presence of stones in the bladder, and the trabeculæ, which usually exist as a result of straining, and also enables us to find a cystic diverticulum, a condition which is frequently present; and now and then we are able to make a diagnosis with the cystoscope where we should not otherwise be able to. I recall a case which I saw several years ago of a man about fifty-five years old (not very old) who had made the rounds of a number of hospitals on account of retention of urine. He had been examined in various places and no enlargement of the prostate could be found. I examined the prostate per rectum and could find no enlargement. It seemed to be perfectly normal in size, and yet the man had retention of urine and could not pass water. He came with various diagnoses such as beginning tabes, paralysis of the bladder sphincter, lesions of the spine, syphilis, etc.; and the nervous system was thought to be involved, but on thorough examination, going over his reflexes, we could not find anything wrong with the nervous system. So, to make sure, we introduced a cystoscope into the bladder, with the result that the diagnosis was established at once, for there was found to be an enlargement of great size of the middle lobe. That was what had prevented him from passing water. I did a perineal prostatectomy, and he was all right afterward. Now that was a case where the cystoscope came in very nicely and established the diagnosis, but, as I say, the cystoscope is not indispensable. However, it is of advantage to know all that we can about a case before operating, but sometimes there are reasons why it is better not to use the cystoscope.

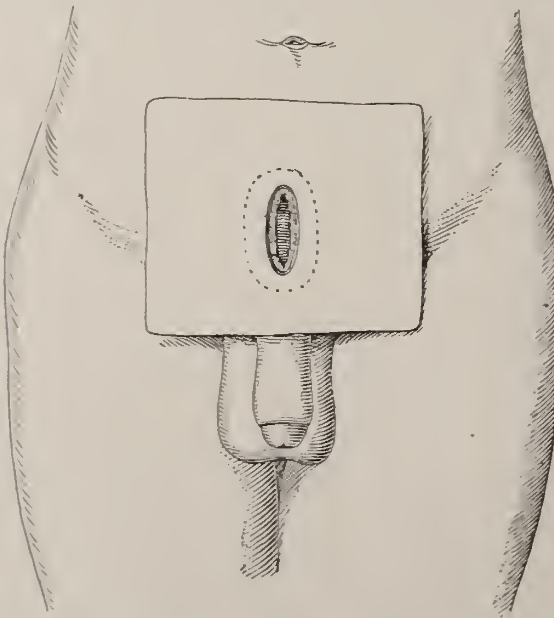
Fig. 2A.—Rubber dam apron for suprapubic drainage, open.

The really essential test, however, in making a diagnosis of hypertrophied prostate is to know the secreting capacity of the kidneys, and the fact should be borne in mind that the determination of this point is essential, and if I were to know only one thing about a case I would rather know that than anything else, for that is the test which really determines whether it is safe to operate. In these old men with enlarged prostate, particularly in the third stage, the urine is of low specific gravity, 1008 or 1010, polyuria exists, casts may or may not be found, and pus is generally present, but there is polyuria, the specific gravity of the urine is low, and the urea is very low. As the condition improves under treatment the specific gravity increases and the quantity of urine decreases. The specific gravity and quantity give us a little line on the functional activity of the kidneys, but the phenolsulphonephthalein test of Geraghty and Rowntree is our chief reliance as to the functional capacity of the kidneys.

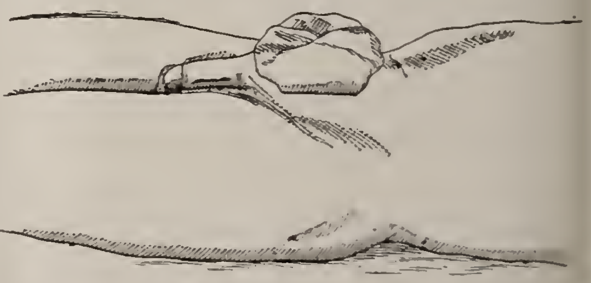
Fig. 2B.—Rubber dam apron for suprapubic drainage closed and enveloping folded gauze over wound.

This I consider indispensable before deciding to operate, and it should be done as a routine procedure in all cases before operation, and we should not make the mistake of operating in a case if the phthalein is low. In cases where I have operated with a low phthalein I have always regretted it.

Having made our diagnosis, not only of hypertrophied prostate, but also of the general condition of the patient, and especially of the functional activity of the kidneys, the question arises as to the choice of the best time for doing the operation, for removal of the prostate, and today our attitude is different from the one which we took fifteen years ago. The operation today carries with it a low mortality on account of improvements in the technic, in the postoperative and preoperative treatment, and in the operation itself.

The ideal case for prostatectomy is a patient in the second stage, where the insufficiency of the bladder is beginning and not very marked, where there is perhaps a quantity of residual urine, say, four to six ounces, no cystitis, and where the kidneys are sound. Such a patient is usually in pretty fair condition and he hesitates as to whether he wants to take the risk of having an operation done or whether he would prefer to go along living a catheter life for a while, and when that becomes unbearable have an operation. I think that we ought to take the stand today that, on account of the reduced mortality rate, it is safer for a patient to have an immediate operation rather than to temporize with a catheter. A man can be operated on with this condition with a mortality rate of about five per cent. or even less. If we put a catheter in his hand we know that he is going from bad to worse. The catheter will become more and more painful to use, he will have to use it more frequently, he will get up a cystitis, he will have an ascending infection—pyelitis—and in the course of a few months' or a few years' use of the catheter he will get to the point where the catheter can no longer be used and he begs and prays for relief through operation, but his condition has become such that operation will not hold out much in the way of success on account of the disease of his kidneys and generally rundown condition.

Is it not better to take a man in a condition to stand operation and operate with a mortality rate of five per cent. than have him run along for a few months or few years and pass on into a condition where operation is hopeless and nothing can be done? When these people present themselves and ask my advice, I explain that while they take some slight risk at this time it is very much less than if they allowed things to go along and ultimately come to operation with a bad outlook.

The practical points which have resulted in the lowering of the mortality are the details of the preliminary and subsequent care of patients. The treatment before operation I consider absolutely essential. I would not operate on a prostatic patient unless I had him under my care sufficiently long to get him into shape to stand the ordeal.

One very great mistake is to catheterize a patient with a full bladder and draw off all the urine that it contains. Take a bladder which is distended up to the umbilicus with two or three quarts of urine; if we draw all that urine off at once with a catheter, we probably have handed the man his ticket across the Styx and he will die within a week. Now, what will he die of, sudden emptying of the bladder? Yes, indirectly, but what he will die from really will be the sudden relief of the back pressure on the kidneys. In cases where there is a long distended bladder, the patients are in a critical condition. They are in that state of balance where it takes little to tip them over the wrong way. The sudden relief of the distended bladder throws the kidneys into a state of acute congestion, they stop functioning, and the patient dies in three or four days from uremic poisoning. Where we have a patient with a full bladder we never empty it at once, but always gradually. It takes about a week to get such a bladder empty. We put in a catheter and draw off a few ounces of urine frequently, several times a day, we insert a cork in the catheter and pull the cork out at regular intervals, and draw off ten or fifteen ounces, enough to get the bladder gradually emptied, and by the time the bladder is entirely emptied it has taken about a week and the kidneys have been functioning freely, and we can then operate with the greatest degree of safety.

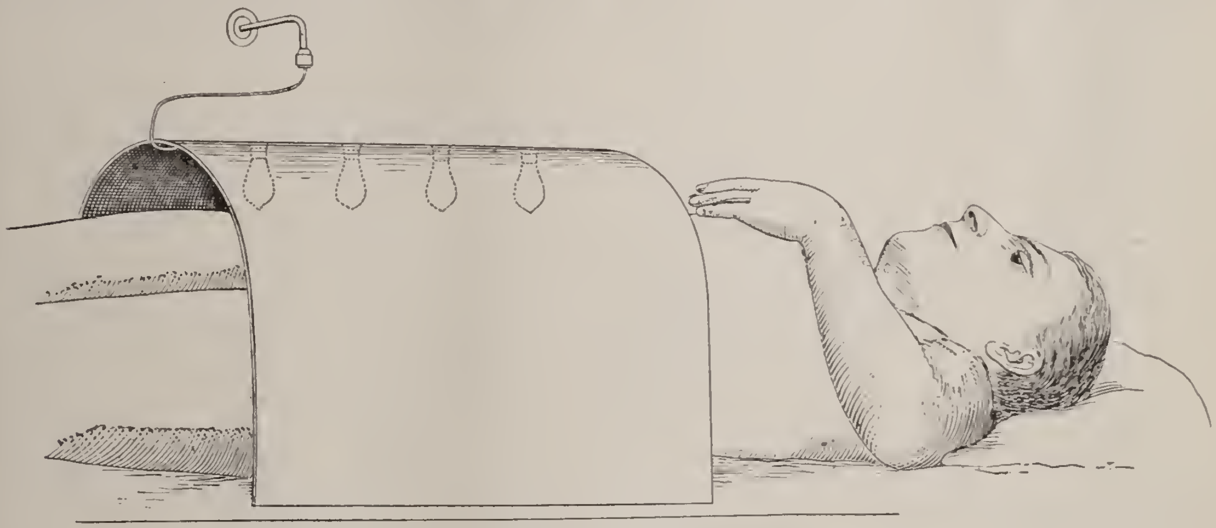
Fig. 3.—Electric baker for treatment of shock.

I may say one or two words as to my opinion of the so called two stage operation. I have always regretted doing a two stage operation. This operation consists in making a suprapubic opening, introducing a catheter, and draining the bladder as a preliminary to doing a radical removal of the prostate. Theoretically it sounds very fine, but, as a matter of fact, it does not work out in practice. The suprapubic wound generally becomes infected and a horrible phlegmonous suppurating wound results. The bladder becomes adherent to all the points around it—adherent to the peritoneum, and when we come to enucleate the prostate, everything is found to be stiffened and united. There is no give to anything and we are liable to tear the peritoneum. The last time that I did a two stage prostatectomy (and I hope it will be the last time), I opened the bladder and drained it for two or three weeks. The wound in the abdomen became infected and the man was in very bad shape. Finally, he got a little better and I decided to take the prostate out. The bladder had contracted down very closely and was so small that there was no room to put my hand in to enucleate the prostate. The next evening they rang me up from the hospital, asking me to come down at once as the patient's intestines were all out. I went down and saw the patient, and, sure enough, there was a great coil of intestine lying on the abdomen. The patient had had an attack of vomiting and had blown his intestines out of the suprapubic wound, and one great coil was lying on the abdomen. The bladder was adherent to the peritoneum, everything was stiff, there was no elasticity, no resiliency, and the muscular force was sufficient to force the intestines out through the wound. I put them back, but after several days the patient died. Of course, there are cases which cannot be drained through a permanent catheter or cannot be drained through a perineal opening where a second stage operation must be done, but they are not nearly as common as people suppose, and the two stage operation is one to steer clear of as much as possible.

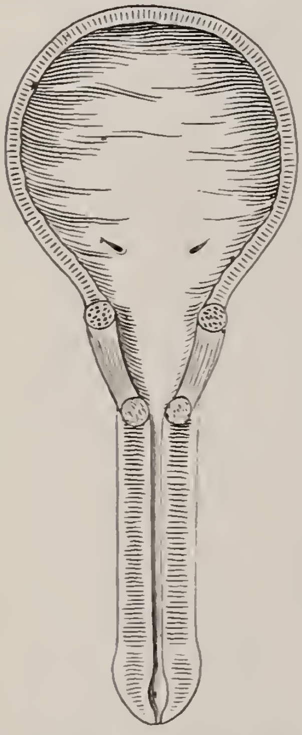
Fig. 4.—Funnel shaped outlet of bladder kept open by infiltration surrounding posterior urethra and causing postoperative urinary incontinence.

The great danger in prostatectomy is suppression of urine. The explanation is that the back pressure on the kidneys throws them into a state of congestion. This can best be guarded against by emptying the bladder gradually and keeping it empty with a retained catheter, bladder washing, forced water, and a protein free diet.

It takes from a week to a month to get a patient prepared for operation before it is safe to operate. We cannot hurry the process, and the degree of preoperative treatment makes for success or for failure.

As to the question of preliminary treatment, I might say that I have here some statistics which I heard at the Academy of Medicine. One hospital has a forty per cent. mortality rate in prostatectomies. Another hospital was cited as having a mortality rate of about ten per cent. About ten per cent. is the rate it should be. I take it that the hospitals having a forty per cent. mortality rate did not give patients preliminary treatment; they did not make use of the phthalein test; they did not acquaint themselves with the conditions under which the patients were to be operated upon; and they did not ascertain that the kidneys were in a state to stand operation. They simply took a man off the street and enucleated his prostate. On the other hand, where ordinarily careful, exact work was done there was a normal mortality rate of ten per cent. That is about right for a big hospital where they have to operate on everything.

Having gone through the preliminary treatment and with our patient in shape so that we think he can stand operation, the question arises as to the route to be chosen, suprapubic or perineal. Some men are wedded to one route and some to the other. A few years ago, we heard nothing but the perineal prostatectomy. Today we hear less of that and more of the suprapubic operation. The perineal operation is done now less frequently than formerly. To my mind, we ought to select the operation which is best fitted to the condition of the patient. If the prostate is situated high up, we put our finger into the rectum to touch the prostate, but finding that it is away up beyond reach of the examining finger, we know, therefore that the prostate is high up in the bladder. We cystoscope the patient and find a big middle lobe. We know it would be very difficult to take that type of prostate out by way of the perineum. The logical way of approaching such a prostate is by the suprapubic route, taking it out from above. On the other hand, given a prostate which is not very much enlarged, we are able, on introducing our finger into the rectum, to feel the prostate low down, and the best way to approach such

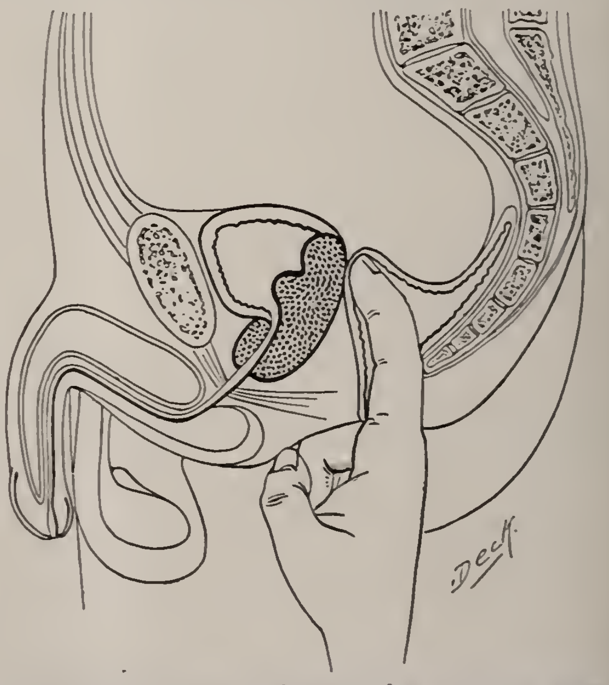
Fig. 5.—Senile hypertrophy of prostate; finger in rectum cannot reach upper margin of prostate; suprapubic prostatectomy is operation of choice.

a prostate is by the perineal route. To my mind, we make our decision actually on the anatomical conformation of the prostate. We know before operating which is the better route to choose.

The question of the anesthetic is important. It is essential not to drown old men with ether. It must of necessity be eliminated and passed out through the kidneys; they are more or less crippled, and the shock and additional weight of unnecessary ether thrown on them are liable to cause the kidneys to shut down. The ideal anesthetic for old men is gas-oxygen with a little ether. Ether, if carefully given in small quantities, can also be used safely as an anesthetic. I have done some cases under spinal anesthesia with stovaine, which, as a general thing, acts pretty well, although, personally, I prefer a general anesthetic.

The general aftertreatment of these cases is highly important. To avoid shock it is necessary immediately to put the patient into a hot bed with an electric baker, and the Murphy drip should be started at once to keep up the necessary fluid to fill the vessels and keep the kidneys going. Water should be forced by mouth as soon as the patient is able to swallow.

Each old man operated upon for an enlarged prostate has a different train of symptoms after the operation. It is a severe strain and they all suffer differently. Sometimes the kidneys seem to be at fault; sometimes the intestinal canal. Tympanites develops; they have vomiting and persistent hiccough. More seldom the heart plays out; they have feeble hearts, and that I think is the worst complication of all. Sometimes they become stupid and dull and the brain is at fault. Each of these complications must be treated accordingly. For the tympanites we use strychnine and eserine, hormonal, or pituitrin to stimulate the muscular fibres of the intestines. A high compound enema is useful in getting rid of the gas, and the old fashioned turpentine stupes still have their place and must not be forgotten. Hiccough is very troublesome, not so dangerous in its way, but annoying. In the presence of this complication, we stop the eserine and use an alkali and atropine. Hoffman's anodyne has also been recommended to stop hiccoughs, but I never saw a case where it worked. Blood pressure is a good thing also to keep track of. If it is too low we can push it up with strychnine, caffeine, or sparteine. Vomiting is a troublesome symptom afterward. Stomach lavage often gives relief for that.

The most dangerous symptom as a complication after prostatectomy is septic anuria. We can tell when that is coming on by the blowing up of the intestine: tympanites develops, the tongue gets dry and brown, the urine becomes scanty, the patient becomes drowsy and sleepy, and, unless we succeed in getting the kidneys going, the patient is "going out" from failure of his kidneys. The first thing that condition demands is the forcing of water, the Murphy drip, water by mouth, and the electric baker.

The medical aspects in these cases are so marked and so varied that it is always a very great comfort to me when I am so fortunate as to be associated with some medical man of broad experience to advise me about the diet and the various symptomatic conditions in these cases because the medical aspects require just as much attention as the surgical side of the case.

As to the care of the suprapubic wound, suprapubic prostatectomy has a higher mortality because the convalescence is slower. It takes from six to eight weeks for the wound to heal, and there is a great deal of attention required in the matter of the aftertreatment in cases operated in by this method. We use the silver wire sutures, which we leave in. A big Freyer tube is put in position to take care of the clots which form and carry them out. This is taken out on the fourth day. Then we make use of a rubber dam apron, to keep the patient dry. It is a rubber dam such as the dentists use. We cut a hole in the middle, smear the wound all around with zinc ointment, and stick that on with zinc ointment and place gauze here and hold this up so that the urine all runs out through the hole and is caught by the gauze and does not run all over everything, the dressings, bed, and clothes. The dressings are changed every three or four hours. It is a great comfort to these patients and they are able to be up and around after a fortnight.

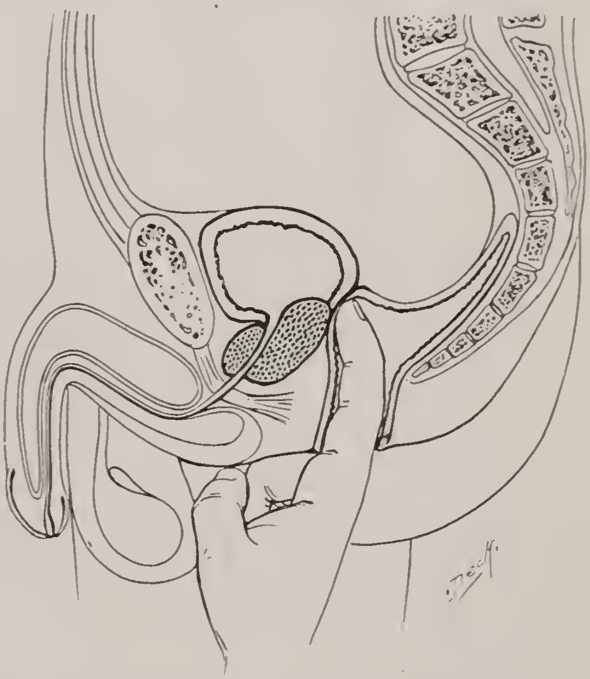

Fig. 6.—Senile hypertrophy of prostate; finger in rectum easily reaches and outlines upper margin of prostate; suitable for perineal intraurethral enucleation.

In the perineal operation the aftercare is very simple. We put in a No. 34 French perineal drain which is taken out on the fifth day and the patient is able to be up and around at the end of a week.

As to the late complications, incontinence of urine is more common after perineal section than after suprapubic; in fact, after the suprapubic we very seldom find it, whereas after the perineal we find it quite frequently; it is an annoying complication. Examination with the water endoscope of Wossidlo discloses the reason. The posterior urethra is funnel shaped on account of the infiltration around it and the bladder sphincter cannot close the upper segment, so that the cut off muscle is the only sphincter which is functioning. When this relaxes a few drops of urine dribble out. If the infiltration becomes entirely absorbed the sphincter of the bladder closes again and the dribbling ceases.

As to the cause of death after operation, suppression of urine heads the list. Shock is rarely the occasion of death and is taken care of by stimulation and the electric baker and the Murphy drip. Hemorrhage ought never to cause death. We use a suprapubic tampon and, if necessary, tampon the whole bladder. Hagner's bag I am not so sure about; it is liable to slip out of the prostatic cavity in the bladder and act as a foreign body, so I think it is better to tampon the cavity of the prostate with gauze.

Sometimes a patient will acquire a pulmonary embolism from a dislodgment of septic clots. Sometimes there is gangrene of the suprapubic wound and general sepsis, and occasionally a general and gradual failure of the vital powers is the cause of death.

Now, the results of our work in the Long Island College Hospital in the last three years have been as follows:

Forty-three patients have been operated upon for hypertrophied prostate. The ages ranged from fifty-seven to eighty-two years. Of these forty-three patients, six died. Two deaths were directly attributable to the operation; one man of seventy-seven years died of cardiac failure eleven days after the operation; the other was a man of seventy-six years with cardiac insufficiency. It was known beforehand and a grave prognosis was given. I said he would probably die, but the people were willing to take the risk and we operated, and he died about six days after the operation. One patient had poor renal function. There was an abscess of the prostate with increasing urosepsis, and the man died on the table before we finished with him. Another man had urosepsis in spite of three weeks' drainage, and we were operating by the suprapubic route when we found that the gut had prolapsed in front of the bladder. In opening the bladder, I incised the gut This was immediately repaired, but the patient died six hours later. One man died of carcinoma of the stomach four weeks after operation, and another man died of valvular disease of the heart six weeks after operation. So we may say that there were only four patients who died as a result of the operation, and as there were forty-three cases with four deaths, the mortality rate would be about ten per cent. That would represent a fair mortality rate where we have to operate on everything that comes along. If we could pick our cases and separate the good from the bad, operating in the good cases only, we could cut the mortality rate down to five per cent., or even less, but where we must operate in cases as they come and cannot turn them down, the mortality rate would probably be about ten per cent., which is a fair estimate. Where men of about sixty-five years in good condition, with good kidneys and a good heart, come in, with them we shall not have a ten per cent. mortality rate. It will probably be about two per cent., perhaps not even that much, but it is the old men with bad kidneys and urosepsis that bring the mortality rate up higher.

This, I think, represents the chief points in the matter of prostatectomy, and if due care is given to the details of preoperative and postoperative treatment, it makes very little difference what surgeon does the operation, or by what route or method the prostate is removed.

32 SCHERMERHORN STREET, BROOKLYN.

A CASE OF HYPOPITUITARISM.

By L. NAPOLEON BOSTON, A. M., M. D.,
Philadelphia,
Professor of Physical Diagnosis, Medico-Chirurgical College; Physician, Philadelphia General Hospital; Pathologist, Frankford Hospital.

The patient forming the subject of this report has twice been an inmate of the Philadelphia General Hospital, and upon his last entrance came under my care. He is an Italian, aged forty-nine years. His family record shows nothing of special interest; five brothers and five sisters are known to be living and in health. His past medical history is also wanting in instances of interest; he has suffered only from the diseases of childhood.

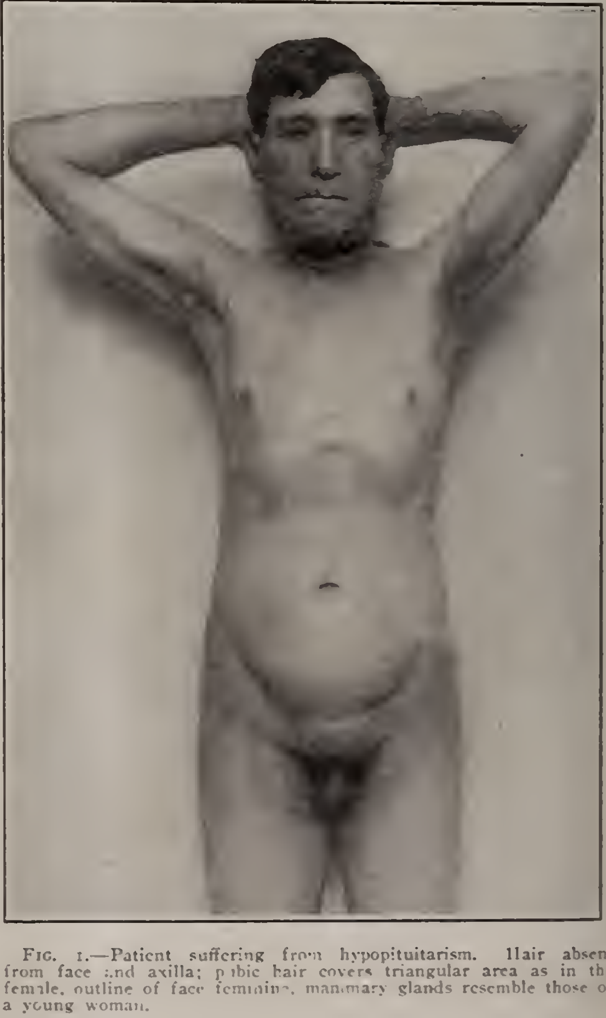

FIG. 1.—Patient suffering from hypopituitarism. Hair absent from face and axilla; pubic hair covers triangular area as in the female, outline of face feminine, mammary glands resemble those of a young woman.

Social history. This patient arrived at the stage of puberty late in life, when probably seventeen or eighteen years of age. He did not, however, actually attain a stage of sexual maturity until after he was married, which was at the age of twenty-two years. During the first three years of his married life, three children were born, all of whom are now living. Following the birth of the third child, he came with his family to the United States, and since his arrival in this country, there have been born at full term, eight more children, all of whom died within the course of a few weeks. There were also several miscarriages.

This history would tend to suggest at least that hypopituitary cases do not as a rule produce healthy children. During his entire married life, sexual ambitions were of an extreme and somewhat perverted character. Questioning the patient shows very clearly that he was mentally unbalanced in this particular.

Medical condition. The heart is gradually increased in its transverse diameter. The first sound at the apex is replaced by a loud murmur, which is transmitted well into the left axilla. There is a decided accentuation of the cardiac sounds over the base of the heart.

Reflexes and sensations. Negative.

Physical examination. The general appearance of this man is so striking that it at once calls our attention to the existence of disease of the pituitary body. His skin is soft and has a velvetlike feel. His face is feminine in outline, and is without evidence of beard. There are but few hairs in the axillary regions (Fig. 1) and over the pubic area the distribution of the hair is typical of the female, the base of the triangular tuft of hair being directed upward (Fig. 1).

The mammary glands are decidedly enlarged, and in many respects resemble those of a young woman. The external genitalia, while actually masculine, show many characteristics simulating those of the female.

His hands present that striking appearance so commonly seen in disease of the pituitary gland, notably that the fingers are greatly shortened and display a peculiar stubby appearance, with deep cutaneous furrows surrounding each digit (Fig 2). In two cases of hypopituitarism reported in the NEW YORK MEDICAL JOURNAL for October 30, 1915, this characteristic feature of the hands was well exemplified. The finger nails are somewhat brittle, show a few longitudinal striations, and in general display evidence of malnutrition.

Special attention should be called to the peculiar condition of the skin in this case. The accompanying illustration (Fig. 3) is a photograph of a portion of the skin on the forearm. This extreme wrinkling of the skin has been present in two other cases of hypopituitarism that have come under my care, and it has also been observed by me in certain cases of diabetes mellitus. The wrinkled condition of the skin is so conspicuous in this case that when the patient rests his hand or arm upon any object, there are detected minute ridges traversing the skin at acute angles to one another, and between these thin elevations are seen corresponding depressions. The skin, while it resembles to some extent what is seen in old age, does not display the long folds characteristic of senility. Even in young subjects this appearance of the skin resembles that seen on the mucous surfaces of the stomachs of domestic animals. In this case this excessive folding of the skin is displayed not only over the arms but also over the chest (Fig. 4).

An x ray examination of the head shows the sella turcica to be appreciably enlarged. The clinoid processes approximate normal.

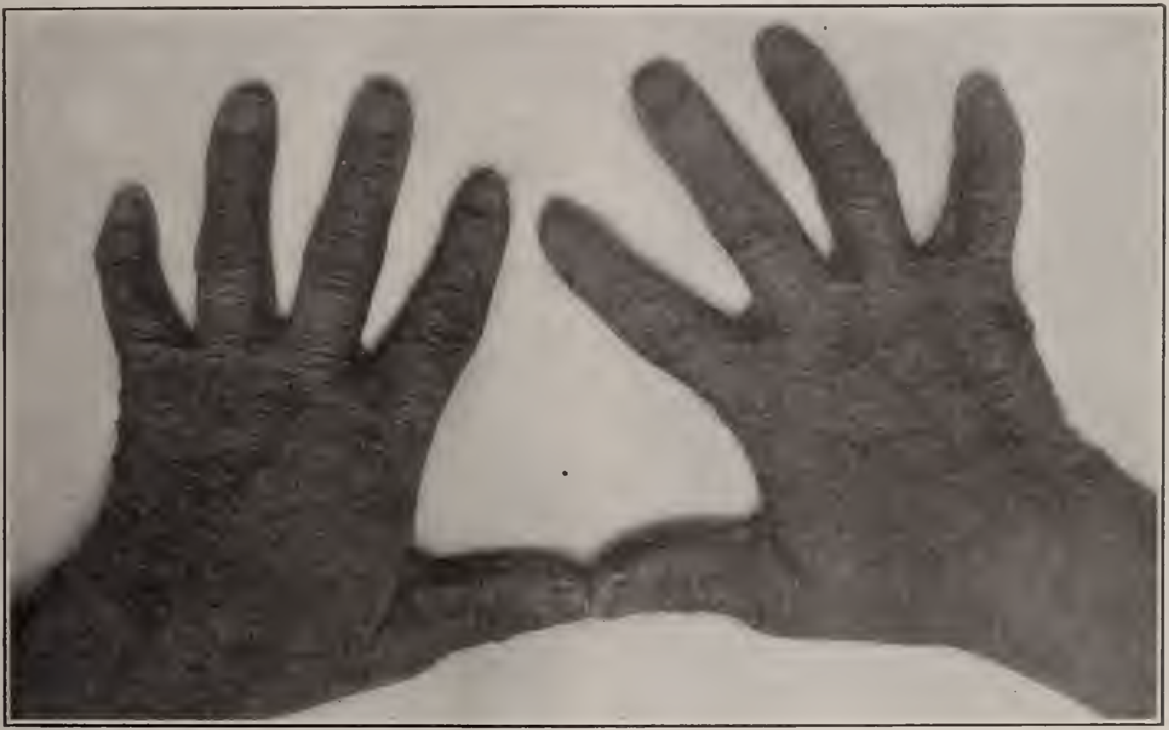

FIG. 2.—Hands characteristic of hypopituitarism; short, stubby fingers with deep cutaneous furrows surrounding each digit.

On November 30th, I directed the resident physician to give him 250 grams of glucose in fifty gram doses, one hour apart. Following the administration of the glucose, the urine was collected for twenty-four hours and examined for sugar with negative results. December 3, 1915, the feeding of glucose was repeated, with the exception that at this time, 400 grams were given within the course of about two hours. A careful study of the urine, following this second administration of glucose, showed it to be free from sugar. These two feeding experiments are, I take it, sufficient to prove that one feature of hypopituitarism, viz., an unusual tolerance for sugar, is present.

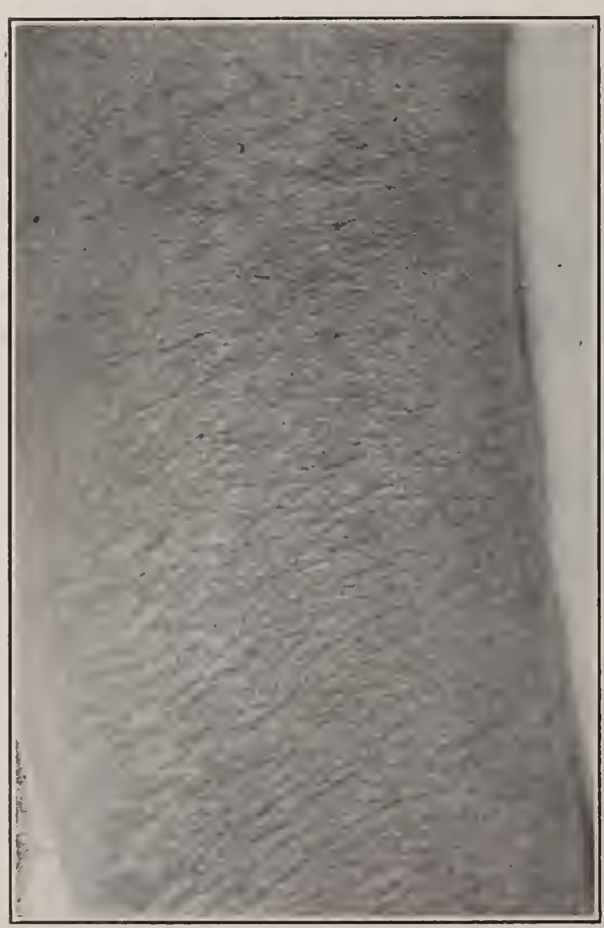

Fig. 3.—Photograph of skin of forearm, showing extreme and characteristic wrinkling of the skin.

Through the fact that this case simulated in certain respects cases that came under my care where glycosuria was present, with the assistance of Dr. L. W. Kohn, I have also made an examination of both the gastric and duodenal fluids, the latter of which shows changes that, so far as I am aware, have not been described in connection with hypopituitarism.

Fasting stomach contents. Amount, 35 c. c.; color, none; odor, putrid; consistence, mainly fluid; precipitate, flocculent, 15 c. c.; reaction, alkaline; free, hydrochloric acid, 0; total acid, 12; microscopic, epithelial cells (flat), salivary corpuscles+, myelin, mucus, débris.

Test breakfast contents. Amount, 70 c. c.; color, light green (bile tinge); odor, sour pap; consistence, mainly fluid and not viscid; precipitate, fine, well ground bread particles; free hydrochloric acid, 18; total acid, 60; rennin, 1:10+, 1:20+, 1:40+, 1:80+, 1:160+, 1:320+, iodine, amylum test=carbohydrate digestion good (interned products+).

Duodenal contents. Color, golden yellow; amount, 50 c. c.; reaction, neutral; consistence, viscid, mucoid, clear.

Test for diastatic activity (*amylase*). Dilution, one in 375=erythrodextrin+; one in 500=erythrodextrin+; one in 750=erythrodextrin+; one in 1,500=erythrodextrin+; one in 3,000=soluble starch; one in 6,000=soluble starch.

Test for tryptic activity. Dilution, one in 375=digestion of casein+; one in 500=digestion of casein+; one in 750=digestion of casein+; one in 1,500=digestion of casein+; one in 3,000=digestion of casein+; one in 6,000=digestion of casein+.

The fasting stomach upon examination gave evidence of the presence of a fair sized quantity of contents (thirty-five c. c.), otherwise nothing of interest. The test breakfast contents upon investigation also gave evidence of a fair sized quantity of contents (seventy c. c.). Although the quantity of the contents in each instance was not in excess, at least it seemed to rule out the possibility of hypermotility.

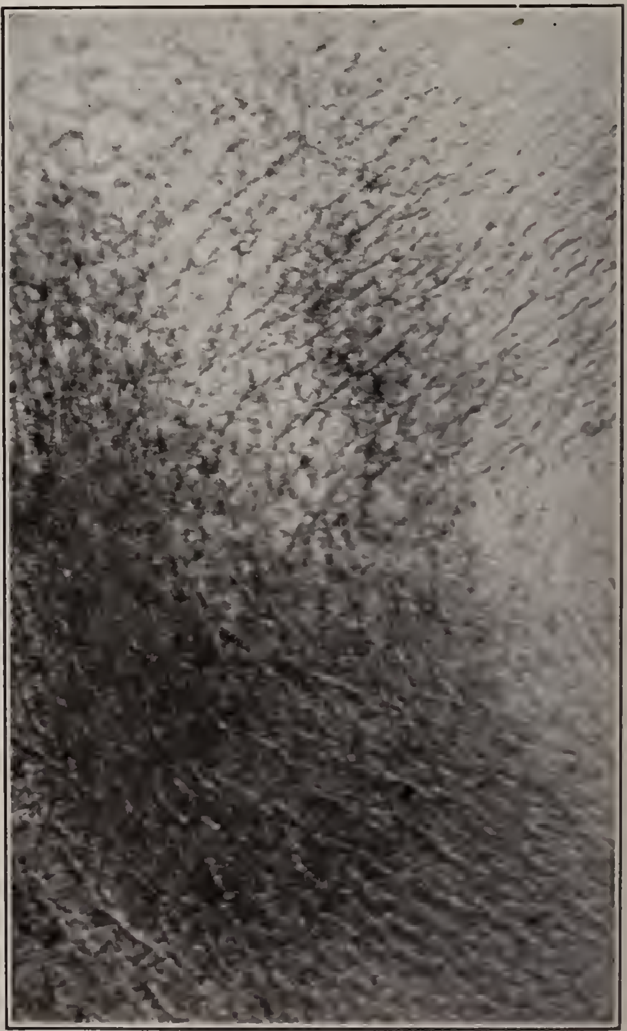

Fig. 4.—Photograph of chest, showing wrinkling of skin in hypopituitarism.

The acidity in this particular case approximates that in the part selected as within the bounds of normality. The gastric ferment activity, according to the degree of ferment and carbohydrates digestion, is very good. An examination of the diastatic and tryptic activities of the duodenal contents shows the diastatic activity to approximate that ascribed to normal persons; while the tryptic activity was of high degree. The Wassermann reaction was negative.

1819 CHESTNUT STREET.

QUARTZ LIGHT IN CUTANEOUS DISEASES.*

My Successful Experience Therewith,

BY EDWARD PISKO, M. D.,
New York.

The reflection that up to fifteen years ago the treatment of the skin and its appendages was restricted to the employment of salves, pastes, lotions, and the like, is apt to evoke a smile of compassion. For a very long period the dermatological therapeutist was surrounded by a mist of empiricism. The dawn of a brighter era first appeared with the discovery of the Röntgen rays, the manifold usefulness of which has been demonstrated by clinicians throughout the civilized world. This was followed by the introduction of radium, the general employment of which, however, is largely limited because of its rarity and its excessive cost. Finally, the latest triumph to add to our weapons is phototherapy, and it is to this agency that I propose to confine my remarks.

The treatment by means of the mercury quartz lamp had been introduced in Germany some time ago, and has succeeded in establishing for itself a definite and even important place in the hands of a few observers. Yet, strange to say, even in the country of its birth, there still exists an astonishing degree of ignorance as to its nature and its uses. As early as 1907 Kromayer first published his experience with the lamp. He was followed by others, particularly Bach and Nagelschmidt. Notwithstanding their publications very little information exists, concerning the exact modus operandi of this lamp and its practical application in medicine. The quartz lamp is indicated in all skin affections in which there is a dilatation of the bloodvessels. The ultraviolet rays destroy the bacteria upon the skin, soothe the cutaneous nerve endings, cause pruritus to disappear. At the will of the physician, their action may be either superficial or deep.

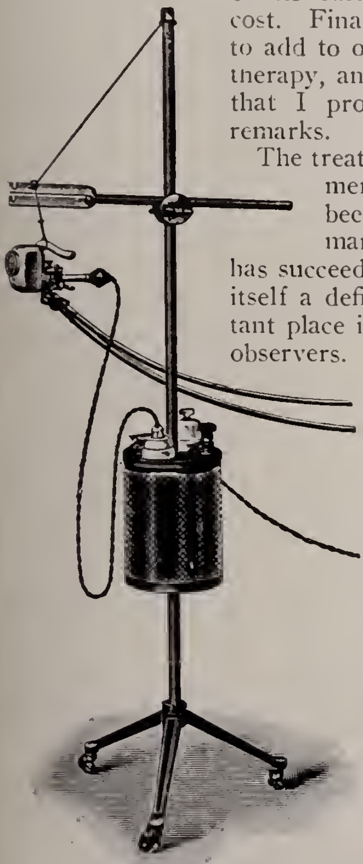

FIG. 1.—Kromayer Lamp.

Dr. A. Schuyler Clark was the first in this country to call attention to the subject by his publication of The Kromayer Lamp in the Treatment of Certain Diseases of the Skin (*Jour. of Cutan. Dis.*, June, 1914). In general my views are in hearty accord with those expressed in his paper, but I differ from him in that, according to my experience—and I wish to emphasize this, the lamp's utility is restricted to the treatment of small and circumscribed lesions, such as are of an area no larger than the aperture through which the rays emerge (Fig. 1). Conditions most amenable to such as are of an area no unculosis, folliculitis (simplex, barbæ, decalvans), acne vulgaris, and small patches of alopecia areata.

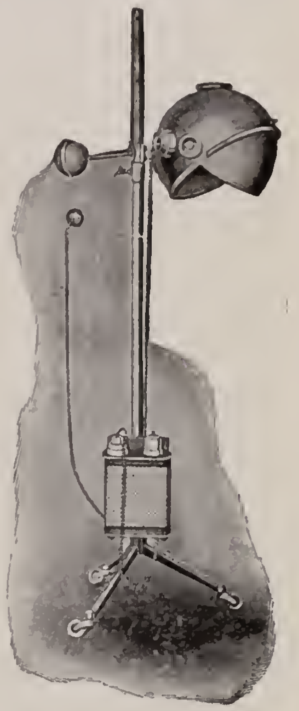

FIG. 2.—Bach-Nagelschmidt Lamp.

Another group of skin diseases can be influenced only by the deeper and more penetrating action of the rays. To this group belong: Lupus vulgaris, lupus erythematosus, nævus unius lateris, nævus vasculosus, nævus pigmentosus, and telangiectasis.

Increased penetration is effected by adding with pressure variously sized and shaped quartz crystals. The parts to be rayed are firmly pressed against the lamp by the attending physician and, to eliminate the heat rays as much as possible I interpose a blue quartz disc of five mm. thickness. This latter procedure at the same time enhances the efficiency of the exposure.

The results obtained in the above mentioned cases have been invariably excellent, even startling. Cosmetically this treatment is followed by less scarring than is obtained by methods hitherto employed.

The Kromayer lamp has been materially improved by the modifications introduced by Bach and Nagelschmidt, notably by the omission of the original cooling device (Fig. 2). This lamp is scarcely known in this country, the only reference to it having been made by Müller (*Medical Record*, May 8, 1915), who employs it exclusively in diseases of the scalp.

It is interesting to note the great difference in size of the ray emitting surface of the two lamps. Observe the comparatively very small aperture of the original Kromayer lamp, contrasted with the much larger ray surface and the great wealth of rays of the improved lamp. Naturally, the ray-producing quartz burner itself is much larger, and therefore its therapeutic effect is so much the greater in the Bach-Nagelschmidt lamp. It is to this improved Bach-Nagelschmidt lamp I especially wish to call attention, chiefly because no mention of it is to be found in American literature. Both of these lamps are made in Newark, N. J.

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*Read before the Harlem Medical Association, April 15, 1916.

The following remarks apply only to my experience with the Bach-Nagelschmidt lamp, which, quite appropriately has been named the Alpine Sun Lamp (*Künstliche Höhensonne*).

This lamp yields an enormous quantity of ultraviolet rays, the beneficial actions of which are applicable to a great variety of lesions of the skin. These rays are very soothing to the nerves, induce a delightful sensation of well being, and in capable hands may be employed freely with absolute safety to the patient and to the operator. Beside its striking local effect, the lamp appears to improve decidedly the general metabolic processes, to stop pain, increase appetite and sleep and, in consequence, maintain a gain in weight. Especial mention should be made of intractable itching, itching which persists for a very long time under other treatment and which promptly subsided after a few radiations, which, however, must be superficial, so as to prevent burning and blistering. A striking illustration of the great efficacy of the lamp is the following:

Case. Mr. B., kindly referred to me by Dr. G. M. Bennett, had suffered for eight years from a mycotic eczema of the foot, which had spread to its plantar surface. It had been treated with a variety of salves, pastes, lotions, and powders, as well as with the x rays. When I first saw the patient, his foot was covered with crusts and scabs and was oozing, and to make his lot bearable, it was necessary to keep his aching member swathed in bandages for eight long years. These were discarded after the fifth exposure. The eczema was completely cured, leaving a slight brownish pigmentation as the only evidence of his protracted suffering. In all other respects the skin became normal. The distressing itching disappeared after the third treatment, when I employed a twenty-five minutes' exposure at a distance of eighteen inches.

The first radiation was given at a distance of twenty inches and was of seven minutes' duration; this procedure should always be followed when instituting the treatment, in order to accustom the skin to the exposure. In the treatment of the face my experience has taught me to establish the rule that for the first radiation the exposure should be made at eighteen inches distance and be of four minutes' duration only. Apart from an agreeable sensation of warmth, the patients are not conscious of anything taking place—always provided that the eyes are protected by suitably colored glasses, such as dark automobile goggles. Quite obviously, the nearer the light rays and the longer the exposure, the greater is the action, as well as the sensation of warmth which ceases with the discontinuance of the raying. Four to six hours later, itching of a mild grade sets in, and the exposed parts of the skin become slightly sensitive to the touch.

Objectively, nothing is to be seen during the exposures, but three to four hours later there may be an erythema which lasts from three to four days. Should the treatment have been, say, of an hour's duration and at a distance of fifteen inches, it is likely to be followed by desquamation, which makes its appearance after about four days. Patients with thin skin are much more sensitive to the light than those with a generous panniculus adiposus.

I have had gratifying success in cases of leg ulcers, intertriginous eczema (especially in one case due to hyperidrosis), also in a case of Duehring's disease with intense itching and in cases of obstinate, chronic eczema which defied all other treatment. Particularly good fortune attended my efforts in the treatment of psoriasis, thus happily obviating recourse to the staining and evil smelling salves. At the utmost after five radiations the skin clears up and the disfiguring patches are quickly removed, leaving a slight brownish discoloration.

I am greatly pleased to report the most gratifying results with a class of cases hitherto the opprobrium of the profession and the despair of patients—namely, defluvium capillorum, premature baldness, dandruff, and a variety of conditions of the hairy scalp which render patients unhappy because of the repulsive sight they present.

In conclusion, I wish to state that although my experience with this lamp in skin diseases in general has been most gratifying, yet I wish again to emphasize my great confidence in the employment of the Bach-Nagelschmidt lamp in diseases of the scalp. It is especially in this class of diseases that we can look forward to absolute results, gratifying to both patients and doctor. Usually these patients traveled back and forth and in their despair wasted time and money upon quacks and charlatans; now this addition to the armamentarium of the dermatologist brightens our outlook for the cure of a malady less dangerous than distressing. My invariable successes cause me to pin my faith and hope to the Bach-Nagelschmidt lamp.

616 Madison Avenue.

THE SYMPTOM ATAXIA.

Its Successful Treatment.

By Heinrich F. Wolf, M. D.,
New York,
Chief, Department of Physical Therapy, Mount Sinai Hospital and Dispensary.

The greatest shortcoming in medicine, and the greatest obstacle to its progress, is the custom of identifying symptoms as diseases. Even now we find this mistake made very frequently. For instance, constipation is only a symptom, the word expresses merely the fact that the bowels do not move. The causes of this condition are many, yet the majority of physicians treat one case in the same way as another. This is only one instance, but we could multiply it manifold.

In this paper I wish to speak about locomotor ataxia. Ataxia is only a symptom. It was of great service to the therapy of this symptom when Maloney in his various papers pointed out that ataxia is not only dependent on certain pathological anatomical changes, but that psychological factors play an important role. I have treated patients with locomotor ataxia for nearly twenty years, with the Fränkel method of reeducation. It was always a puzzle to me how differently the various patients responded to the treatment, how patients whose disease was apparently a mild form, might not respond well, while severe cases might be greatly benefited. The explanation appears plainly, if we analyze these cases on the basis of Maloney's ideas.

The Fränkel treatment relies chiefly upon the assistance of the eyesight. It replaces the lack of sensation by control of the eyes. As the disease progresses it is quite natural that the patient becomes more self conscious, more highly strung, more, we may say, nervous. Everything that tends to lessen the patient's mental control, must interfere with his locomotion. The results therefore are neither satisfactory nor permanent, for the patient loses his control, when his orientation becomes more difficult, for instance, in strange places, in the presence of others, and in the dark.

We know now that ataxia may be caused by two factors which are usually combined; these are fear, and diminished sensations. If the treatment of ataxia is to be successful, we must analyze each case, so as to ascertain the role which these two factors respectively play, and we must regulate our treatment according to the findings of this analysis.

As an illustration. I present a case of locomotor ataxia which I have treated in the neurological department of Mount Sinai Hospital and report another case in a patient of Dr. Pearce Bailey's, which I have treated in my private practice.

Case I. J. G. did not admit infection; Wassermann 4 plus. Began to complain, April, 1915, of stiffness in the hands and difficulties in walking. September, 1915, after an injection, he got suddenly worse. Could not walk well. Legs grew steadily worse. Ataxia distinct for four months. Entered hospital, March 24th; walked then fairly well, but after another injection of salvarsan, the condition got so much worse that he could not walk or stand without great difficulty. There was some suspicion of general paresis. Examination revealed at once the fact that joint sensation was good, although he was unable to stand or walk. When I examined him, it could at once be seen that his muscles were in a state of high tension. In the first session it was impossible to bring about any degree of muscular relaxation. My treatment therefore consisted only in relaxation exercises.

The patient was blindfolded, and was then treated by the regular method, which has been described in various places. His progress was truly remarkable; this patient who was so highly ataxic, started to improve after the second or third treatment, and as I can demonstrate, can now walk so well that at times it is almost impossible to note the ataxia, and this even while the eyes are closed.

Case II. This patient, a girl of about twenty-seven years, became ataxic about eight years ago, not because of tabes, but because of arsenic poisoning. Tactile, as well as joint and muscle sensation, was practically gone. Seven years ago, I treated this patient with the Fränkel method of reeducation, and the result was that the patient could walk when the light allowed her to see. She walked with her legs widely separated; the gait was ataxic and she had frequent falls. The condition remained stationary for seven years.

Four months ago, I started with Maloney's method of reeducation. The patient relaxed very well and had no fear at all. Examination showed that joint sensation was almost entirely absent. She did not realize the position of her legs, and the hands were equally affected. To attempt to stand with closed eyes was hopeless. It was clear to me that in this case of ataxia, fear did not play an important part, and that the result of the treatment depended on the possibility of improving the sensation. On that basis I started with the treatment and the results were very encouraging.

I do not intend to go into the description of the methods employed, but only want to describe in short, the results. The joint sensation has improved very much, except in the ankle, where only excessive movements are perceived. The patient recognizes fairly well the position of her legs. She can stand for two minutes with closed eyes, and walk across the room, also with her eyes closed. It is now more than two months since she has fallen and she walks in the street without support.

These two cases seem to me to be illustrations of two of the principal factors in ataxia. They clearly show the necessity of analyzing every case of ataxia, and of regulating the treatment accordingly. They also show that when this is done, the results are so excellent that we are tempted to regard ataxia as merely a symptom which is eminently susceptible of improvement.

161 West Eighty-sixth Street.

DYSENTERY IN SERBIA.

By J. Rudis-Jicinsky, M. D.,
Chicago.

Uskup, the old Serbian capital of the great czar Dusan Silni—Dushan the Strong—the beautiful, but "old city in the new Serbian territory" freed from Turkish influences, while we worked there with our unit (1914-1915), had some nice broad streets, some of them tree framed, and others again so narrow, especially in the Turkish quarter, that, without proper sanitation and sewerage, there seemed to be constant danger! In the winter months, as stated before, we had an epidemic of typhus exanthematicus, febris recurrens, etc., pneumonia, diphtheria, scarlet fever, smallpox, measles, giant parotid abscesses, many cases of mastoiditis, otitis media, tuberculous glands, some cases of tetanus, and all kinds of infection with most repulsive cases, where the entire body of the wounded seemed to fill with pus, without apparent cause. There were many gunshot wounds, clean and infected, mostly compound fractures with constantly draining sinuses, and finally we had posttyphus gangrene and frozen extremities. In summer we had many patients suffering with dysentery in all forms, and had to be on our guard against the possible outbreak of cholera asiatica, plague, and similar diseases, which unhygienic conditions, overcrowding, and all kinds of insects may transfer from the unhealthy to the healthy, the louse playing the main role. In the two pavilions (bed capacity 435 and 310) of our hospital at the *Inzinirsky Kasarna*—barracks—upon a hill dominating the river Vardar, during the year of our stay we cared for 8,272 surgical cases and hundreds and hundreds from even the civilian population of the city and vicinity, including all the nationalities engaged in war without distinction. Sometimes not only was there an awful scarcity of good water for drinking purposes, but food was insufficient, the nourishment of the patients was not proper, and many suffered from the lack of good milk and vegetables, garlic, onions, and celery especially, scurvy developing in many instances. We had an opportunity to observe every variety of wounds inflicted by the modern instruments of warfare, but the description of these we shall reserve for some future article. I wish now to speak rather of the infectious inflammatory condition of the large intestine, characterized anatomically by ulceration of the mucosa, and clinically by frequent mucous and bloody discharges, tenesmus, fever, and prostration with abscess formation in the portal system, accompanied by anemia, in a word, the epidemic disease, dysentery, which occurred in Serbia and all our hospitals, summer and autumn, at any sudden change in temperature, the malarial districts suffering most. We had to deal with all the three distinct clinical types of this affection, each of which had the special etiological factors known to us from the times of Hippocrates, Galen, Sennertus, Morgani, Cruveille, Robitansky, Purkyne, Virchow, Lambl, Klebs, Thomayer, Žit, and others. They settled most of the questions connected with the disease, which appears nearly always during war. The ravages of dysentery in all the armies and among the suffering population of the stricken countries being usually great, our work was directed especially toward preventing the spread of the disease, as well as of all infectious diseases.

In the beginning, in Dzevdzelija (Gevgelija), Uskup, and later at different places in Montenegro, wherever our unit went, the patients would be put to bed in the condition in which they came from the trenches, in their clothing, dirty *charape,* shoes, boots, rags, mud, lice, and all. Thus the louse was everywhere, on the floors and even in the bandaging rooms, not to mention the discharges, slimy or bloody, in the dirty beds. There were so many patients and so many hundreds suffering with dysentery, and so little actual help, medical or other, before the American, English, and Russian missions came, that we had to evolve our own system of thorough cleaning, with careful search for the origin of the infection in typhus as well as in dysentery, in the water, milk, vegetable, and meat supply, sewage, drainage, etc. We had gauze instead of screens in the open windows, and we boiled the water right from the start and disinfected all discharges of the patients! One pavilion was used as a receiving and observation part of our hospital at Uskup. These wards, or *soby* as the Serbians called them, were under my charge, the bacteriological examinations and pathological specimens were made by me, our male nurses with the help of the Serbian *bolnichari* looking after the sanitation. My assistants had to separate the surgical cases from the medical and the contagious from the noncontagious, and take care to insure proper isolation, when necessary, and before we could send the contagious cases away to our tents, or to places managed by the English mission further away. We had only a few typhoid patients, but they were isolated just like typhus patients, with an abundance of fresh air in outdoor tenting, or if they were in the hospital, abundant ventilation in large airy rooms, cleaned and disinfected every day twice or oftener. The newly received patients were first recorded and then at once placed on a sheet, stripped of their clothing, their hair clipped, their beards shaved with a good rub down with petroleum, the head sprinkled with acetic acid, or naphthalin, if necessary. Then we gave them clean American pajamas, as received from Mr. Frothingham in New York, and placed the patients in a clean bed, the sheets covered with insect powder. Their clothing was marked, wrapped in the same sheet they had just lain upon, and sent to the steam sterilizer, and then to our tailor, who ironed the seams of the clothing to insure killing the louse eggs. After a patient had been under observation for a few days, he was assigned to his proper *soba.* The method was the same for sick or wounded, whole companies or soldiers, or prisoners of war, who came perhaps only for vaccination, or to receive their doses of combined cholera, typhoid, and paratyphoid serum, or antitetanic serum as a prophylactic in lacerated wounds.

In catarrhal dysentery the solitary follicles suffered most by hyperplasia, then sometimes a necrosis followed and ulceration, or we had purulent inflammation of the entire mucosa with superficial ulceration confined to the large intestine. Bacillus coli communis was found many times on microscopic examinations of the glairy stools, with red corpuscles, many leucocytes, and large oval epitheloid cells with fat globules, beside the bacteria of putrefaction or Cercomonas intestinalis. In bad cases we found shreds of mucous membrane before the stools changed to a greasy brown or dark green appearance, the discharges being less frequent and the blood diminished. In all our cases the characteristic symptoms, colicky pains followed by discharges from the bowel, were present, and in some cases the dejecta, with straining and tenesmus, appeared a hundred times a day or oftener. In milder cases, there would be at least six or ten movements for five days, showing mucus, blood, and pus in scybalous masses. The tongue had a greasy coating, moist at first, dry later and red. Anorexia was always present with excessive thirst, and sometimes even vomiting. The abdomen was flat and tense, the patient much debilitated, collapsing with small, frequent pulse, hoarse voice and hiccough, the temperature being only 103° or 104° F. For hiccough we gave ten drops of saturated solution of menthol in rectified spirits of wine or atropine hypodermically. The duration of mild cases was only about ten days, but the condition returned in many instances, in a more severe type, lasting four or five weeks, or became altogether chronic. In others profound prostration with serious nervous symptoms developed and the patient died from exhaustion, peritonitis, pericarditis, endocarditis, or pylephlebitis. This was seen particularly in soldiers wounded or enfeebled by operations, amputations, or disarticulations after gangrene, or in the aged *chichas* and *komitage,* the old volunteer Serbian soldiers and prisoners of war in their overcrowded barracks.

In other cases we found Amœba dysenteriæ, knowing that the patients, Greeks, Armenians, Turks, came from tropical regions perhaps. Amœba dysenteriæ is unicellular, motile, its protoplasm consisting of two zones, a colorless and a granular, with a visible nucleus and one or more vacuoles. We found the ameba in the discharges of the patients and traced the infection nearly always to drinking water. On microscopical examination there was proliferation of the fixed connective tissue cells and amebas found in the walls and the base of the ulcers, in the lymph spaces, and sometimes even in the bloodvessels, but pus, so far as we know, was not detected. The lesions were always in the large intestine, and only once we found them in the ileum. The first visible changes with hyperemia of the mucosa we observed in the descending colon and rectum, then came the characteristic ulcer or necrotic process involving the overlying mucosa with its epithelium, the amebas reaching the submucosa in our opinion by infiltration through the destroyed and sloughing tissue. Sometimes this condition with numerous ulcers involved almost the entire mucosa of the large intestine, with fistulous channels between the ulcers. In healing, there was always plenty of fibrous tissue along the edges and the bases of the ulcers. Contractions followed, leading to stricture partial or irregular, as we saw in cases that came to autopsy, giving proof of diphtheritic inflammation secondary and terminal. In cases where hepatic or pulmonary abscesses developed, or pleurisy or peritonitis could be demonstrated, we found amebas even in the sputum of the patients. The affection was characterized by intermissions and more or less marked exacerbations of diarrhea, the liquid stools containing necrotic tissue of a grayish brown or yellowish gray color, with or without blood, the number of discharges per diem ranging from eight to ten. The prognosis was grave among the soldiers in the field, the mortality amounting in the beginning to eighty per cent., but in sporadic cases later on the danger to life was much less. The duration was eight to ten weeks.

We had also a few cases of diphtheritic dysentery or colonic inflammation accompanied by croupous or true diphtheritic exudation, some being primary and others secondary, but of acute onset with an initial chill, the fever rising rapidly, together with early prostration and delirium. Pain in the abdomen was severe, the discharges containing sloughs or tubular pieces of false membrane mixed with blood and mucus. The stools were dark brown in color with a fetid odor. Tenesmus was often present, the prognosis being then unfavorable. When recovery followed, the disease usually took on a chronic course. In some cases paraplegia occurred, the patients with wounds closed and apparently healed suffering the most, as each attack increased the liability to subsequent and stronger attacks.

We kept these patients in bed with the prophylactic measures mentioned above, giving milk, barley soup, and light meat broths, using our bouillon cubes during the active intestinal symptoms, though we gave easily digestible solids, eggs, plenty of well boiled rice, fish, fowl, and Serbian *Kyselo mleko* (sour or curdled milk, very rich, something like *kumyss* or *janina*) rice boiled in milk, etc., always in small quantities, gradually increased during convalescence. In asthenia and cardiac failure we administered cognac, *rakije*, or other alcoholic beverages, but in extreme cases of debility we gave strychnine. In nearly every case we gave castor oil from the start, or a saline purge to clean the bowel thoroughly, but not later on, depending on ipecacuanha and laudanum in small doses, repeated as often as possible. In tenesmus we used either opium suppositories or laudanum by enema, giving morphine hypodermically, if necessary. To tell the truth, we did not believe in many highly recommended intestinal antiseptics, depending rather on the vigorous employment of supportive measures, i. e., proper food and alcohol, especially in cases where the patient was used to it. We found this procedure much more important than the use of any medicament internally, since, as Anders says, "unfavorable cases tend naturally to asthenia and death, while favorable ones tend as certainly to recovery without energetic medical treatment." Antiseptic irrigation of the bowel we employed often, especially when the bowel was not irritable. In cases of pruritus ani, prolapsus, or extreme sensitiveness, we exposed the local lesion to the ultraviolet rays of the sun and proceeded to give our laudanum enema and starch water (or silver nitrate, tannic acid, salicylic acid, mercuric chloride alternately, each once a day), without cocaine suppositories or solution of cocaine. The injections were administered slowly, and the flow being interrupted at short intervals, they were tolerated nicely by the patients, who were in the dorsal position, or upon the left side with the hips well elevated. Locally, we employed dry heat only, treating various complications according to the symptoms, and remembering that the disease after an acute attack may, particularly if it is of amebic variety, change into the chronic form, lasting then for many months or even years. That we knew from the veterans of the Civil War in our own country, where the disease is far less frequent than formerly, owing to the advance made in hygiene and sanitary science, giving us an opportunity to fight some of the predisposing conditions more easily and more successfully.

We had to observe carefully all suspicious cases, had to examine all the cadavers, so that sources of contagion or infection could be discovered in time. The disinfection service was perfected later on, as far as possible, by means of directions printed in Serbian. Instruction was imparted to the people, and the members of the American, English, Russian, and French units and the Rockefeller Institute vaccinated everybody and cleaned up the whole country, cities and villages, and thus there was no anxiety concerning the health of the troops for a long time. The nursing of the dysentery cases progressed nicely, especially in the hands of our male nurses or those of the volunteer Serbian women, who attended either the Serbian or our school of instruction, which had been established in our tents during the most trying moments of the epidemic. Vegetables for our kitchen we cultivated in our own garden by the hospital.

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1900 BLUE ISLAND AVENUE.

THE PREEXISTING CONDITION OF THE INJURED.

A Medicolegal Study from the Standpoint of Employer's Liability and Accident Insurance,

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(*Continued from page 445.*)

The question of a preexisting arteriosclerosis acquires considerable importance from the fact of its near relation to traumatic neurasthenia, and I would particularly insist upon the fact that I have often observed, namely, the very slow return to normal of the intellectual functions after a trauma as an indication of a beginning arteriosclerosis. In truth, the coincidence of vascular disturbances and depressive mental troubles has been observed, and Krishaber has described the cardiac neurasthenic type which bears his name, but nobody has so strongly affirmed the close relationship between arteriosclerosis and neurasthenia, these two products of the arthritic diathesis, as Régis. The arteriosclerotic state, if not fully developed, but at least imminent, as it is in some arthritics, manifestly places the victim in a most favorable position of receptivity for the fruition and development of a serious and durable neurasthenia, accompanied by the organic signs of arteriosclerosis, aggravated or made evident by traumatic shock. In these patients, beside the nervous symptoms, we find circulatory disturbances, such as palpitation, tachycardia, angina pectoris, vasomotor disturbances, vertigo, tinnitus aurium, especially on the left and pollakiuria. One of the best means at our disposal for the diagnosis of traumatic neurasthenia, is the measure of the blood pressure, and I insist upon this point. Now, it is only a short way to go to conclude that these cardiovascular lesions, although latent, preexisted at the time of the injury. Such circulatory disturbances require as a substratum something else beside a purely functional state, and what could this better be than a preexisting lesion of the circulatory apparatus? This may perhaps not have manifested itself clinically, but in the larger number of cases it will have shown itself by symptoms that a medical man would not overlook.

Therefore, it seems to me unquestionable that very often the disturbances of the circulation are dependent upon a preexisting arteriosclerosis, that the trauma, no matter what it may be, is unable to explain. A trauma, however violent, is not enough to provoke a disease such as arteriosclerosis, but in a patient who is predisposed, although slightly, by his family origin or his own pathological past, a profound shaking up of the organism can, by the metabolic disturbances to which it gives rise, increase, favor, hasten, or even determine the lesions of arteriosclerosis long before their time is due. In its turn, toxoinfectious neurasthenia can very surely hasten the evolution of arteriosclerosis.

In his thesis (Bordeaux, 1906) Fauré records several typical cases of serious traumatic neurasthenia occurring in arteriosclerotic subjects, and clinical examination showed that in all there were vertigo, cephalalgia, tinnitus aurium, amblyopia, vibratory trembling, amnesia, insomnia, and asthenia, all neurasthenic phenomena coinciding with symptoms of arteriosclerosis, such as cardiac hypertrophy, exocardiac murmurs, varicose veins, tachycardia, and pigmented retinitis. Thus, behind the neurasthenia another disease appears distinctly, viz., arteriosclerosis. In only two cases recorded by Fauré was the trouble made clinically evident beforehand by distinct signs.

However this may be, it is difficult to admit that a traumatic shock could produce such an advanced sclerosis of the arteries as in the cases under consideration. To present the symptomatic picture of only its beginning, arteriosclerosis requires morbid processes which cannot be developed in the organism in a few days. It must have a soil prepared far back, either by the ancestors of the subject or by the subject himself, and this prepared soil, in imminence of arteriosclerosis, it needs only the occasion of a neurasthenizing traumatic shock to cause the disease to develop completely. It is clearly correct to suppose the preexisting arthritic state of the subject may be, after a traumatism, the reason for the appearance of neurasthenic phenomena. To conclude, if we take up the hierarchy of the causes in traumatic neurasthenia, we see that the predisposition is represented by a preexisting arteriosclerosis and plays an important part, certainly more considerable than that of the necessary efficient or determining causes. The nature of the necessary efficient causes is most difficult to determine in these cases. Perhaps it should be sought for in a special condition of the nervous system or in the problematical presence of special toxins, according to Bernheim's theory.

As to the determining part here played by the trauma, it is frequently of small import, particularly in elderly people, in which case its role is overshadowed by that of arteriosclerosis. What goes to prove this is that in young subjects traumatic neurasthenia is relatively mild when the state of their cardioarterial system allows them to pay the expenses of the perturbations produced by the traumatism. At all events, left to its own forces and without the intervention of a preexisting arteriosclerotic condition, the trauma is hardly capable of creating completely a serious traumatic neurasthenia. On the other hand, a trauma intercurrent upon a neurasthenia undoubtedly aggravates the latter. That this is so, is made made manifest by new symptoms or a recrudescence of those already existing, or by a more hasty evolution, which from torpid becomes galloping. Consequently, the idea, which, starting from this scientific viewpoint of the part played by arteriosclerosis, wishes to implant this notion in the juridical domain is, without any cavil, only one of justice. Unfortunately, it encounters from the start serious difficulties in its application. The scientific proof of an arteriosclerotic state presents all the difficulties of a retrospective diagnosis and the same causes of mistake.

It has been pointed out that if, in cerebral hemorrhage, we can resort to macroscopic and histological control in case of death, it is no longer the same when the subject survives, in which case we have simply the clinical evidence upon which to base our conclusions, which is, of course, much too little to establish certitude. I shall show later on, when considering the forensic aspect, what can be deduced from the preexisting state of health in relation to arteriosclerosis.

I have referred to only a few of the disasters resulting from a preexisting arteriosclerosis and in so doing only the most characteristic have been selected. But they are far from being the only ones. Arteriosclerosis has been accused, justly or not I cannot say, of acting as a predisposing, or even an efficient cause in a host of diseases. Thus in a case recorded by Reinhold, the possible relationship was noted between cerebral arteriosclerosis and general paralysis, and it is known that a cerebrosclerous general pseudoparalysis has been described by some. In a case cited by Hochaus, calcification of the cerebral arteries has been suspected to be the cause of the epilepsy, while in an instance of relapsing anterior poliomyelitis, Oulmont and Blaudoin noted a tachycardia of 100, a systolic murmur from atheroma at the aortic orifice, and fifty cgm. of albumin, and they are inclined to believe that the arteriosclerosis may very likely have played a part in the evolution of the disease. Even hysteria has been considered as likely to arise from a cardiovascular lesion, since Potain related a case of hysterical paralysis in a subject affected by chronic aortitis with aortic dilatation, although it must be confessed that this pathogenesis is assuredly most questionable. If a trauma had occurred, we should not have failed to attribute the hysterical manifestations to it.

In the two groups of disease that have so far been considered, it has been shown that predisposition was, if not perfectly, at least distinctly defined, when the evidence of the necessary efficient conditions remained insufficient. Quite different is the case in tuberculosis. Here we can, it is true, define the conditions which make a person predisposed to tuberculosis, but these conditions are by no means absolute. There is also the question of soil, of organic mineralization, which comes in play, but quite differently from one subject to another. On the other hand, we know perfectly the necessary efficient factor which is Koch's bacillus, so that the etiological value of trauma is here reduced to the part of a determining cause as in the preceding affections. By itself, a trauma is incapable of producing the disease, and in order that it may develop at the seat of contusion a second factor must come into play, viz., Koch's bacillus, which was quietly dormant in the injured tissues. There consequently was a preexisting state, composed of one or several foci of tuberculous bacilli, since the infection could not come from without.

Under these circumstances, and this forms the first instance of a preexisting tuberculous state, the trauma plays an efficient part, revealing, as it does, the latent bacillary focus, whose development it provokes. It brings into activity a tuberculous process which could very well have remained for a long time, perhaps always in a latent state.

From the purely theoretical viewpoint, there does not exist, strictly speaking, a traumatic tuberculosis, therefore it clearly follows that under these circumstances the trauma is not clinically responsible, since it only revealed the presence of a latent tuberculous focus, but it is a question whether or not a distinction should be made between a so called revealing trauma and one that can very properly be termed a localizing trauma; in other words, the case in which the trauma provokes a localization of the disease at the point of the injury, the subject at the time carrying the disease with him, undergoing its evolution at some distance away, for example, a patient with pulmonary tuberculosis. It appears to me from the clinical standpoint that this case is identical with the preceding. Whether the presence of Koch's bacillus in the organism was latent, as in the case of a revealing trauma, or that it was already confirmed, as in the latter example, it still remains a fact that the bacillus of tuberculosis was already living in the organism. There is no difference between an unsuspected tuberculosis, but nevertheless existing as in the first case, and one in which the tuberculosis has been diagnosed. When the bacillus of tuberculosis is present in some tissue or organ of the body, far from or near the point of injury, is that alone quite sufficient for the trauma to cause a localization of the tuberculosis? Nägeli, of Zurich, was not able to find a single male cadaver over thirty years old exempt from tuberculosis, and in children Harbitz has shown that the lymph nodes, healthy in appearance, contained Koch's bacillus, for inoculation of the guineapig was positive. Therefore, the point of traumatism need not necessarily be tuberculized.

Clinically, it is quite permissible to suppose that the trauma does not localize the tuberculosis, but simply aggravates the already existing lesions. Broca is of the opinion that tuberculosis is never localized by a trauma and that there is merely a coincidence; the injury only aggravates and reveals a preexisting lesion. A sprain occurs at the time that there is some beginning stiffness or pain in a joint, and at once it is considered as the causal factor of the trouble, when on the contrary it is, perhaps, simply the effect of the disease. The frequency of latent tuberculosis is such that we can never affirm that a subject is not already the bearer of the infection, and, scientifically speaking, no state exists in which a trauma *per se* is sufficient to produce it. With the required conditions of the soil, in presence of the tuberculosis bacillus, a trauma merely reveals or localizes a latent tuberculosis. Now, although this action of the trauma is manifest only under certain conditions, its *aggravating action* on a tuberculosis in evolution is evident beyond a doubt. An injury to a part in which there is a preexisting lesion in a torpid state, hastens its evolution and suppuration rapidly takes place.

A trauma can also aggravate a tuberculosis by causing generalization, but this is probably infrequent and occurs only when the injury directly involves the diseased part. The vessels opened by the trauma may be invaded by the bacilli, the bacillosis becoming a bacillemia, the subject dying from an acute miliary process or a meningitis.

We now come to the question of predisposition from the forensic standpoint, and returning to the subject of predisposition in parasyphilitic affections, it is clearly evident that the predisposition consists in the existence of the syphilis. Now, by an approximate calculation of probability it is easy to prove that it is practically impossible to take into consideration this syphilitic predisposition. As was pointed out, the proportion of syphilitics who later become general paralytics is two per cent. according to W. Mott, which, in other words, means that a syphilitic has one chance out of fifty of acquiring paresis. Consequently, the part played by a syphilitic predisposition represents only unity against forty-nine others of not becoming a paretic, so that even mathematically the predisposition is quite negligible.

Thus it would be a mistake to take syphilis into consideration from the forensic viewpoint as predisposing to parasyphilitic affection. The exact proportion of syphilitics who become tabetic is not known, but it may reasonably be supposed that it is about the same as in general paralysis, and the same reasoning may very properly be applied here. There are still other reasons which are opposed to the supposition that syphilis is taken into consideration in this affection. It is first the frequency of this etiology at the origin of these affections and, secondly and more particularly, the recent pathogenic hypothesis which advances that syphilis has not alone the power of creating a systematized myelitis because the common infections of the arachnoid cul-de-sac may create as much. Consequently, from both the medical and forensic viewpoints the part played by simple predisposition is, as far as a preexisting state is concerned, to be eliminated.

The same applies to diseases arising from arteriosclerosis for exactly the same reasons. All arteriosclerotics do not make their *exitus letalis* by a cerebral hemorrhage and the proportion of those having this complication following upon a trauma is about the same as that of persons not afflicted with arterial calcification, who after an injury suffer the same accidents. Now what of predisposition here? Clearly, a subject who, already arteriosclerotic, receives an injury, will acquire a much more serious traumatic neurasthenia than a young and healthy subject from the fact of his arteriosclerosis, so that in forensic matters it is only just to take this into consideration. On the other hand, proof of the arteriosclerosis is difficult, especially if necropsic or operative control is wanting and when we are compelled to resort only to laboratory or clinical investigations based on hypotheses which are at this very time still under discussion. Therefore, it would be difficult to convince a court and jury of matters which have not acquired scientific authority. In truth, it would be easy to invoke hardening of the arteries in a case of gangrene or cerebral hemorrhage following a trauma in order to reduce the importance of the injury from the forensic viewpoint, and all the more so because behind arteriosclerosis is often hidden that great arthritic diathesis, but the question of diathesis is not current money in legal medicine.

It is easily conceived how great is the difficulty to calculate accurately the importance of the part played by predisposition. The case of judgment rendered and reversed by the Court of Montpellier, France, is typical in this respect. The lower Court of Montpellier had rendered a decision on July 10, 1908, based on the experts' report, that the damages demanded on account of the trauma should be reduced in the case of a laborer, G., on account of the arteriosclerosis presented by the injured, esteeming that this had contributed to his fall and had aggravated the sequelæ. This decision was reversed on May 27, 1910, by the Court of Cassation, which handed down a decision in which the following remarks occur: "The morbid predispositions of the victim, whether they facilitated the accident or aggravated the sequelæ or not, are not to be taken into consideration in determining the amount of damages." It is true that, on June 18, 1908, the Court of Cassation had handed down a decision in another case that "it cannot be otherwise when the morbid predisposition is developed in the laborer, without any relation to the injury received."

In reality, it may well be asked upon what ground the experts and court saw fit to reduce the amount of damages asked for in this suit by sustaining the theory that the trauma resulting from a preexisting arteriosclerosis was not fully responsible for the condition of the plaintiff.

For all these reasons, viz., variability and the preeminently conditional character of predisposition and the great difficulty of giving a just appreciation of the part it plays, the expert will be the wiser if he leaves it entirely aside. Jurisprudence is unanimous in this respect and I will here give some examples of such instances.

D., a laborer, died suddenly while manipulating some iron weighing fifty kgm. At autopsy death was attributed to aortic insufficiency and provoked by alcoholic excesses. The three experts declared that the affection causing death was latent and conclusive. D. expired suddenly at the age of thirty-five years from a syncope having an aortic insufficiency as origin, and the work done by D. should be considered as an adjuvant cause of death. The decision of the court was "that from the conclusions so distinctly formulated, also taking into consideration that the law terms that there is an employer's liability when death is produced by work being done, no matter what may have been the morbid predisposition of the laborer, the court declares established the relation between cause and effect, between the work and accident followed by death, and admits the damages asked for by D.'s widow." (Civil Court of Cherbourg, January 18, 1911.)

A decision of the Court of Caen, July 27, 1911, confirmed the decision of the lower court on appeal: "Should be considered as having taking place during work, and consequently the act of April 9, 1898,[1] is here applicable, the accident, such as a fall, occurring on the place and during the time of working, although the cause has remained unknown; but it is not sufficiently demonstrated that the said accident was due to a morbid disposition of the victim or to a factor foreign to the work." (Court of Paris, May 16, 1911.)

"The employer is held liable by the terms of the law of 1898, for the consequences, even indirect, of an accident occurring during working hours and in the transaction of the business duties of the employee without taking into account the morbid predispositions of, nor the preexisting physical condition prior to the injury, etc." This was part of the ruling of the Court of Douai, February 14, 1912, in a case of amputation for rupture of an aneurysm.

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[1] The Employer's Liability Act.

although the court admitted that the aneurysm was a preexisting morbid state, but that the victim should nevertheless recover damages because the cause leading to rupture was a slight blow received during work. I have referred to these decisions of the French courts simply to show how the law interprets such cases, but it is regrettable to observe how a simple predisposition is confounded with a manifest latent morbid state, such as aortic insufficiency or an aneurysm. It is nevertheless true that as far as parasyphilitic or arteriosclerotic affections are concerned, predisposition cannot enter into account, and we will now consider if the same applies to tuberculosis, and if, in absence of predisposition, we can consider as a preexisting morbid state the necessary efficient cause, viz., Koch's bacillus.

It has been pointed out from the scientific standpoint that a trauma, in the case of a posttraumatic bacillosis, only acts by fixing the bacilli preexisting in the organism, but nothing proves that, without the trauma, these very bacilli might not have remained indefinitely latent. Thus, in France at least, all the decisions completely neglect the question of a tuberculous predisposition, likewise the possible presence in a latent state of the causal agent of tuberculosis in the organism of the injured, basing the decisions on the principle that there is a relation between cause and effect, between the injury and morbid manifestations following it, there is no ground for considering the predisposition of the victim to the lesions resulting from the injury. For instance, in a case of Pott's disease following upon a strain, the Court of Montpellier (November 3, 1905) awarded full damages. A laborer with a tuberculous knee joint (white swelling) received an injury to this knee with the result that amputation was required, and the Court of Rennes (July 18, 1906) allowed damages in full, although the existence of the tuberculous bacilli prior to the injury was evident, but was not taken into consideration by the trial court.

To sum up what has been said of the question of predisposition from the forensic standpoint, I believe that it should be rejected, and the same applies to the presence of the causal agent in the tissues prior to the injury. Consequently the preexisting physical state in the above mentioned class of cases is to be put aside.

The question of the preexisting physical state changes its aspect when, instead of predisposition or efficient causes, we are dealing with diseases fully developed prior to the receipt of the injury, and which have been influenced by an intercurrent trauma. Here also there are various problems to be considered, which I will examine successively. The first case is that of some real but latent disease and retrospectively recognized by interrogation of the patient, as in the case of the tabetic woman in whose antecedents paroxysms of pain characteristic of tabes in full evolution, were discovered. This case offers some interesting considerations. This woman was not capable of simulation since the accident was not one where a suit for damages could be brought. However, it was only by a minute interrogatory that this symptom which she had forgotten, could be brought to light in her antecedents.

In all cases, even where there is no action for damages in view, and the patient's assertions are devoid of suspicion, it is practically impossible to arrive at an exact conclusion as to the date a myelopathy or a cerebropathy began. When the subject begins to notice functional disturbances, it is probable that the affection made its beginning long before. The clinical commencement follows too soon upon the receipt of the injury, and there is a maximum of probability that the disease has been suddenly revealed by the injury, when in reality it existed in a latent state for an indefinite time. From the strictly forensic viewpoint, in the case where the disease is real but latent, the injury cannot with equity be considered responsible for the trouble.

It is to be distinctly understood that the notion of a disease in full development prior to the injury is applicable only to affections whose evolution and duration are fairly well known and understood, and where we may approximately fix the beginning even by a retrospective examination. This does not apply to diseases with an indefinite evolution, such as arteriosclerosis for example. It may possibly find its application in cancer, which affection I have purposely avoided when considering predisposition, for the very good reason that we are in complete ignorance as to the conditions which predispose to this affection. This much having been said, we will next endeavor to formulate the forensic rules to be followed in cases where the injured having an organic myelopathy, cerebropathy, or tuberculosis, attributes his affliction to an injury received.

When the personal inquiry of the expert reveals the presence of undoubted symptoms of the disease in question prior to the injury, the problem is reduced to a study of whether or not there is a revelation or simply an aggravation of the disease. What at first sight would seem relatively easy is, in reality, quite a delicate matter, because the symptom which for the patient reveals the trouble, is merely one of an aggravating kind for the medical man, and, moreover, a condition of affairs which cannot fail to result in a conflict of ideas. Take the case of a *revealing traumatism*. It is just here that above all intervenes the importance that should be attached to the retrospective value of the trauma in the affection in question. The relative importance of the prior state of health and trauma is, in point of fact, most variable. Sometimes, the prior state of health plays so preponderating a part in the evolution of the affection, that it can alone be invoked and the effect of the trauma is occasionally so intangible from this viewpoint, that it is necessary carefully to weigh the pros and cons in order to avoid considering it as a cause, when it really is a pretext or a revealing agent. Then again, the prior state of health is the only reason for the working incapacity. The simplest case is that where, playing an undoubted revealing part, the trauma occurs in an early tabes which is ignored by the patient, and produces a fracture, when in a healthy subject a trauma of the same intensity would have resulted merely in a simple contusion. In this case the injury is the revealing agent, since the tabes was undergoing its evolution insidiously without as yet giving rise to incapacity for work.

All depends upon the clinical analysis and the conditions in which the injury occurred. The expert must look for and estimate the nature and violence of the shock, its direction, and the occupation of the subject at the time of the accident, the position of his limbs, and all other details susceptible of enlightening his convictions. If it can be shown that the fracture was produced by an insignificant trauma, and if the cause was manifestly unable to produce a fracture in a healthy subject, the preexisting tabes should be considered, however paradoxical it may be, as a simple predisposition. There are, consequently, certain well defined cases in which, considering the insignificance of the efficient cause, a more or less latent preexisting morbid state may very well be considered as a simple predisposition and, from this standpoint, to open no way for a decrease in the amount of liability. But—and it is a point to which I would particularly call attention because it seems to me a new conception of this particular point of the question of the preexisting state—it is not the entire tabes that should be recompensed by the payment of damages for a single paroxysm of fulgurant pain produced by the trauma, nor for the latent tuberculosis existing prior to the receipt of the injury which may only have caused a simple hemoptysis resulting from the effects of an effort on the part of the plaintiff during work. There is here an important disproportion between the resulting symptom and the entire preexisting latent disease, so that the causal responsibility must lose its integrity, to limit itself strictly to the resulting symptom, without which the case would end in evident injustice. There is, to my mind, no difficulty in fixing the ultimate limits of the resulting symptom, and there can be no possible doubt of the relation of cause and effect with the trauma. If after a period of temporary incapacity, instead of evolving toward recovery, the symptom continues without any end in view, we come back into the following case, namely, that of aggravation. As to doubt relative to the bonds of causality between the resulting symptom and the trauma, it is for the expert to establish solidly this fact; and, if scientific proof is lacking we may rightfully admit the relation juridically, on the simple succession of time. The case in point frequently arises in instances of locomotor ataxia, because Gauraud was able to collect twenty reports of intercurrent trauma in tabes, and of these twelve might have been, or were accidents involving the employer's lability. It is curious to note that singly, some symptoms are more particularly influenced by trauma than others, particularly exacerbations of painful phenomena.

The trauma may either exaggerate the already existing symptoms of locomotor ataxia or provoke the appearance of a new symptom with such rapidity that the relation of cause to effect cannot be doubted. This case will be examined shortly. Thus, there is too much tendency to profit by the fact that a trauma by provoking the appearance of a new symptom of some affection, reveals the existence of this very disease, in order to place upon the injury all the responsibility of producing the malady *in toto*.

I am unacquainted with any legal decision relative to the revealing part played in tabes by a trauma, but I am glad to be able to quote a judgment handed down by the Civil Chamber of the Court of Cassation on April 5, 1909, which states that "there are no damages due if the death results from a latent morbid state, where the trauma only plays the part of the revealing agent." The trauma must be the direct revealing agent of the prexisting physical state and not indirectly so, as a decision rendered on November 24, 1910, by the Civil Court of Toulouse appears to uphold, as the Court says: "It is not sufficient to show that a sprain, by preventing the patient from taking nourishment, has thus permitted organic defects to reveal themselves."

I know of no case where tuberculosis has been revealed by an hemoptysis having by itself produced only a temporary incapacity for work.

We now come to the question of *aggravating* trauma. In practice, as we have already seen, this and the preceding case are not infrequently combined. It is the symptom provoked that keeps up, as, for example, an hemoptysis which takes the place of the signs of cavities or a paroxysm of fulgurant pains preceding incoordination. There are many ways in which a given disease may become aggravated, either spontaneously or by the fact of an injury. The simplest is the appearance of some new symptom, or what comes to about the same thing, in the reappearance of a former symptom which had disappeared. In order to be able to judge an aggravation which has really occurred in the preexisting physical condition from an injury, it is essential, 1, to know exactly this prexisting morbid state, and, 2, to be certain that without the injury the preexisting state of health would not have become spontaneously aggravated from the very fact of its evolution; in other words, that the new symptom observed need not necessarily occur in the given disease. For example, it cannot be said that motor incoordination will surely come on in a tabetic who as yet is free from it, any more than trophic disturbances, if an external cause does not occur to favor their production.

However, Thoinot declares that in every case of progressively evolving tabes, and counting motor incoordination as one of its symptoms, a time will come when this, slight as it may yet be, will by the progress of the affection, become at length manifest to everybody. This, of course, naturally happens without any trauma coming into play in the majority of tabetics, so that we should be rather skeptical when a trauma is invoked as a cause of the incoordination. In this objection, it will be observed that Thoinot absolutely ignores the question of the date of appearance of the incoordination and that, if the patient suddenly arrives at the maximum of this incoordination immediately after the receipt of the injury, it is quite a different matter than if it took ten years or so before it appeared.

The same cannot be said of a new localization of tuberculosis following an injury, because, even admitting the presence of foci of bacilli at the point of injury, the correlation of the spot traumatized implicates the trauma as the causative factor of the new localization. In this case the trauma should, both medically and legally, be considered alone responsible for the new symptom considered with its individual prognosis as well, and not by the general health of the subject, as it results from the combination of the new symptom with the preexisting morbid state. The only problem to settle is whether or not the new symptom would have made its appearance without the action of the trauma. It is clear that it would be unjust to consider complete working incapacity, which is usually that of most tabetics, as due entirely to the injury which in a tabetic has only set up another symptom of the disease. This distinction, to my mind, is much more in conformity with equity.

Beside the new symptom, properly speaking, is to be placed a former symptom which reappears. Thus, subjects afflicted with infantile paralysis are sometimes in adult age, taken with late amyotrophy. The etiological value of trauma in myelopathic amyotrophies has given rise to important writings from the pens of Kurt Mendel, Pagenstecher, Sand, Ladame, and Inglbraus. Rémond has recorded the following case: The patient, thirty-three years of age, who had been an infantile paralytic, received within six years two violent injuries of the shoulder, and six years after the first trauma an amyotrophy of the scapulohumeral type developed. The awakening of the amyotrophy may occur twenty or even fifty years after the attack of poliomyelitis.

To explain the elective localization in the anterior horns at the time of the first attack of the affection, it is generally admitted that it results from a congenital predisposition of the cord due to hemorrhage as well as to hereditary predisposition. Thus, it is clear that the latter predisposition cannot be solely responsible. Certain cicatricial sequelæ, the remains of the first attack, certainly intervene in the genesis of late amyotrophy. We can here readily recognize the origin of the preexisting state; the amyotrophic state which is both visible and palpable, where predisposition is certain since the subject is already diseased, and on the other hand, the hereditary and constitutional medullary debility. But how often infantile paralysis will again progress later on in life without the action of trauma, and how many cases, too, remain stationary, even after the receipt of an injury!

The reappearance of an old infantile paralysis cannot be considered as a latent state from the forensic viewpoint as may be readily conceived, but simply as a suspended state which equals an indefinite predisposition, much less active than that created by syphilis in regard to parasyphilitic affections, and not preventing the subject from earning a living. Then by analogy with what we have learned as to the appearance of a really new symptom, trauma, it seems to me, should alone be held responsible in this case for the development of this symptom whose reappearance it provoked.

In spite of its bad prognosis, tuberculosis cannot be considered as a disease of progressive evolution on account of the frequency of its remissions. Two cases are to be considered, according to whether the injured person was already in such a state of health that his working capacity was compromised; or a trauma inflicted on a subject who, although tuberculous, enjoyed full working capacity. In the first case, the working capacity will be still further decreased, the affection is hastened in its progress, or the term of the affection may be advanced, but the trauma has here played merely an accessory part in a subject who must of necessity die sooner or later, so that it is quite impossible to hold the injury entirely responsible for the outcome. Others, however, hold the contrary view. It is clearly the duty of the expert to collect all possible data relating to the patient's antecedents, and in his report he must indicate the amount of working incapacity resulting and the state of health prior to the receipt of the injury. The rest is for the court and jury to decide.

A number of cases reported in the literature show the manifestly aggravating action of trauma upon malignant tumors, particularly in their evolution, be the trauma surgical or simply accidental. On the other hand, cancer represents an eminently progressive pathological process. This fact should be impressed upon the court by the expert. In the courts of Europe I think I may safely say that in the present state of forensic law they would admit the influence of the injury only when the preexisting disease was not in a clinically advanced state, or was not likely to result in the hastened or early death of the subject from the nature or situation of the neoplasm. It devolves upon the expert clearly to explain all the elements of a given case with detail and precision.

To conclude, it may be said that the etiological value of the trauma in the cases considered in this paper occupies only a secondary place in the etiological combination composed of predisposition, the necessary efficient cause, and the determining factor, and in some cases it is even doubtful if the injury alone can produce the given affection *in toto*. The trauma, more particularly, provokes the consequences of the preexisting state.

From the forensic viewpoint, it is the duty of the court to determine the actual part played by the trauma. The expert, in his report, should state what he has actually discovered, without taking into consideration what may be the opinion of the court. The preexisting latent morbid condition should always be systematically searched for as soon as there is any doubt as to the reality of the effects of the trauma, and an obvious pathological condition should at once reduce the part played by the trauma to one of aggravation only.

A TEST FOR SYPHILIS.

Mercury Bichloride in the Blood Serum and Cerebrospinal Fluid.

By George B. Ubel, M. D.,
Ithaca, N. Y.

The principles of this test are based upon a few of the recognized facts in chemistry relating to the action of colloids, viz., first, that bacteria react in accordance with all the established facts pertaining to colloids; secondly, one colloid may be absorbed by another colloid, preventing its precipitation when a mild precipitant is added. By assuming that normally there is a colloid present in the blood serum which is not present in the cerebrospinal fluid, the test may be satisfactorily explained.

The addition of a one in 100 solution of mercury bichloride to the nonsyphilitic blood serum will precipitate the colloid which is normally present, and a turbidity will result, but if the serum is syphilitic the colloid of Spirochæta pallida protects or absorbs the colloid normally present in the blood serum, and hence the serum remains clear when the precipitant is added.

The reaction on the spinal fluid is just the reverse, i. e., normally there is no colloid present, hence when the bichloride solution is added no precipitate is formed, but in a syphilitic spinal fluid the colloid of the spirochete is present and is precipitated by the solution.

TECHNIC.

The technic is the one described by Doctor Gordon, of Philadelphia, in the New York Medical Journal for February 20, 1915, though he made no attempt to explain the principle of the reaction. To several c. c. of clear serum, in a clean test tube five to ten drops of a one in 100 mercury bichloride solution is added. If the serum is nonsyphilitic, a white, flocculent precipitate will be formed, giving the serum a turbid appearance in from a few seconds to three minutes, and, if allowed to stand several hours the precipitate will settle to the bottom of the test tube. On the other hand, if the serum is syphilitic it will remain clear.

The technic for testing the spinal fluid is the same as for testing the blood serum, but the results are reversed, i. e., a nonsyphilitic spinal fluid remains clear and the syphilitic spinal fluid becomes turbid when the solution is added.

The blood should be withdrawn four or five hours after a meal, as this insures a serum free from chyle, and therefore much clearer. A clear spinal fluid is also imperative, hence the test should not be attempted on a blood tinged fluid.

This test was tried out on the following series of unselected cases in the neurological wards of the Erie County Hospital, Buffalo, N. Y.

		Wassermann.				Bichloride test.	
	History.	Serum.	Spinal fluid.	Cell count.	Globulin on spinal fluid.	Serum.	Spinal fluid.
Case 1*....	+	+	+	38	+	+	+
Case 2.....	+	+	+	48	+	+	+
Case 3**...	+	—	—	6	—	—	—
Case 4.....	—	—	—		—	—	—
Case 5.....	—	—	—		—	—	—
Case 6.....	—	—	—		—	—	—
Case 7.....	—	—	—		—	—	—
Case 8.....	—	—	—		—	—	—
Case 9.....	+	—	+		+	—	+
Case 10....	—	—				—	
Case 11....	+	+	+	138	+	+	+
Case 12***.	—	—	—	18	+	—	+
Case 13....	—	—	—	6	—	—	—
Case 14....	—	—	—		—	—	—

Case I. First test showed both blood and spinal fluid positive for syphilis. One week after two injections of salicylate of mercury, one grain, the blood became negative, but the spinal fluid remained positive.

Case III. History was positive for syphilis, but patient had undergone strenuous antisyphilitic treatment, and one year previously had had a negative Wassermann.

Case XII. Woman, aged fifty-four years, history negative; epileptic seizures developed within the last six months. Before a second sample was taken, the patient became maniacal, and was transferred to the State hospital for the insane.

This series of cases is reported with the permission of Dr. George A. Sloan, attending neurologist, Erie County Hospital Buffalo, N. Y.

REMARKS.

The small number of cases reported does not warrant us to draw definite conclusions, but it is interesting to note that in Case I the blood serum became negative after antisyphilitic treatment had been started, also in Case XII a positive mercury bichloride test was obtained, while the Wassermann reaction was negative.

201 Dryden Road.

DRUG ADDICTION.

A Study Made in Essex County Prison and House of Detention,

By Edward W. Markens, M. D.,
Newark, N. J.

About the morphine and opium habit much has been written and a goodly amount of literature prepared. More especially is this true since the enforcement of the Harrison narcotic law.

Statistics given by the various contributors on this subject invariably lay stress on the history, when it is a conceded fact this class of patients are most unreliable in their statements. How then are we to arrive at the facts unless we have the patients under close observation and know positively that they do not receive drugs other than those prescribed?

There is no desire on my part to compare the method employed here with others better known, my only purpose being to give a résumé of the results obtained and let the reader draw his own conclusions.

I have taken the last seventy cases of drug addiction for the purpose. It must be borne in mind that these cases were treated at the Essex County Prison at Newark, and we must be mindful of the fact that every patient was under restraint and subject to the treatment prescribed. The cases included patients addicted to one or more drugs, cocaine, morphine, heroine, and opium.

The duration of the habit was from three months in the case of a morphine addict, to twenty-one years of opium smoking. The ages were from twenty-one to forty-five years.

The patient, when received, must take a bath and is thoroughly examined, and then placed in the hospital. Most careful observation is made for the first twelve hours, and the patient's condition indicates the amount of drug he is to receive.

The average first daily dose given is one and a half grain of morphine (morphine being the only drug prescribed, regardless of the fact that many patients are suffering from the effects of other drugs). The dose is reduced according to the condition of the patient, sometimes a quarter grain a day or perhaps the same amount in two or three days. On rare occasions it was found necessary to increase the dose a quarter grain for a day or two. The treatment in this series of cases extended from five to twenty-eight days.

A standard dose as in some of the well known treatments is not desirable, as each patient must receive individual symptomatic treatment.

Purgation is not resorted to, except in rare cases, when gastric lavage is also employed.

The regular prison fare is given three times a day.

During the first twenty-four hours the patients suffer from nervousness, insomnia, anorexia, nausea, and rarely, vomiting. Pains in the lower extremities are noticeable in every case.

In every case the patient was off the drug for at least ten days before being discharged, and in many cases for three or four weeks. Very little ill effects were experienced after the first twenty-four hours, and in every case a gain in weight was noticeable.

It might be well to state here that we have a most admirable hospital in the prison where these patients are treated. Everything is bright and cheerful; there are good baths, plenty of sunshine, and fresh air in abundance. The bedding is changed daily and the bed is of the highest standard. The average patient coming under our care, it must be remembered, is the poor unfortunate without friends and at best with poor abode. The conditions we have to offer him are in such strong contrast to what he has been enjoying that he instantly realizes he is among those who will help him to better things.

The new patient is invariably encouraged by seeing the good results obtained by others. In this manner the unfortunate is led to help himself, which is a large factor in the treatment of this class of patients.

Of course, there is no way for us to tell how lasting is the effect this treatment may have; suffice it to say that a fair percentage when discharged will write from time to time, and tell how well they are doing and how they have not returned to the habit.

If we have been instrumental in permanently curing even a small percentage of the people, our work is well done. Time alone will tell.

RECOVERY FROM TETANUS.

By B. Scheinkman, M. D.,
New York.

The following case of tetanus with complete recovery may be of some interest to the profession, especially from a therapeutic point of view:

Case. On May 10, 1916, I was called to see Mike C., twenty-eight years old, a laborer at a city dumping dock. He complained of pain and stiffness in the lower jaw, dryness in the throat, and weakness in the legs. Gave a history of a severe chill about two days before. On examination I found the inferior maxilla quite rigid, both sternomastoid muscles somewhat contracted with deep depressions in the supraclavicular and infraclavicular spaces, and marked weakness in the lower extremities. Pulse slightly accelerated, no fever, no inflammatory process in the throat, no swellings in either the submaxillary or other glands in the region. On further examination, I found a small scar on the palm of left hand, the result of an apparently slight abrasion which had healed about three months before and was quite forgotten. I became suspicious of tetanus, but left the patient untreated for further developments till next day.

On May 11th, I found the patient much worse; lower jaw much stiffer and more painful, sternomastoids considerably more rigid, supraclavicular and infraclavicular spaces more sunken, lower extremities much weaker; walked with great difficulty and with somewhat of an ataxic gait. My diagnosis of tetanus having thus become more convincing, I called Dr. Thomas Rehling in consultation, who, on thorough examination, fully coincided with my diagnosis. Patient having absolutely refused to go to a hospital, I injected him with 6,000 units of tetanus antitoxin subcutaneously the same day.

On May 12th, patient's symptoms much aggravated; lower jaw firmly set; muscles of neck, abdomen, and lower extremities contracted and rigid, head retracted, with the corners of the mouth drawn up, imparting to the face a peculiar, ghastly expression with a sardonic grin. I injected 10,000 antitoxin units more—intramuscularly.

On May 13th, patient's condition worse; severe tonic contraction of all muscles of back, abdomen, and legs, closely simulating rigor mortis. Injected 10,000 units of antitoxin.

May 14th, patient in a state of complete opisthotonos with severe and frequent clonic convulsions of all the muscles, each spasm accompanied by an agonizing moan or groan; body covered with perspiration and patient presenting a moribund appearance. I injected 10,000 units antitoxin and simultaneously injected also five c. c. of a two per cent. solution of carbolic acid.

May 15th, patient in same condition. I injected six c. c. of the carbolic acid solution, and prescribed a powder consisting of quinine sulphate two grains, phenacetin, antipyrin, and caffeine citrate, of each one and one half grain, and codeine grain one fifteenth, with instructions that this dose be given every two hours. Antitoxin abandoned. The combination of synergists I have been in the habit of prescribing in most of the infectious diseases in the course of my professional practice and close observation with results so gratifying as to give me ample justification to consider quinine as possessing either direct germicidal powers or stimulating phagocytic properties or both; while the well known antipyretic, analgesic, and antispasmodic effects of antipyrin, phenacetin, and caffeine are, in my opinion, undoubtedly due to their exerting some important vasomotor influences favoring elimination of morbid material from the system; as shown by their powerful control over temperature, pain spasm, urinary secretion, perspiration, etc., which control would be difficult to explain in any other way, since these drugs are neither anesthetics nor narcotics. The depressing effects of phenacetin and antipyrin (as is the case with most of the coal tar products) being counteracted or neutralized by the stimulating effects of the quinine and caffeine, renders the simultaneous administration of the drugs absolutely safe for any reasonable length of time according to indications.

May 16th, patient's condition unchanged. Injected seven c. c. carbolic acid solution, same powders continued. May 17th, 18th, 19th, 20th, patient's condition practically unchanged. Treatment the same, except for a daily increase in the carbolic acid solution by 0.5 c. c. May 21st, 22nd, 23rd, 24th, patient showed slight, but progressive improvement. May 25th, marked general relaxation of muscular rigidity, jaws open about one half inch. Same treatment continued. May 26th, 27th, 28th, progressive improvement. Treatment continued. May 29th, opisthotonos almost disappeared, clonic convulsions ceased, abdomen lost the boardlike hardness, patient free from pain, could move legs. Same treatment continued.

May 30th, June 1st, 2nd, 3rd, 4th, patient fully relaxed, could open jaws to almost full extent, sardonic grin disappeared, looked cheerful, had good appetite, discontinued all treatments.

June 8th, patient fully recovered.

As a noteworthy feature, I consider the fact that during the entire course of the disease the patient's temperature never reached above 101° F., and only on very few occasions the pulse showed some erratic tendencies, but not enough to require interference. The intellect remained unimpaired throughout the entire attack.

During the whole period of the disease, the patient was fed on milk and copious quantities of water (owing to severe thirst), which were given by mouth, notwithstanding the firm closure of the jaws, thanks to a narrow interspace between the upper and lower incisor teeth (a fortunate anatomical anomaly), through which he could be made to sip his liquid food and medicine.

152 Canal Street.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

THE RELATION OF DIET TO DISEASES OF THE SKIN.

By Albert Strickler, M. D.,
Philadelphia,
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Food, a prime necessity to the maintenance of human existence, is at the same time capable of producing a varied number of pathological conditions in the human body. These conditions may be either acute or chronic.

Foods are capable of acting either as primary or as secondary factors in producing disease in a number of ways.

1. We may partake of a certain type of food for a long period of time and so upset the equilibrium existing in the body.

2. We may partake of food which acts as an acute poison, producing various acute diseases of the skin.

3. The human organism may be hypersensitive to various proteins, and the ingestion of these particular protein foods may be productive either directly or indirectly of diseases of the skin.

4. The bacterial flora of the intestines may so alter the products of digestion or be altered by them, as to produce toxic products whose absorption may induce various cutaneous eruptions.

A great many affections of the skin have at one time or another been attributed to errors of diet; we shall discuss, however, only those diseases in which foods as a causative role have been definitely established. These diseases are psoriasis, eczema, urticaria, and acne vulgaris.

Psoriasis—This disease which constitutes between four and five per cent. of all skin diseases, has remained an enigma until recently. Various theories have been advanced to explain its pathogenicity, but none have met with approval.

Recent studies by Dr. Jay F. Schamberg, Dr. John A. Kolmer, and Dr. G. W. Raiziss have thrown some light on the nature of the disease. As a result of carefully conducted metabolic experiments, carried out on psoriatic subjects over varying periods of time, the following facts were demonstrated:

1. On a given protein diet a psoriatic subject eliminates less nitrogen in the urine than a normal subject on a similar diet.

2. Psoriatic patients show a marked retention of nitrogen, and this occurs on a diet low in nitrogen, and on which a normal person would fail to maintain an equilibrium.

3. A low nitrogen diet has a most favorable influence upon the eruption of psoriasis, particularly if it is extensive. The authors maintain that severe cases of psoriasis improve under such diet, almost to a point of disappearance of the eruption. From these studies and also from some observations of the author, it may be concluded that in a large number of subjects of psoriasis, particularly those who can be kept in a hospital where the diet is carefully controlled, a low protein diet influences favorably the eruption of psoriasis and probably renders local remedies more efficient by making the skin less irritable.

Eczema—This disease, the most common of all affections of the skin, is of variable etiology. For a long time, diet was suspected to be causative of a certain percentage of cases of eczema. In recent years attempts have been made to separate cases due to diet from those of different origin. This is done by means of anaphylactic food tests. Two principal methods are employed:

1. The cutaneous method, consisting in abrading the skin and rubbing in the various food products, waiting thirty minutes and reading the reaction; and, 2, the endermic method, which consists in injecting into the layers of the epidermis a stated quantity of the different proteins in solution or suspension, waiting from twenty-four to forty-eight hours, and reading the reactions. All agree that a positive reaction consists primarily of a papule at the site of injection and secondarily of an erythema. All agree that normal persons do not give positive reactions.

These food reactions in eczema have been studied by Doctor White, Doctor Blackfan, and the author.

Doctor White employed the endermic method, using a dental burr to produce the skin abrasion, then rubbing in the various food proteins. He concludes that approximately twenty per cent. of patients with eczema do not react positively to food proteins as shown by the anaphylactic tests. He reports some fifty-six cases in which these tests were carried out and a number of cures due entirely or in part at least to a modification of diet. Doctor White used local treatment as well as a dietary régime based on anaphylactic food tests.

Doctor Blackfan studied forty-three patients without eczema, using the anaphylactic food tests, and only one gave a positive test. His work was done with children. Of the twenty-seven with eczema, twenty-two gave evidence of susceptibility to proteins. Blackfan found the endermic method more sensitive than the dermic. Removal of some proteins in older children and adults, brings about great improvement in some cases of eczema. According to this author, in infants it is not successful because of the inability of regulating their diet. It is next to impossible to remove all proteins from the baby's rations without seemingly undermining the health of the baby.

In my investigations I employed the endermic method in all cases. In all, forty-six patients with eczema were studied and a great majority of them were adults and older children. Our plan has been, whenever feasible, to withhold local treatment completely to see what benefit diet exerted on the course of the eruption both as to its subjective and objective phenomena. In this study it was found that fifty per cent. of our patients were benefited to a greater or less degree by a changed diet as shown by the anaphylactic food tests. In twenty-six per cent. the food tests were entirely negative, while in the remainder the correction of diet, as shown by the anaphylactic food tests, did not have any bearing on the course of the disease.

From a review of the literature and from our own work, it may be concluded that eczema in a certain percentage of instances, is benefited by a correction of diet, based on anaphylactic food tests, and that this method constitutes a valuable addition to our armamentarium in treating eczema.

Urticaria—While it has been known that acute urticaria is due in the largest number of instances to the ingestion of certain foods such as pork, sausage, fruit, strawberries, shellfish, etc., and these facts are substantiated by the food tests, still these tests applied in chronic urticaria do not yield satisfactory results. The author studied a number of cases of chronic urticaria, and while some positive results were obtained, a correction of diet according to these findings failed to influence the eruption.

Acne vulgaris—Lastly, we consider acne vulgaris a disease which afflicts between seven and ten per cent. of the patients in private dermatological practice. Anaphylactic food tests in this disease, even when positive, do not yield fruitful therapeutic results when the diet is corrected according to the findings.

According to studies conducted by Doctor Kolmer, Doctor Schamberg, and the author, in this disease we are dealing among other things with an intestinal toxemia. Both complement fixation experiments and therapeutic results seem to point strongly in this direction.

SUMMARY.

From this brief exposition the following may be summarized:

1. In psoriasis we are dealing with a disease of disturbed nitrogen metabolism. In this disease there is a marked nitrogen retention; and when the patient is placed on a low protein diet, particularly when the eruption is extensive, the disease is influenced very favorably.

2. In eczema, in about fifty per cent. of the cases, a correction of diet as shown by the anaphylactic food tests, is productive of good therapeutic results. In fact, these should be made in every case of chronic eczema, because physicians of experience realize the difficulties in treating this group of cases.

3. In acute urticaria, the anaphylactic food tests are of value from the viewpoint of both prophylaxis and therapeutics, while in chronic urticaria, their value is questionable.

4. In acne vulgaris there is evidence in most cases of an intestinal toxemia, as shown by the complement fixation tests, and food sensitization does not play a role in the etiology of this affection.

Value of Oysters.—Stutzer maintains that it takes fourteen oysters to contain as much nourishment as one egg, and 223 to equal a pound of beef. Their cost is triple that of beef.

Bacteria in Oysters.—Gigon and Richet, Jr. (*Bulletin de l'Académie de médecine,* June 27, 1916) report a bacteriological investigation of samples of oysters bought in Marseilles, France. Analysis of the juice of oysters revealed an average of 2,814,000 aerobic organisms in each oyster, with numerous putrefactive organisms and colon bacilli, and in one instance each the A and the B paratyphoid organism. Study of different parts of the oyster showed them to be all infected, the juice containing 443,000 colon bacilli to the litre, the intestinal mass, 130,000, and the pallium 90,000. The danger of infection arises not only in the proximity of oyster banks to drainage outlets—a condition insufficiently controlled in the Marseilles district—but in the character of the water in which the oysters are kept immediately before sale. Analysis of the water of the old port of Marseilles, in which many unsold oysters are kept from one day to the next, contains 6,000 to 8,000 colon bacilli to the litre. Observations such as these demonstrate the absolute necessity of proper supervision of the site of oyster beds by the authorities.

Influence of Diet on Development and Health of the Teeth.—Jay I. Durand (*Journal A. M. A.,* Aug. 19, 1916) points out that there is a steadily increasing tendency of the teeth of civilized races to decay which has been proved by extensive comparative observations. At the present time caries is to be found in from eighty-six to ninety-five per cent. of the school children and is common even in very young children. That diet has much to do with this prevalence of caries is shown by comparative studies of children fed in different ways for the first six months of life. Those fed exclusively at the breast showed caries in about forty per cent.; fed upon cow's milk mixtures in about the same proportion; while those fed on sweetened condensed milk showed caries in about seventy per cent. These facts show the importance of a properly balanced diet during infancy if the teeth are to be preserved. Such a diet should be a properly modified cow's milk with the early addition of vegetables, fruits, and meat if the infant cannot be nursed by the mother. The vegetables, fruits, and meats may be started as early as the sixth month if properly prepared and controlled. The next important point comes in providing a diet for the early years of life which will teach the proper function of the jaws and develop them. Children should be given strips of tough meat, from which to extract the juice by chewing, and such foods as bacon rind, tough crusts, hard dry bread, apples, celery, lettuce, etc., should be included in the dietary to develop the jaws and teeth. Later the prevention of decay should be practised by the institution of proper sequence in the dietary. The last article in each meal should be one which will not leave a sticky carbohydrate residue to cause decay. Such a residue cannot be removed by the tooth brush. The meal should end with meat, green salad, celery, radish, apple, orange, or fibrous food in general. Acid fruits are ideal for the close of a meal, as they provoke the secretion of a highly alkaline saliva with high ptyalin content.

Diet in Ulcer of the Stomach.—Charles Greenberg (*Medical Herald,* July, 1916) advises that the diet should consist of three ounces of a mixture of milk and cream every hour from 7 a. m. to 7 p. m. for the first few days; then to add slowly soft boiled eggs and well cooked cereals until by the tenth day three eggs are taken daily and a three ounce feeding of the cereal with the milk mixture. Cream soups may be substituted, but the total bulk of any single feeding should not exceed six ounces. This diet is intended to nourish the patient and to control the acidity, and in some cases the feedings can be given only every two, three, or four hours. By the fourth week the intervals between feedings may be slowly lengthened, so that the interval becomes every two hours in the fifth week and later every three hours. Combined with this plan of feeding we may use the two following powders alternately, given midway between the feedings:

I.

℞ Magnesii oxidi ponderosi, }
Sodii bicarbonatis, ... } ....āā 0.6.
M. et fac tales chartulas.

II.

℞ Bismuthi subcarbonatis, ...0.6;
Sodii bicarbonatis, ...1.5.
M. et fac tales chartulas.

After a period of use of these powders they may be discontinued and teaspoonful doses of bismuth may be taken before breakfast each day for six to eight weeks, washed down with a glass of water. For a year or more the diet should consist of milk, cream, cereals, soft eggs, vegetable purees, soups, and bread and butter. Healing should not be assumed until the patient has remained free from ulcer symptoms for six months after a return to normal diet. The rigid diet may be reinstituted if discomfort returns despite careful management, but this is usually an indication of some complication.

Digestibility and Utilization of Egg Proteins.—Bateman (*Jour. Biological Chemistry,* August, 1916) shows very plainly the necessity of investigating routine methods. For many years it has been the custom to feed patients on raw eggs in order to increase the body weight. As long ago as 1898 Steinitz reported that the administration of raw egg white to dogs caused vomiting and diarrhea. This was again noted by Mendel in 1913. Bateman found that when uncooked egg white of three to five eggs was fed to dogs it invariably caused diarrhea of more or less severity. Experiments were also made with raw eggs upon a number of persons, and the results obtained confirmed what had already been determined. The egg white was poorly utilized, and most of the patients suffered from diarrhea which, however, generally decreased in the course of several days. Various investigators report that fifty per cent. only of the raw egg albumin is made use of.

As a control experiment two sets of dogs were fed meals alike except that one received native egg white ground to a fine pulp. By the addition of water to both types, meals were made as nearly of the same consistence as possible. Those meals containing the raw food stuffs always caused diarrhea while the others did not.

It has also been noted that the ingestion of raw egg white does not stimulate the flow of gastric juice, that it quickly passes out of the stomach accompanied by scanty amounts of gastric juice and that it is practically unaffected by pepsin. In other words there is to all intents and purposes no gastric digestion.

In order that egg white be made digestible, it must be coagulated by heat; by precipitation with alcohol, chloroform, or ether; by incubation with dilute alkalies or acids; by partial digestion by pepsin; by conversion into alkali metaprotein.

The conclusion of greatest interest to the clinician is that although whole eggs, raw egg white, and albumin water are extensively prescribed, there appears to be little in their conduct as food stuffs to warrant much faith in their nutritive value or ease of assimilation.

Contemporary Comment

Medical Misocainia or Neophobia.—The popular man and the man of true originality, according to the *Medical Standard* for August, 1916, are seldom one and the same individual. Reasons are obvious enough. The popular man stands on your own level, or not more than a hair's breadth higher; he shows us the truth which we can see without shifting our present intellectual position. This is convenient. The original man, on the other hand, stands above us; he wishes to wrench us from our fixtures, and to elevate us to a higher and clearer level. But to quit our old fixtures, especially if we have sat in them with comfort for a long time, is no such easy business; accordingly, we demur, we resist, we even give battle, and while we may suspect that he is above us, we try to persuade ourselves (laziness and vanity earnestly assenting) that he is below us.

But now let a speaker of the other class come forward—one of those men that have the opinion which all men have. No sooner does he speak than all of us feel as if we had been wishing to speak that very thing, as if we ourselves might have spoken it; and forthwith sounds from the whole world a celebration of that surprising feat. What clearness, brilliancy, justness, penetration! Who can doubt that this man is right, doubtless he is a clever man, and his praise will long be in all the magazines.

These ideas have been given expression by Carlyle, but Carlyle might carry them a great deal further if he had studied the history of misocainia, or the hatred of new ideas, in medicine. The essential motives of misocainia are prejudice, selfishness and indolence, the archenemies of all progress, and there are cases on record in the history of medicine in which misocainia had developed to such a degree that men of science, of exalted position, lost the sense of truth and honor and degraded themselves by the employment of unworthy means in order to suppress a new idea and descended to intrigue against those who had promulgated a new truth.

Editorial Notes and Comments

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A PSEUDOSCIENTIFIC HOAX.

It seems that our English cousins have their own troubles with the patent medicines, the fakers, and the garbled newspaper reports of medical matters. A leading London newspaper, according to the *British Medical Journal* for March 18th, published recently an elaborate account of a complex method by which the blind were to be educated to perceive objects by means of light rays reflected on their chests. A wealth of detail was given, well calculated to impress the lay reader, although the least informed practitioner could see at a glance that the possibility of any such contrivance ever being of the slightest use to the blind was so exceedingly remote as to be negligible.

Newspaper hoaxes have been plentiful before and since the immortal one of Edgar Allan Poe, which reminds us that the recently deceased poet Riley perpetrated a poem supposed to be a posthumous one of Poe's, which was so like the latter's in style as to deceive many literary critics until Riley confessed. Such fakes as these, together with the wires from out of town correspondents recording the bad boy who fed whiskey to the chickens and the consequent discovery of a rum omelet in the nest, are all harmless enough and make sufficiently light reading for the heated term, but a story such as that referred to by our English contemporary should be regarded somewhat differently. The better sort of newspaper is still prone to publish medical news without sufficient discrimination. When we consider that a large group of any newspaper's readers have no means of checking up these statements and that these readers are precisely the victims of itinerant quacks, the responsibility of the lay press becomes evident.

Obviously, the newspaper may rejoin that it cannot afford to pay a medical expert, that it must get its news items from customary sources, and that it is its policy to print anything which may interest its readers, provided only that it is not indecent or libelous. By dint of a little trouble, however, there is no doubt that the newspapers of any community could arrange with the local medical society to supervise items of this sort. The arrangement would be mutually advantageous and an argument in its favor is the fact that the average daily paper does not consider material of this kind very important, but rather in the nature of "feature stuff" and "fillers," to be kept on the editor's desk until needed to fill a gap. We must except our New York newspapers from criticism of this kind, as they are generally careful to verify news of a medical or surgical nature.

APPLICATION OF THE BINET TESTS.

Sufficient interest has been aroused and a sufficient amount of work has been done with the Binet-Simon scale for measuring intelligence, and with its many modifications, to reach the conclusion that the limitations of these methods are too great, and the results obtained by many equally good observers too varied, for their use as absolute gauges of mental development. The scale idea is a good one, and an ideal to be aimed at. There should be scales for mind as well as for body; but while the readings might be comparatively easy, the interpretations would always be difficult. Naturally, because of the complexity of the mental processes and the meagreness of our knowledge, they must be elastic to be embracing. Commensurate with this elasticity, the interpretations of readings or results must be more liberal. Hasty conclusions in respect either to diagnosis or to the best disposition to be made of a subject found defective may cause a great deal of harm. Because of the tendency to carry on mental measurements on a large scale, as in the school systems, for segregation purposes, or for special training, special liberality of interpretation is required, else the percentage of error will be so large as to vitiate the whole endeavor.

In so complex an organization as the mind the influences affecting its development and its action are so varied that any rule of thumb becomes a guide and not an index. Physical condition, environment, nourishment, temperament, health, and race, all exert a marked influence on the mind. Persons apparently defective, at least according to the scale, will often be found to make remarkable improvements when such factors are detected and remedied. No new mental centres are developed or new brain cells vitalized. The stimulus to mental development is the general stimulus that all body processes get through the general removal of adverse conditions. It is for this reason that no mental examination or mental survey can logically be undertaken unless preceded by a thorough physical examination and a painstaking inquiry into modifying conditions.

European observers working with school children of different countries, but with the same scale, found that children of equivalent ages and school grades gave widely different results. This is significant when it is considered that a scale retardation of from two to four years is sufficient to relegate such a child to the class of the permanently retarded. The differences certainly cannot be explained on the ground that there is a difference in mental development in different countries; it is explained on the natural variability and the difference in point of view. Differences of this kind become more marked in the requirements for the tests of the higher ages (Haberman, *Journal A. M. A.*, July 31, 1915). Indeed, observers in this country have found wide differences, not only in different children, but in the same children at various but proximate occasions.

Moreover, the tests have the highest value in the lower ages. It is a moot question whether they have any value at all above the age of twelve years. The test questions for the lower years are questions of orientation fundamental in scope, and required for the proper test of a child almost everywhere. The questions for the higher years are not for the determination of intelligence and discernment, but rather of the powers of expression. The tests given for the ages between twelve and sixteen years are rarely answered, even by higher students and teachers, as the scale makers intended them to be answered. Because the questions for the lower years are fundamental is the reason why great variation in the same class of children is proof of fundamental differences in mental development, of so profound a nature that the subjects who vary from the standard must have definite mental defects. Even variations which are much above the standard for that class of children, as in the precocious, is significant of an "instable" and too highly matured, and, therefore, easily disturbed mental organization. The term "exceptional child" is a term comprehensive enough to include marked variations above as well as below the standard. For the higher ages the range of mental development is very great and of necessity is varied in conformity with individual needs and individual station. It is well nigh impossible to embrace all angles within the confines of a measuring scale; the limitations are many and hard to grasp. Special mental capacities crop up, and some are abandoned in behalf of others. In other words, mental specialization is normally a later year development. Specialization in the early years denotes deficiency in many faculties, the remaining energies being all launched in the patent faculty. The specialist of later years is the rule of the normal; the specialist of the younger years is the rule of the defective. It can be seen how unwieldy a scale that attempted to encompass later year variations would be. The test of later year mental capacity is rather a test of ability and usefulness in chosen life work, and above all the progress made in such work. It is the test of the ability to contribute something to society.

The newer Binet modifications must, moreover, have a new aim. The generally defective are easily found. If the specially defective accidentally finds his proper sphere, the fact that some of his faculties are defective is of no moment. The aim should be to find out the defective faculties, determine the extent of the normal ones and train the individual definitely with a view to place him in his proper sphere and not to allow this placement to be subject to the vagaries of accident. This is very much a field for applied psychology. Binet has opened a new field rather than devised a new method, and his work calls attention to the necessity of searching out all the defective. The work requires the cooperation of the sciences of medicine, psychology, pedagogy, and sociology; no one of these is entirely sufficient.

THE DIAGNOSIS OF SYPHILITIC SUBOCCIPITAL OSTEITIS.

The diagnosis of syphilitic suboccipital osteitis, on account of its extreme infrequency compared with tuberculous lesions and certain types of rheumatism, is often a matter of some difficulty. The more or less advanced age of the patient, however, his specific antecedents, and the presence perhaps, of some gross or minute luetic manifestation, should arouse the attention of the physician when in presence of a painful stiffness of the neck, usually spontaneous from the beginning and increased by rest in bed. A sharp pain results from pressure over the spinous apophyses of the first few cervical vertebræ or at the level of the upper pharyngeal region, or there is a revelation of soft gummatous areas; these lesions are undergoing evolution in a subject with a satisfactory general condition and who responds to a specific therapy. A positive Wassermann will naturally plead in favor of a specific lesion.

An important sign of the suboccipital localization of syphilis is revealed by the patient when he supports the head in his hands. We do not desire to give the impression that this is pathognomonic of caries of the upper cervical vertebræ, as has been put forth by some, because it does not appear to us impossible that a severe rhachidial pain, whatever its source, may not oblige the patient to consider the weight and mobility of his head as a cause of an increase of pain. Radiography is of immense value for the discovery of the lesion and too often is not resorted to, while a positive Wassermann is important.

The differential diagnosis must include traumatic lesions, chronic and gonococcic rheumatism, spondylosis, and above all, Pott's disease. Gonorrheal rheumatism has a sudden onset, while it has not the progressive element observed in syphilitic osteitis. In the former affection there is usually a more marked rise in temperature, while pressure over the cervical vertebræ does not reveal any localized pain.

Most important of all, however, is the differential diagnosis between cervical Pott's disease and syphilitic osteitis. In the former lesion the tuberculous syndrome, if we allow the expression, is quite different from the syphilitic syndrome. It is to be recalled, however, that hereditary syphilis often becomes an associate of tuberculosis, and as Ricord used to say, we have frequently to deal with a "scrofulate of pox," a combination distinctly influenced by specific treatment. This reserve being made, tuberculous heredity is generally devoid of syphilitic infection in the antecedents of the patient. For that matter, in his actual state, the tuberculous patient is to be separated from the syphilitic. Now, the latter is an adult, usually in a fairly good state of health, while the former is a child, frequently with a weak constitution and offering evidences of a bad general condition. The one offers the stigmata of specific taint, the other pulmonary or lymphatic tuberculous involvement.

Spontaneously painful, particularly at night or when the subject is at rest when the case is luetic, the lesion when tuberculous in nature gives rise to pain only on manipulation of the parts. Bacillary lesions give rise to abscess with elimination of few but large sequestra, accompanied by obstinate discharge. On the contrary, gummata give issue to a serosanguineous discharge or to a small quantity of thick pus and cause only infrequent, rapidly healing abscesses with multiple, small sequestra. The former are ameliorated by rest, while specific treatment improves or cures the latter, but never aggravates them.

The microscope will reveal the tubercle bacillus or Spirochæta pallida according to the case, while a positive Wassermann is a great help in detecting the luetic nature of the process, but is of less value when negative. It must be recalled that in some instances both clinical and laboratory data will be in default and then the diagnosis will be more or less difficult.

A NEW LIGHT IN MEDICINE.

The tendency of modern medicine is to progress away from internal medication. Witness the gradual diminution of the Pharmacopœia, the vogue of the psychanalysts, the popularity of nature cures, radium and the x ray, and the marvelous growth of surgery. The influence of sunshine on tuberculosis, the action of the x rays on malignant growths, and the beneficial effects which hydrotherapy has in certain nervous disorders, are all instances of the replacement of such drugs as creosote, arsenic, and the bromides by external therapeutics. In line with this movement is the discovery of a new form of light by an English investigator and called after him the Simpson light. This light is obtained from an electric arc formed between electrodes made by a special process from a mixture of the ores of several metals, the chief one being a tungstate of iron and manganese, known as wolfram.

The chief claim on medical attention of this new light is that it is extremely rich in ultraviolet rays and also has rays of shorter wave lengths, meaning obviously different physiological and therapeutic properties. Many experiments have been made at St. Bartholomew's Hospital, London, with the idea of deciding in just which particular field of medicine the Simpson light will find its greatest usefulness. It is still too early to generalize, but several interesting discoveries have been made. It seems to stimulate the healing of wounds; shrapnel wounds have been greatly benefited by the treatment. Cases of rheumatoid arthritis and of malignant growth have been treated with little or no appreciable result. Rodent ulcers have been healed by this light. It is believed, however, that its principal indications will be found in certain diseases of the nose and throat, especially lupus and syphilis.

Like other similar methods, this treatment is not without its dangers. An erythema is often produced and the eyes must be protected or a conjunctivitis will follow. The necessary exposures are very short which is an added advantage in that a great number of cases can be treated in a short time. So far at least, this light seems to be a notable addition to the field of phototherapy.

THE DIGESTIBILITY OF EGG WHITE.

Common sense should dictate the dietetic use of egg white. Raw egg white, like milk, is an excellent culture medium for bacteria, and like milk suffers immediate bacterial contamination if exposed to the air at ordinary temperatures. Eggs should be chilled when newly laid, for egg shells are porous and do not prevent infection of the egg content; therefore raw egg white from eggs which have not received immediate refrigeration may well cause diarrhea. Cooked egg white, when exposed to boiling temperature (212° F.) or to the action of acids, becomes leathery in consistence and difficult of digestion; sterile egg white exposed to a temperature below 180° F. becomes jellylike, and by most individuals is as easily digested as raw sterile egg white, which itself is innocuous. A suggestive and analytical comment on the digestibility of egg white (Bateman, *Jour. Biological Chemistry*, August, 1916) appears in the department of Dietetics, Alimentation, and Metabolism in this issue of the JOURNAL. It illustrates, however, a common tendency of research students to ignore the obviously matter of fact in favor of the recondite.

NASCENT IODINE TREATMENT OF TUBERCULOSIS.

Mr. Edward Bigg, of Bristol, writes to the *British Medical Journal* for August 19th, giving an account of a device, original with him, to administer nascent iodine. It almost completely prevents the fumes of chlorine gas from escaping and causing certain symptoms of poisoning.

Take a forty ounce stoppered bottle and charge with thirty-six ounces cold water. Prepare a smaller bottle (two to four ounce capacity) with a neck of the same diameter as that of the forty ounce; choose a sound wine cork which will fit both snugly, perforate for a glass tube, and cut a tube of such a length that, when connected, it will reach to the bottom of the forty ounce and half the depth of the smaller bottle. See that the fitting is correct, and that the two bottles can be connected easily and firmly. Then charge the smaller bottle with one and a half dram of powdered potassium chlorate; add three drams of pure hydrochloric acid, and rapidly and carefully insert the short limb of the tube, avoiding the entrance of the effervescing mixture into the tube by sloping the apparatus and inverting it. Then plug the cork into the forty ounce bottle, when gas will at once bubble up through the water. Leave the apparatus for three or more hours, when the reaction will be complete. Wash the residuum from the smaller bottle in the open air (or it may be added to the contents of the forty ounce if it is desired to use the potassium chloride which remains). No air release is needed.

News Items

Personal.—Dr. D. J. McCarthy, of Philadelphia, has returned home, after spending six months in Europe, during which time he made a survey of prison camps for the United States Government.

Hospital for Deformities and Joint Diseases.—A regular clinical meeting will be held in the dispensary building, 41 to 43 East 123d Street, New York, Tuesday evening, September 12th, at 8:30 o'clock. The paper of the evening will be read by Dr. Herman C. Frauenthal on Electricity in the Treatment of Infantile Paralysis.

American Electrotherapeutic Association. — The twenty-sixth annual meeting of this association will be held in New York, September 12th, 13th, and 14th, with headquarters at the Hotel Martinique. An excellent program has been arranged which includes the reading and discussion of thirty-five papers on the therapeutic use of electricity. There will be three scientific sessions, with a manufacturers' exhibition of electrical apparatus at 12:30 o'clock. Dr. Jefferson D. Gibson, of Denver, is president of the association, Dr. Byron S. Price, of New York, is secretary, and Dr. Frederick M. Law, of New York, registrar.

Dangers in the Manufacture of Explosives.—To safeguard employees connected with certain chemical industries, the American Public Health Association has taken the matter under investigation. At the coming meeting of the American Chemical Society, to be held in New York, September 25th to 30th, Dr. Alice Hamilton, chairman of the committee on Industrial Hygiene of the American Public Health Association, will present the matter in a comprehensive manner. Doctor Hamilton's paper will form a part of the program of the symposium on occupational diseases which has been arranged by the American Chemical Society.

Gifts and Bequests to Hospitals.—Mr. and Mrs. Harry Payne Whitney have contributed $10,000 toward the new children's and maternity ward to be added to the Newport, R. I., Hospital.

Contributions amounting to $27,500 have been received by the Volunteer Hospital, of New York, toward the construction of three additional stories, which the directors of the institution consider necessary.

Johns Hopkins Hospital, Baltimore, has received a collection of portraits of medical men valued at $100,000. The gift was made by Dr. Howard Kelly, a member of the staff of the institution, and Mr. Blanchard Randall, one of its trustees. The collection gives to Johns Hopkins Hospital one of the finest portrait galleries in the world.

Dental Schools Consolidate.—The New York School of Dental Hygiene has become allied with the Columbia School of Dentistry, and hereafter will be affiliated with the College of Physicians and Surgeons. The school will open on September 27th in the Vanderbilt Dental Clinic. A gift of $2,500 has been received from the Rockefeller General Education Board for the School of Dental Hygiene and the Columbia School of Dentistry has raised more than half of the $30,000 needed for temporary housing. The administrative boards of the two schools are practically identical: Dr. Louise C. Ball is dean of the School of Dental Hygiene, Dr. William J. Gies, treasurer, and Dr. Julia L. Mitchell, executive assistant. The executive committee consists of Dr. Louise C. Ball, Dr. William J. Gies, Dr. Edward F. Brown, Dr. Henry S. Dunning, Dr. Arthur H. Merritt, Dr. M. L. Rhein, and Dr. Louisa M. Webster.

Erysipelas and Workmen's Compensation.—The Connecticut Supreme Court of Errors has decided that a widow is entitled to compensation under the Connecticut workmen's compensation law for the death of her husband which resulted from erysipelas that developed after frostbite. He was an insurance solicitor and his duties required him to endure exposure to severe cold, which the compensation commissioner decided was the "proximate cause" of his injury. The main points in the opinion are published in the August 25th issue of *Public Health Reports.*

Clinical Congress of Surgeons.—The seventh annual session of the Clinical Congress of Surgeons of North America will be held in Philadelphia, October 23d to 28th, under the presidency of Dr. Charles H. Mayo, of Rochester, Minn. A tentative schedule of clinics and demonstrations to be given at this congress has been issued, which will be amplified and corrected so that the final program will properly represent the clinical work of Philadelphia surgeons. The committee on arrangements is planning for a complete showing of Philadelphia's clinical facilities in every department of surgery. Headquarters will be established at the Bellevue-Stratford Hotel. Dr. Franklin H. Martin, 30 North Michigan Avenue, Chicago, is secretary general of the congress; he urges surgeons who wish to attend the meeting to make application immediately for registration, as it is apparent that the limit of attendance will be reached weeks in advance of the date of the meeting.

Three Hundred Million Red Cross Seals to Be Distributed.—Three hundred million Red Cross Christmas Seals are being printed in Cincinnati for the annual holiday campaign to be conducted under the joint auspices of the American Red Cross Society and the National Association for the Study and Prevention of Tuberculosis. The campaign for the sale of Red Cross Seals this year will be larger than ever before. Although in 1915 the sale reached the record total of 80,000,000 seals, bringing in $800,000, it is expected that this year at least 100,000,000 seals or $1,000,000 worth will be sold. The sale will be organized from Alaska to the Canal Zone and from Hawaii to Porto Rico. Every State and Territory in the United States will have seals on sale. New organizations will be working in a number of the Western States, including Montana, Utah, and Wyoming. Distribution of the seals is now under way. The State Charities Aid Association, which has again been appointed agent for the sale of seals in New York State outside of greater New York, has already placed an order for 35,000,000 seals and hopes that its record of 10,464,092 last year will reach the 12,000,000 mark in 1916. In anticipation of increased sales, New York, together with other States has begun to organize the campaign considerably earlier than in former years.

Rockefeller Foundation Appropriations.—It is interesting to note that appropriations amounting to over $3,000,000 have been made by the Rockefeller Foundation this year. These appropriations, as announced in the official organ of the foundation for August 1st, are as follows: Previously reported, January 1 to June 30, 1916, $2,863,377.97; June 28, 1916, to the Rockefeller Institute for Medical Research for its current expenses, $80,000; June 28, 1916, to the Rockefeller Institute for Medical Research for the cost of alterations in the laboratory and hospital buildings, $80,303.72; July 11, 1916, to the American Red Cross for relief in Serbia, $15,000; July 11, 1916, to the International Committee of Young Men's Christian Associations for the establishment and maintenance of recreation centres in connection with the military forces on the Mexican border, $50,000; July 14, 1916, for the assistance of the Department of Health of the City of New York in controlling the epidemic of infantile paralysis, $50,000; July 18, 1916, to the American Social Hygiene Association for its current expenses, $7.000; July 18, 1916, for the protection, maintenance, and education of Belgian children in Switzerland under the direction of the War Relief Commission, $25,000; July 31, 1916, to cover appropriations, China Medical Board, $198,985.78; total, January 1 to July 31, 1916, $3,369,667.47.

Death Rate in New York.—During the week ending September 2, 1916, 152 deaths were reported as due to infantile paralysis, compared with 209 during the previous week and 301 for the week ending August 12th. It is encouraging also to note that the mortality of the contagious and diarrheal diseases continues to remain lower than during last year. The mortality of the following diseases was lower during the past week than during the corresponding week of last year: Measles, whooping cough, typhoid fever, cerebrospinal meningitis, diarrheal diseases, pulmonary tuberculosis, and diseases of the nervous system.

The total number of deaths reported during the week was 1,388 compared with 1,515 reported during the previous week, the death rate for the past week being 12.96, compared with 14.13 for the week ending August 26th. The death rate for the first thirty-six weeks of 1916 was 14.51 and the death rate for the corresponding period of last year 14.42.

American Association for the Study and Prevention of Infant Mortality.—The seventh annual meeting of this association will be held in Milwaukee, October 19th, 20th, and 21st, with headquarters at the Hotel Wisconsin. The subjects to be discussed include: Governmental activities in relation to infant welfare; care available for mothers and babies in rural communities. standards for infant welfare nursing; morbidity and mortality in infancy from measles and pertussis; public school education for the prevention of infant mortality; vital and social statistics. Dr. S. McC. Hamill, of Philadelphia, is president of the association, and Dr. William C. Woodward, of Washington, president-elect for 1917. Dr. George C. Ruhland, Health Commissioner of Milwaukee, is chairman of the committee on local arrangements. Special sessions are announced which will be devoted to obstetrics, pediatrics, governmental activities, and vital and social statistics propaganda, public school education for the prevention of infant mortality, rural communities and nursing and social work. The session on pediatrics will be a joint one with the Milwaukee County Medical Society. The session on governmental activities will be a joint one with the committee on vital and social statistics, and the session on rural communities will be a joint one with the committee on nursing and social work. Programs or other information in regard to the meeting can be secured from the Executive Secretary, 1211 Cathedral Street, Baltimore, Md.

Civil Service Examinations.—Among the positions for which the Civil Service Commission of the State of New York will hold examinations on September 30th are the following:

Assistant physician, regular or homeopathic. This examination is intended to provide eligibles for the position of assistant physician in the State hospitals and for other positions of a similar nature in various State and county institutions. Salary in the State hospitals $1,200, increasing $100 each year to $1,600, with maintenance, including quarters, board, laundry, etc. Examination open to men and women who are licensed medical practitioners in this State, who have graduated from a registered medical school and who since graduation have had one year's experience on the resident medical staff of a general hospital, or as medical intern or clinical assistant in a State hospital or institution or have been engaged for three consecutive years in the practice of medicine. Open to nonresidents; unmarried men preferred.

Woman physician (regular or homeopathic), State hospitals and institutions. $1,000 to $1,500 and maintenance. Candidates must be licensed medical practitioners of the State of New York, and must have had at least one year's experience on the medical staff of a hospital or three years' experience in the general practice of medicine. Open to nonresidents.

Laboratory assistant in bacteriology, State Department of Health. Men and women, $720 to $1,200 a year. Open to nonresidents and noncitizens. Only candidates who have satisfactorily completed a systematic course in bacteriology and have also had not less than eight months' practical experience in laboratory work will be accepted.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE PROPHYLACTIC USE OF ANTITETANIC SERUM.

By W. H. Luckett, M. D.,
New York,

And Roberts S. Knapp, M. D.,
New York.

The serum treatment of surgical conditions, in our experience, has in most instances been very discouraging, in fact more or less useless, particularly in conditions where it seemed to be most needed; for instance, in the more virulent type of infections and where the patient seemed to be unable by himself to take care of the infection. There is, however, a most noteworthy exception. The present war in Europe, with the reports that reach us particularly from northeast France and the Austro-Russian and Serbian fronts of the numerous cases of tetanus following gunshot wounds, reminds us of the advisability of recording and calling attention to our work here with the hope that the preventive use of antitetanic serum may become a more routine treatment for all suspicious wounds.

In estimating the efficiency of serum therapy in general, the fact must always be taken into serious consideration that in by far the majority of cases the body itself seems to be perfectly able to take care of the infection. How much this is true of tetanus is most difficult of demonstration.

Ten to fifteen years ago one of us used regularly to report cured cases of tetanus from wards of the Harlem Hospital and in private. For the past ten years since we advocated and practised the preventive use of the antitetanic serum injection, we have not had develop in the wards of the Harlem Hospital a single case of tetanus on our service.

The difficulty of isolating the tetanus bacillus from an infected wound; the fact that positive clinical tetanus is frequently encountered in which the bacillus, after most thorough bacteriological search, could not be found; and the urgent necessity of making a prompt injection; long ago determined us to use the antitetanic serum as a preventive in all puncture wounds, gunshot wounds, compound fractures where the bone had probably become infected by coming in contact with the street soil, and in fact in all suspicious dirt contaminated wounds, particularly of the hands and feet, without wasting time in waiting for the bacteriological report, for time is a most important factor.

The following figures are taken from the records of the Harlem Hospital for the past ten years ending January 1, 1916, and show that during that decade antitetanic serum was administered as a prophylactic dose as follows:

In compound fractures	696	cases
In gunshot wounds	595	"
In stab wounds	337	"
In punctured wounds (mostly of hands and feet)	575	"
In suspicious dirt contaminated cases of lacerations, cellulitis and burns of various parts of the body	46	"

making a total of 2,239 cases, not one of which exhibited any of the signs or clinical manifestations of tetanus. We have yet to note harm, danger, or complications from its administration. Before we regularly employed as a routine the preventive injection, this class of cases gave us annually four to six cases of tetanus.

Technic of administration. Wash skin at site of injection with ether and alcohol, paint surface with tincture of iodine three per cent., give 1,500 units of antitetanic serum intramuscularly or subcutaneously, preferably the former, massage over point of injection, paint needle wound with tincture of iodine, cover with small "collodion butterfly"; if wound is near a large nerve trunk inject serum directly into wound or as near nerve as possible.

The so called delayed tetanus may manifest itself a month or two after the original wound. It is a very serious condition and may demand more than one preventive dose, especially if the wound continues to suppurate, in which case a preventive injection every seventh or eighth day is indicated. If in the course of repair of such wounds an operation becomes imperative, another injection is indicated.

We purposely do not mention the local treatment of the wound, as it is today about the same as it was when we were seeing so many cases of tetanus, and this impels us to give credit to the antitetanic serum.

THE TREATMENT OF SPRAINED ANKLE.

By S. Bernard Rosenzweig, M. D.
New York.

The first step in the treatment of sprains of the ankle should be a careful radiographic examination made by a competent röntgenologist. Within the last few years, routine x rays have demonstrated the comparative rarity of simple sprains compared with oblique fractures of the malleoli without displacement, and transverse fractures just above the joint margin. The differentiation is essential because the treatment differs.

In the simple sprain, mobilization and massage are indicated. Painful at first, continuation of the treatment brings early relief. The ankle is soaked for fifteen to twenty minutes in water as hot as the patient can bear. This is followed by massage and passive movements, after which alternating hot and cold douches are given, and a large, loose evaporating dressing of lead and opium wash is applied. This is carried out twice daily, and after seventy-two hours the patient is induced to move his ankle himself. Thereafter, the swelling having subsided, the ankle is strapped for support and the patient advised to walk about. A cane may be necessary at first, but should be discarded early. At the end of ten to fourteen days, the patient is able to be around with practically no discomfort. A high laced shoe should be worn for some time to support the joint; leather anklets are generally inefficient and uncomfortable. Whenever the facilities permit, the patient should be given daily bakings from the beginning. The absorption of the exudate is enhanced and painful sequelæ are avoided.

When the actual condition is a "sprain fracture," immobilization by means of a heavy adhesive dressing or a light plaster splint of a removable type is indicated. Massage, baking, and mobilization are given at the end of a week, after which the patient is permitted to bear weight on the limb, the support being continued for another fortnight or so, depending on the extent of the injury. Aftereffects, such as weak arch and contracted heel cord, are prevented by maintaining the foot in marked dorsiflexion and inversion while it is kept immobile. Here, as in simple sprain, early motion and use are important.

Some Unusual Uses of Rubber in Surgery.—Saint-Martin, at a recent meeting of the Société de chirurgie (*Presse médicale,* July 13, 1916) reported that, in cases of nerve injury, pieces of rubber tubing were passed around nerves freed at operation from compression by fibrous or other tissues, in order to keep these nerves isolated from surrounding structures. The radial or ulnar nerves were involved. The rubber was still being perfectly borne from two to four months after operation. In another case, a small rubber ball shaped like a human testicle was substituted for an injured testicle without the patient's knowledge. The rubber substitute was borne perfectly, and the patient remained free of concern about his injury.

Typhus Fever.—F. Meyer, A. Klink, and E. Schlesies (*Berlin. klin. Woch.,* February 21, 1916) advise general treatment, including chiefly open air living, and measures to protect the heart. From the first, small doses of digitalis should be given, so that during the critical period the heart will be under the full influence of the drug. Later large doses of caffeine and camphor should also be given; during the unconscious stage saline and glucose infusions are required. General nursing should be scrupulously attended to, and cold baths or cold packs should be used to reduce the severity of the nervous symptoms. Neither salvarsan nor convalescent serum has yielded good results, but on the theory that the disease might be of protozoal origin optochin was tried in forty-six cases in oral doses of 0.25 gram six to ten times daily, until the temperature fell nearly to normal. In some very severe cases 0.25 gram was given intravenously once a day, or two or three intramuscular injections per diem of 0.25 to 0.5 gram dissolved in camphor oil with the aid of alcohol. Toxic symptoms other than the most trivial were not present, but when complaint was made of visual disturbance, the drug was reduced in amount. No decided effect on the fever was produced, but optochin caused a marked subjective improvement and a general reduction in the severity of the disease, particularly in nervous symptoms. It did not seem to have any influence in preventing injury to the heart or late gangrene and thrombosis. Quinine was found to have the same action as optochin, but was much less effective.

Extirpation of the Lacrymal Sac Without Scar.—J. A. Kearney (*Medical Record,* August 19, 1916) describes his method of removal of the tear sac by way of the slit canaliculus. It is best done under ether anesthesia, and its advantages are absence of scar on the face, less difficulty therefore in obtaining the consent of the patient to operation, and great lessening of hemorrhage during the operation. A return of the condition is impossible because the mucous lining is ablated from the puncta to the upper portion of the nasal duct. There is immediate cessation of sac secretion after this operation, with a gradual disappearance of epiphora.

Gillet Operation for Intestinal Stasis.—A. J. Ochsner (*Illinois Medical Journal,* August, 1916) describes this operation which gives greater promise than others. In consists in severing the ileum at the most convenient point to make an anastomosis with the lower end of the sigmoid flexure of the colon. After the anastomosis, the upper segment of the sigmoid is passed through a buttonhole in the anterior abdominal wall on the left side. The distal end of the ileum is closed and is dropped back into the abdominal cavity. The colon is not disturbed by the operation, and what little mucus gathers in the colon can be washed away by an enema given once a week through the colostomy opening.

Pregnancy in the Tuberculous and Its Management.—C. C. Norris (*American Journal of Obstetrics,* June, 1916) reports sixty-eight cases, and asserts that, except in the advanced cases of pregnancy, coexisting tuberculosis has little or no tendency to produce abortion, miscarriage, or premature labor. In about twenty per cent. of mild, quiescent cases, however, and in seventy per cent. of more advanced cases, exacerbations of the tuberculous process occur during pregnancy or the puerperium. Pregnancy should be avoided by tuberculous women unless the disorder is in the first stage and has been quiescent for at least two years. If, before the fifth month of pregnancy, evidences of activity of the disease appear, the uterus should be emptied, preferably by curettage during the first six or eight weeks and in later cases by vaginal hysterotomy. When pregnancy is thus interrupted, the prognosis is greatly improved, though amelioration of the lung condition is not positively insured. Before the fifth month of pregnancy, evacuation of the uterus, as soon as acute symptoms arise, leads to definite improvement in sixty-five to seventy per cent. of cases, provided suitable aftertreatment is applied. Intervention postponed a week or more from the onset of the exacerbation yields less satisfactory results. After the fifth month of pregnancy, expectant treatment is generally best. Labor should be made as easy as possible, the patient being rarely, if ever, allowed to go to term, but delivered by induction of premature labor two weeks before term. At labor, forceps or version is usually indicated. Throughout, hygienic and dietetic treatment should be applied; the patient should be carefully examined at regular and frequent intervals. Tuberculous mothers should not be allowed to nurse their infants, which should be especially guarded from infection.

Management of Empyema in Childhood.—A. Merrill Miller (*Illinois Medical Journal,* August, 1916) insists that aspiration is only an emergency procedure and that rib resection is the cure. To keep the opening patent and encourage free draining he prefers the self retaining rubber spool, which has the advantage of presenting a flat surface for the application of dressings. Anesthesia must be light to preserve the coughing reflex. Sunshine and fresh air are of the utmost importance in aftertreatment.

Economic Use of Costly Alkaloids.—N. Bishop Harman (*Brit. Med. Jour.,* August 5, 1916) states that for ophthalmic practice solutions of several expensive alkaloids must be kept continually on hand, but they tend to deteriorate, grow moulds, and become contaminated with various bacteria so that there is much waste. These disadvantages can be entirely overcome by the use of the following solvent:

Tincture of iodine,	0.03;
Methyl salicylate,	0.25;
Distilled water,	500.00.

This should be well shaken, put into a stoppered bottle, and is ready for use after twenty-four hours. It will keep sterile indefinitely even when opened frequently. It is slightly irritant, increasing the initial burning of an instillation to a trivial degree. Viscid solutions are preferable to thin ones and they may be prepared either by dissolving the alkaloidal base in castor oil, or by the use of the alkaloidal salts dissolved in the foregoing solvent to which acacia has been added in amount about eight times that used in the mucilage of acacia, that is, about five grams per mil of the solvent. Viscid solutions are more economical than thin ones, and spread more uniformly over the entire conjunctival sac.

Benzol in the Treatment of Leucemia.—Joseph M. Barry and Jane M. Ketcham (*Journal of the Indiana State Medical Association,* August 15th) report the case of a woman twenty-nine years of age with leucemia, who was admitted to the hospital July 28, 1914. She was kept in bed, placed on a forced diet, and benzol treatment was instituted. Five mm. of benzol were given three times a day, and the dose was gradually increased until the maximum quantity given was thirty-five mm. three times a day on October 7th. It was given at first in an emulsion with olive oil, but later was administered in capsules after meals. The patient complained sometimes of eructations, but at no time did any vomiting or nausea occur. She sat up in a wheel chair for the first time on September 28th, and the benzol was discontinued on October 28th. She had gained twenty-seven pounds in weight and the spleen was no longer palpable. After discontinuing the benzol, iron, quinine, and strychnine were given by mouth, and one and a half grain of citrate of iron hypodermically twice a week. In the discussion of this paper C. S. Bond urged that care must be exercised in the use of benzol not to have it produce too great an effect, and that it would be well to stop the drug when the leucocyte count is slightly less than 40,000 or 50,000, and then see what follows, but if it is discontinued too soon we are liable not to get the desired result.

Value of Vaccines in Gonorrhea.—G. Cappelli (*Giornale italiano delle malattie veneree e delle pelle,* June 12, 1916) states that vaccine administration alone is insufficient to control or cure the conditions in the original sites of infection, such as the urethra, vagina, and conjunctiva, but is of help in what may be called secondary localizations of the gonococci, such as epididymitis and arthritis. Vaccines are more or less uncertain in points which have a direct communication with the urethral canal, such as Cowperitis and prostatitis. The reason for this is not clear, although it may be that the immune bodies can better restrain the growth of the gonococci when allowed to act upon them in a closed or isolated place.

Treatment of Epidemic Poliomyelitis.—Herman B. Sheffield (*Medical Record,* August 19, 1916) reports the results of his treatment in thirty-three patients of whom nine died, including six within forty-eight hours of the onset. The treatment consisted of the application of six to ten cups on each side of the spinal column, hot mustard baths at a temperature of 101° to 105° F., every six hours, one or two grains of ammonium salicylate for each year of the child's age every two to six hours, with small doses of strychnine. Lumbar puncture was done where there was pronounced rigidity or twitching, with the hypodermic use of camphorated oil in case of respiratory difficulty. Immobilization of the paralyzed limbs, light massage and passive movements were used at once even in the acute stages.

A New Antiseptic Fluid for the Treatment of Wounds.—P. Duret (*Bulletin de l'Académie de médecine,* July 11, 1916) recommends the following preparation, which is not only germicidal, but is an active stimulant to phagocytosis, and keeps the tissues under the best conditions for combating microbic invasion:

℞ Calcis chlorinatæ,	28 grams;
Magnesii sulphatis,	18.2 grams;
Aquæ,	1,000 grams.

Fiat solutio.

The two salts are triturated in a mortar, then gradually dissolved in the water, and the solution filtered through cotton in a funnel. A clear solution is thus obtained which contains magnesium hypochlorite, chloride, hydrocarbonate, hydrate, and oxychlorides. It is isotonic with the blood serum, is alkaline to litmus, yields its own volume of gaseous chlorine, and is more stable than Labarraque's solution (liquor sodæ chlorinatæ) or Dakin's solution, losing less than half its chlorine when left twenty days in an open bottle in the light and at room temperature. In wounds it gives off its chlorine slowly, and as it decomposes yields magnesium chloride and hydrate which form soluble oxychlorides and double oxychlorides of magnesium and sodium. After mechanical cleansing and removal of foreign bodies from a wound, the latter should be copiously irrigated with the solution at 35° C. To secure rapidly a strong antiseptic action from it, hydrogen dioxide solution, diluted one in ten, may be brought in contact with it over the tissues, thus accelerating the liberation of chlorine. Finally, the froth may be driven out of the wound with the magnesium solution alone, in which the wound is then bathed.

Treatment of Scabies by Sulphur Dioxide.—John Bruce and Stanley Hodgson (*Brit. Med. Jour.*, August 5, 1916) report that as the usual treatment of scabies by sulphur ointment requires from one to two weeks, experiments were undertaken to devise a more rapid method, and the use of sulphur dioxide was adopted as the most satisfactory. The patient is first given a hot bath, in which he allowed to soak for five minutes; he is then rubbed well with soap and the skin scrubbed to open the burrows. He is then enclosed in a tight chamber, constructed on the plan of a home Turkish bath cabinet, in which he sits on three narrow bars. His head is outside of the chamber and about his neck a moist towel is wrapped closely to prevent the escape of the fumes. He has fifty minutes' exposure to sulphur dioxide fumes from a large, slow burning sulphur candle, and then is dressed in clean warm clothing. All of his clothes previously worn must be sterilized by similar fumigation or by steam. One treatment cures ninety-eight per cent. of cases and gives immediate relief from itching. The treatment at times causes temporary erythema.

Autotherapy.—Charles H. Duncan (*Long Island Med. Jour.*, August, 1916) points out that all experience shows that the body contains within itself the natural agents for the cure of disease. Upon this basis the author has elaborated a system of drugless therapy in which he seeks to utilize and enhance the normal curative agents. Thus in localized purulent infections cure can be assured promptly by the administration of a few drops of the pus orally in some water. In other infections—chiefly the systemic ones or those in which the pus pocket is not accessible—cure will result from the subcutaneous injection of small doses of the patient's own blood diluted with physiological salt solution. Similarly, autotherapy is practised successfully in the employment of measures to provoke hyperemia, such as Bier's methods, local applications of heat, radiation with x rays, radium and ultraviolet rays, and the use of diathermy. A further elaboration of the method consists in the injection of the bacteria-free filtrates of pathological exudates. The cure of syphilis by injection of distilled water, as recently reported, is another illustration of the same form of treatment.

New Method of Bloodless Circumcision.—Henry Curtis (*Practitioner*, August, 1916) grasps the prepuce on each side of the median dorsal line with two pairs of forceps, the points of which are pushed up to the level of the corona glandis. The prepuce is then divided with scissors along the median line between the forceps into two lateral flaps, each of which is carefully separated from the glans as far as the groove behind the corona, so as to evacuate inspissated smegma, and then is clamped from below upward, at a distance of about a sixth of an inch from its attachment in the circumcoronal region. The clamp, in the case of each flap, is applied with the point directed upward and inward, i. e., toward the median dorsal line, the angle of union of the blades being made to lie at a point about a sixth of an inch distant from the frenum. Generally a third clamp is needed in order to secure bloodlessness. It is essential to apply this clamp so that there is no interval of prepuce left unclamped between the first and second clamps from which oozing could occur. A catgut suture with a short straight needle at each end is then introduced in each lateral flap in the following way: Beginning near the free lower edge, about an eighth of an inch from it, and at the same distance from the frenum, one needle is passed from mucous membrane to the skin just proximal to the clamp, the catgut pulled half way through, and the second needle passed through the same stitch hole in the opposite direction, and the suture drawn taut. Other similar stitches are made until the cut edge of the flap is reached, when the ends of the suture are tied. The clamps are then removed and the redundant prepuce is trimmed off just distal to the suture.

Practical Aspects of the Ovarian Secretions.—William P. Graves (*N. Y. State Jour. Med.*, August, 1916) reports that in ovarian therapy much better results are to be obtained by the use of extracts of the whole ovary than of those made from the corpus luteum alone. In addition to their lesser efficiency, the luteum extracts are prone to disturb the digestion, while ovarian extract is seldom toxic. The ovarian extracts give excellent results in genital hypoplasia, atrophy, after removal of the uterus and ovaries, and in the menopause. They are also helpful in the amenorrheas and in many other forms of menstrual disturbance, including irregularities and dysmenorrhea. Even certain cases of sterility have been benefited by the use of ovarian extract.

Immobility after Joint Injury.—John Collie (*Lancet*, August 5, 1916) states that if proper methods of treatment and aftercare are instituted, the occurrence of immobility following injuries to or about the joints can be largely obviated. The practice of prolonged immobilization is responsible for most of the stiffness, through formation of adhesions within the joint and thickenings and adhesions in the tissues about the joint, including the tendon sheaths. Where such immobility has occurred it may largely be overcome by proper measures. In either case, the essential features of treatment are maintenance of mobility through massage and passive or active movements. Where adhesions have already developed they should be broken down under a general anesthetic which abolishes muscular spasm. Then within twenty-four hours at most, movements must be begun gradually and without producing more than slight pain, in order to prevent reforming of the bands. Massage and electrotherapy should be used wherever a limb has to be immobilized, in order to maintain the nutrition and functional capacity of the muscles. Following a period of passive movement, the patient should be encouraged by every possible means to perform active movements to develop the weakened muscles, but these movements are often somewhat painful and must be carefully guided so as to minimize pain. Attention should also be given to prescribing specific forms of exercise to make sure that the affected muscles are actually being trained.

Deep Röntgen Therapy in Chronic Progressive Pulmonary Tuberculosis.—Bacmeister (*Berlin. klin. Woch.*, Feb. 14, 1916) states that clinical experience has confirmed the experimental work of Bacmeister and Küpferle regarding the curative value of deep irradiation in chronic tuberculosis. The treatment is in no sense specific, for the tubercle bacilli are not destroyed. Its value lies in stimulating cicatrization of the tuberculous granulation tissue. Three or four applications per week of fifteen erythema doses, combined with the application of the quartz lamp rays, usually lead to prompt healing of chronic, progressive pulmonary tuberculosis, even in cases with fever and sputum containing elastic tissue and tubercle bacilli.

Treatment of Anterior Poliomyelitis.—Charlton Wallace (*N. Y. State Jour. Med.*, August, 1916) states that preventive measures similar to those taken in diphtheria or scarlet fever should be carried out and the first stage of the disease should be treated by laxatives and the administration of hexamethylenamine or salol. Heat applied to the spine and tender muscles is efficacious in the relief of pain, and the patient should be kept at absolute rest on a firm fracture bed. Plaster of Paris bandages should be applied to the feet to prevent contraction of the tendo Achillis. During the stage of apparent paralysis the patient should be kept in bed, and plaster of Paris dressings or even complete casts should be kept on to prevent contractures and stretching of the weakened muscles. After this stage daily muscle massage and manipulation should be begun, and braces should be fitted to protect against severe strain of the weakened muscles. Electrotherapeutics should be a part of the first year's treatment. Functional use of the affected muscles, under protection of proper mechanical appliances, should be encouraged, but muscle education is contraindicated, since it is useless and even harmful. Various operative measures are of great value after determining their absolute need.

Local Anesthesia in Intrathoracic Surgery.—Couteaud and Bellot (*Bulletin de l'Académie de médecine*, July 18, 1916) have succeeded in extending the field of local anesthesia to intrathoracic interventions, in which general anesthesia had hitherto alone seemed applicable. The method was used especially for the extraction of projectiles imbedded in the lungs. A preliminary injection of morphine was always given. The local anesthetic solution used was a mixture of one part of a one in 200 solution of cocaine hydrochloride with two parts of a like solution of stovaine, a few drops of adrenaline solution being added. Occasionally a more dilute solution was employed or a one in 400 solution of stovaine used, thus replacing novocaine, which was unobtainable. Properly employed, these solutions can be carried freely and with impunity over the pleurocostal tissues, permitting necessary rib resections, entrance into the thorax, and deliberate manipulations of the lung, without fear from operative pneumothorax. By this means the removal of foreign bodies in about thirty cases was satisfactorily effected. These were cases of local intolerance of the foreign body, the wounds having been sustained some time before. In twenty instances the missiles extracted were in the lung, and in one instance in the apex of the left ventricle. In eight cases the lung opened into was largely, or completely free of adhesions, pneumothorax resulting and the missile being removed after fixation and delivery of the lung from the wound. Uniformly the lung was observed, after penetration through the properly anesthetized chest wall tissues, to be, unless inflamed, entirely free of sensation. The organ could be seized, pulled out, and manipulated without the least pain. The pneumothorax itself caused merely a quite bearable respiratory difficulty, followed by a stitch which rapidly passed off, frequently without causing any change in the patient's facies. Shock was practically nonexistent. The pneumothorax was established less suddenly and completely than in the generally anesthetized patient, complete collapse of the lung never taking place. The waking patient proved, in fact, of marked assistance to the operator himself, being able, by cough and voluntary respiratory activity or rest, and according to the surgeon's directions, to drive his lung toward the chest opening practically at will, thus limiting the extent of the pneumothorax and often rendering useless the subsequent aspiration of air from the pleural cavity. In one case a shell fragment imbedded at the hilum of the lung, nine cm. deep, was thus removed, the surgeon's hand palpating during the procedure the mediastinal organs, heart cavities, and pulsating aorta without a wince from the patient. All the cases operated in terminated favorably.

Treatment of Chronic Gonorrhea in the Female.—George A. Lassman (*Jour. Florida Med. Ass.*, July, 1916) has found that before beginning treatment we must make certain of the diagnosis, and if there is but little secretion a pure glycerin tampon should be inserted and allowed to remain for twelve to eighteen hours, when a copious secretion will have accumulated. The first requisite is to adopt measures for improving the patient's general health and to avoid all internal medication which may impair it. Since the infection is purely local, cubeb, sandal oil, copaiba, and methylene blue should not be given, since they tend to disturb digestion. The urethra and bladder should be irrigated with potassium permanganate solutions, beginning at about one in 10,000 and increasing to one in 800. The bladder should be filled with the solution by injection through the urethral orifice with the aid of an acorn tip nozzle. For the vagina, protargol in ten to twenty per cent. solution is the best, and it may well be combined with the insertion of glycerin, boroglycerin, or protargol-glycerin tampons, which should be retained for about ten hours at a time. Douches of permanganate of potassium, one to 3,000 to one to 300, should also be ordered and the patient should be directed to hold the labia closed about the nozzle to secure distention of the vagina. The cervix should be cauterized with pure phenol followed by alcohol, and using an acorn nozzle of soft rubber pressed firmly into the external os, the uterine cavity should be filled with a two per cent. solution of protargol. This treatment should be continued until repeated smears are negative for gonococci.

Miscellany from Home and Foreign Journals

Use of Trypsin in Broth for Blood Cultures.—S. R. Douglas and L. Colebrook (*Lancet*, July 29, 1916) from a series of bacteriological experiments, here recorded, reached the conclusion that the use of a broth containing trypsin gave much better results in blood cultures than were obtainable otherwise. This was true for all organisms tested, and not for a restricted few. The addition of trypsin to the broth overcame the antitryptic property of the blood, prevented clotting, and neutralized the antibacterial powers of the blood. The broth should contain five per cent. of trypsin solution and the blood culture should be made with one c. c. of blood in five c. c. of the broth.

The Pathogenicity of Lamblia intestinalis.—H. B. Fantham and Annie Porter (*Brit. Med. Jour.*, July 29, 1916) state that there has been much dispute as to the pathogenicity of this parasite (Giardia intestinalis), but the personal experience of the authors with 187 cases of pure lambliasis has convinced them that the parasite is pathogenic for man. The symptoms are weakness, stools of varying and peculiar colors—yellow, brown, putty colored, white, etc.—and of consistence varying from solid to diarrheal, with blood at times, and with concurrent lymphocytosis. The disease is not restricted to the tropics, but is found in temperate regions as well. Animal feeding experiments made with material from the stools of patients showed the parasite to be pathogenic for cats, mice and rats. Different strains varied widely in virulence. It is suggested that rodents may be the reservoirs of this parasite from which man derives his infection, and this seems to be supported by the considerable number of cases coming from the trenches in Flanders, where rodents are present in great numbers.

Municipal Control of Poliomyelitis.—Abraham Sophian (*Jour. A. M. A.*, August 26, 1916) remarks that evidence points strongly to the dissemination of poliomyelitis mainly through contact with the sick and by the medium of healthy human carriers. Other agencies of transmission have not been excluded, and some even have been shown to be possible factors in experimental infections. Such include flies, various insects and animals, dust, dirt, contaminated food, garbage and refuse. Since the nasopharynx harbors a virus resistant to drying, it follows that coughing, sneezing, and spitting can spread the disease. The virus is also present in the stools of infected persons; fecal matter, therefore, requires complete disinfection. Municipal control should take cognizance of all these facts and all cases should be treated in hospital to secure adequate quarantine, which should last eight weeks. All contacts should be quarantined under observation for ten days and ordered a spray of salt solution and one per cent. peroxide of hydrogen for the nose and throat. No contacts or children under ten years of age should be admitted to the community and every agency should be employed to clean up the city, prevent spitting, and to educate the general public in the means of prevention.

Effect of Surgical Procedures on Blood Sugar and Renal Permeability.—Epstein, Reiss, and Branower (*Journal Biological Chemistry*, August, 1916) point out that although the amount of sugar in the blood is invariably increased after operations, yet glycosuria after operation occurs only occasionally, one case in fifty showing traces of sugar. By careful examination of patients in whom no evidences of renal disease were present, they found that one of the effects of the surgical procedures was a diminution in the amount of urine. The authors conclude, therefore, that a reduction or an impairment of renal function is responsible for the infrequent elimination of sugar in the urine after operations.

Congenital Acquired Scleroderma in Childhood.—E. A. Cockayne (*British Journal of Children's Diseases*, August, 1916) points out the confusion which exists between this disease and sclerema neonatorum. As the result of the study of 100 cases he concludes that females are affected more often than males. In sclerema the sexes are equally affected. The commonest form of the disease in childhood is that with isolated plaques or bands of induration. Sclerosis of muscles may be a primary condition in scleroderma, another manifestation of the disease being myositis ossificans. As to the causative factor of scleroderma, little is known. According to one hypothesis it is a trophoneurosis due to disease of the sympathetic system.

Rational Diagnosis of Pulmonary Tuberculosis.—E. Rist (*Presse médicale*, July 13, 1916) deplores the frequent misuse of the procedures now available in the diagnosis of tuberculosis of the lungs, and likewise the tendency toward hastily labelling all cases of chronic cough, hemoptysis, fever, or loss of weight as tuberculous, and thereafter neglecting to apply diagnostic methods which will establish the diagnosis with certainty. It has been disproved of late that a stage of germination of the disease can last several months or years, during which the tuberculous lesion, detectable upon auscultation, has supposed to progress without expectoration of tubercle bacilli. Practically every adult individual is a case of healed tuberculosis, and active disease in the adult is merely the result of reinfection, a stage of germination in fact continuing throughout life. Active lesions nearly always occupy from the first an extensive portion of lung tissue and not infrequently a cavity is formed in their central portion within a few weeks. With few exceptions, the stage of germination is wanting or is brief. Yet attempts are still made to detect this stage, the physical signs of which have been formulated theoretically, on a mistaken pathological basis. A diagnosis of tuberculosis made by percussion and auscultation is useless from the standpoint of prophylaxis and cure. Great care, skill, and experience are, therefore, necessary in the earlier detection of the disease by these measures. Impaired breath sounds may be due to atelectasis from bronchial obstruction instead of to induration of the lung; hence the absolute necessity of previously unblocking the bronchi by having the patient cough repeatedly, and controlling the bronchial timbre by the pectoriloquy test before reaching a definite conclusion. A much larger number of cases of central lesion are negative to auscultation and percussion than is generally supposed. X ray examination, which reveals such lesions, is therefore essential in a complete diagnostic inquiry; this reveals smaller diseased areas than do percussion and auscultation, and absolutely proves the lung to be normal when an experienced eye finds no shadow on the radiographic plate, thus preventing mistaken conclusions of disease based on the physical signs alone. Finally, examinations of the sputum for tubercle bacilli are also indispensable. Pulmonary affections in which repeated sputum examinations prove negative should be held nontuberculous, and these examinations should be made even in apparently certain cases of tuberculosis with cavity formation, lest one overlook instances of suppurative hydatid cysts, abscesses of the lung, open interlobar pleurisies, lung syphilis, bronchiectasis—all affections often yielding the same auscultatory signs as tuberculosis. By combining all the diagnostic procedures referred to, positive diagnoses may be made in a few days which would ordinarily remain in suspense for months, with corresponding delay in the intelligent application of treatment.

Spasmophilia.—J. P. Sedgwick (*Lancet-Clinic*, August 5, 1916) defines this condition as one of abnormal irritability of the nervous system, especially common in early childhood, and characterized by galvanic as well as mechanical hyperexcitability of the peripheral nerves and a tendency to tonic and chronic convulsions. At certain times of the year, over thirty per cent. of all infants show evidences of it. The criterion of spasmophilia is an anodal opening contraction with the Stinzing normal electrode over the peroneal nerve, behind the head of the fibula, with a current of less than five milliamperes. True laryngospasm, tetany in children, most of the convulsions of children, and spastic apnea have been shown to be but manifestations of an underlying spasmophilia. The Chvostek phenomenon, or muscular contraction about the mouth upon tapping the cheek over the facial nerve, is often present in spasmophilia, and the Trousseau phenomenon, or tetany position of the hand upon constriction of the arm, is pathognomonic. The condition is often familial, and Sedgwick has found heightened electric excitability in the nursing mothers of all spasmophilic infants less than one year of age. Many cases of frequently repeated mental absences in children, resembling petit mal, are due to spasmophilia, and are unrelated to epilepsy and hysteria. Such end in spontaneous recovery. The brains of spasmophilics show a low calcium content. The treatment is usually effective and, as hitherto recognized, consists in the withdrawal of cow's milk and substitution of breast milk, when possible, or of carbohydrates in the form of gruels, and the giving of codliver oil, phosphorus, and sedatives, such as chloral hydrate, when necessary in the active stages. Sedgwick, from his recent experience, strongly recommends calcium salts in these cases, as giving quicker and more definite results. He administers ten c. c. of a ten per cent. solution of calcium chloride, mixed with orange or other fruit juice and water, four or five times daily; frequently also a teaspoonful of a one in 10.000 solution of phosphorus in codliver oil morning and evening. In the acute and subacute cases in one year infants, brilliant results were obtained with calcium chloride, and in more chronic and very severe cases, as well as in older children, similar definite results. The giving of calcium permits keeping the infants on cow's milk. The author has also employed Behrend's treatment, which consists in the subcutaneous injection of twenty c. c. of an eight per cent. solution of magnesium sulphate. The results were satisfactory, but the injections proved painful and frightened the older children.

Gangrene of the Leg Following Diphtheria.—E. B. Gunson (*British Journal of Children's Diseases*, August 1916) reports a patient who received 20.000 units of diphtheria antitoxin on two successive days. On the seventeenth day sudden pain in the popliteal space developed and the next day the limb was discolored and the patient suffered subsequently from spasms of severe pain referred to the right popliteal region, and this region was extremely tender to the touch. The limb was of a lower temperature than the left and a ring of edema appeared about one and a half inch below the knee at the site of discoloration. On the twenty-second day, dry gangrene of the right small toe developed, which, by the thirtieth day had included the whole of the right leg below the knee joint. Later the limb was amputated about the middle of the thigh, and it was found that the popliteal artery was completely occluded by a thrombus extending for a distance of two inches above the bifurcation of the artery.

Complement Fixation in Pulmonary Tuberculosis.—Alfred Meyer (*Medical Record*, August 5, 1916) describes tests made in forty-eight cases with positive sputum, using Miller's antigen with positive results in all but two cases, ninety-six per cent. This is in accord with the findings of Baldwin with ninety per cent., Craig with ninety-six per cent., and Radcliff with eighty-nine per cent. positive tests.

Serum Reactions in Cases of "Enteric Fever."—Ernest Glynn and E. Cronin Lowe (*Lancet*, August 5, 1916) employed Dreyer's technic, using standardized agglutinable emulsions, and tested the reactions in a series of 300 unselected cases of enteric fever. Three thousand tests were made and the technic was found to be most satisfactory. Serums of men inoculated against typhoid and suffering from dysentery or some surgical condition gave no reactions against either paratyphoid organism. But all sera of convalescents excreting the paratyphoid bacilli agglutinated the corresponding organism in dilutions from one in 25 to one in 250. The titre in each form of paratyphoid infection was found to fall rapidly during convalescence. The typhoid titre, on the contrary, did not fall markedly in the majority of cases, but remained nearly stationary in the absence of typhoid infection, that is, in inoculated subjects. No coagglutination occurred between paratyphoid A and B in convalescents, and typhoid vaccine or infection did not yield agglutins to either paratyphoid. On the other hand, the occurrence of paratyphoid B infection in typhoid inoculated subjects raised the typhoid titre. Titres for paratyphoid A averaged lower than for B, and hence a low titre was of more significance in the former than in the latter.

Hemihypertrophy.—Robert Hutchison (*British Journal of Children's Diseases*, August, 1916) reports the case of a boy five months of age in which the right arm and leg were appreciably larger than the left. The child was treated with citrate of potassium, but died subsequently. The post mortem examination showed a purulent pyelonephritis and an asymmetrical development of the trunk, limbs, and paired organs.

The Pathology of Weil's Disease.—H. Breitzke (*Berlin. klin. Woch.*, February 21, 1916) reports that detailed pathological examinations were made of the tissues in five fatal cases of this disease and the evidence pointed toward a general septic condition. Marked damage to the liver tissue was found in the form of swelling of the cell nuclei and edema of the pericapillary lymph spaces. The latter caused compression of the bile radicles. Multiple hemorrhages were present in the skin, subcutaneous tissues, mucous membrance of the intestine, and other parts of the body, including the brain and muscles. In the muscles, the hemorrhages were often focal and suggested a focal distribution of the infectious agent. The kidneys also showed hemorrhages with diffuse swelling and infiltration with lymphocytes, polynuclears and some eosinophiles. Similar pathological changes were observed in guineapigs which had been inoculated with material from the human cases. In the tissues of the pigs spirochetes were demonstrable, but these were found only twice in the human material, and then scantily. This indicated that the organism left the tissues early, just as it has been shown soon to leave the blood. In view of the anatomical changes found in these cases in man, the author suggests that the disease may lead to permanent damage to the organs, as evidenced by the prolonged convalescence in many cases of Weil's disease.

Abdominothoracic Tetanus with Prolonged Incubation Period.—P. L. Marie (*Paris médical*, July 8, 1916) reports the case of a man, aged thirty-two years, wounded by shell fragments in various places, including the left eye and the inner aspect of the left thigh. Two days later a prophylactic antitoxin injection was given, and shortly after the left eye was enucleated. One hundred and thirty days after the injury the patient began to experience lancinating pains in the abdomen, thorax, and lumbar regions, soon followed by continuous abdominal and lumbar muscular rigidity. All the wounds had healed rapidly except that on the left thigh, which was still discharging slightly through a small sinus. Administration of chloral hydrate, three grams daily, was begun, but the condition kept growing worse, and convulsions appeared, beginning at the waist and extending toward the feet. Soon after, alarming respiratory depression was noted, but later this passed off. An intense, permanent, and painless contraction of the lower part of the trunk and lumbar regions was observed, with a trace of trismus but absence of all rigidity of the lower and upper limbs. The reflexes were markedly exaggerated in the left lower extremity. No constitutional symptoms were noticed save slight pulse acceleration and a tendency to sweating. After the condition had remained stationary for ten days, in spite of repeated antitoxin injections and choral, x ray examination revealed a small shell fragment imbedded six cm. below the sinus already referred to, which was removed under local anesthesia. In the small accumulation of pus surrounding the projectile were found numerous kinds of bacteria, including Bacillus perfringens, long and narrow bacilli, diplococci, etc. Within a few days improvement set in, and complete recovery followed. In late tetanus, the portal of entry is almost always near the chief seat of the spasms; in this instance the virus evidently entered the thigh and traveled up branches of the lumbar plexus, finally reaching the cord at the corresponding level. The limitation of the disease to this area, its late development, and the favorable issue are ascribed to prophylactic tetanus antitoxin injections previously given.

Trichinosis. — Benjamin F. Salzer (*Journal A. M. A.*, Aug. 19, 1916) reports fourteen cases, occurring in an epidemic, studied carefully from the laboratory and clinical sides. In all of the cases the Kernig sign was present, all had edema of the face and all showed absence of the reflexes in the lower extremities. Almost half of the cases had edema of the lower extremities. The diazo reaction was present in all, and was proportional to the degree of eosinophilia present. Trichinæ were found in the blood in nine cases, in the spinal fluid in eight, in the stools of all, in a pleural exudate once, in the duodenum in one of two cases, in the pus of furuncles once; they were abundant in the milk and mammary gland of a nursing mother, absent from her uterus but abundant in the placenta, and they were absent from the urine in all cases. In one of the cases in which they were found in the spinal fluid, they were still present there three months after clinical recovery. Leucocytosis was found to diminish as eosinophilia increased, and the blood coagulation time was markedly prolonged in all cases. The feces were clay colored in all cases and this persisted in five which remained under observation. This was probably due to reduction of the bilirubin by living trichinæ. Cats, dogs and rabbits could be infected by injection or ingestion of materials from the human cases, such as pleural fluid and stools, and the organisms were found abundantly in the various tissues of these animals, including the brain and pancreas. The serum from recovered human cases removed the persistent eosinophilia in both man and animals, prevented infection in animals and, when mixed with infected material, rendered it noninfectious for animals when fed to them. Normal serum was without action in any of these particulars. In two very severe cases in the active stage, immune serum was found to have remarkable curative value, causing a prompt fall in the fever and removal of the eosinophilia.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Joint Meeting of the Sections in Obstetrics and Pediatrics, Held Tuesday Evening, March 28, 1916.

Dr. George W. Kosmak in the Chair.

The Correlation of Obstetrician and Pediatrist.—Dr. George W. Kosmak observed that the obstetrician often concerned himself more with the care of the mother than of the infant, and dismissed the latter from his mind unless some startling abnormality occurred. The pediatrist was necessarily interested in the baby as such, and only too often was called in to care for a child with errors of growth and nutrition that might have been corrected or avoided earlier in its life. The subject of prenatal development was receiving increased attention, but practical application to the human subject had not yet been extensively made. Defective development had been ascribed to maternal intoxications of various kinds: in a diseased uterus even a healthy ovum usually failed to become properly implanted or nourished. The experiment of exposing fertilized eggs of certain fishes to oxybutyric acid and acetone had produced deformities of the most varied types which might lead to the belief that toxic products in pregnant women resulting from altered metabolism might account for departures from the normal of fetuses at birth, or even for defects manifested in later life. If obstetrician and pediatrist made more detailed observations on the human subject, their correlated work might contribute something more definite in this regard than was now generally known.

Dr. Roger H. Dennett said that in no other branch of medicine was there a specialty which called for both surgical technic and the peculiar mental attitude of the internist. The obstetrician was essentially a surgeon, the pediatrist essentially an internist. It was true that these two specialties had been combined, but no single individual had ever attained eminence in both. Judging from personal acquaintance among obstetricians, it seemed to him that their occasional practice of pediatrics was not only distasteful, but that it was thrust upon them by force of circumstances and tradition. It had been the custom for the obstetrician to take care of newborn babies from birth until the second, third, or fourth week of life, and the pediatrist had been the consultant only, called in when things went extremely wrong. This was true both in private practice and in the charitable hospitals among the poor. In New York city there was not, to his knowledge, a public lying-in service nor a private obstetrical institution where newborn babies were visited each day by a pediatrist, just as the mother was cared for by an expert.

There could not be any question that the study of congenital diseases was one of the most neglected and, at the same time, most important phases of medicine. Not only the mortality but the morbidity should be considered. There were three reasons why pediatrists should have infants under their care from birth: 1. Perhaps the most important, he should have the opportunity to study the much neglected subject of diseases of the newborn, since only in that way could this practically unexplored field be investigated; 2, the mortality could in all probability be enormously lowered if proper attention were given to these diseases; 3, the morbidity and its peculiarly distressing accompaniments might be lessened during the first year by preventing many cases of malnutrition and gastrointestinal disturbance.

The subject of early mortality from congenital disease was now undergoing a thorough investigation by the Bureau of Child Hygiene of the New York board of health and they were showing some startling statistics. For instance, 40.3 per cent. of the deaths under one year were shown to be due to congenital disease, whereas the deaths from respiratory or diarrheal disease were little more than half this number, twenty-three per cent.; further, seventy per cent. of all deaths due to congenital disease were due to causes that could be classed as preventable, forty-eight per cent. occurring in the first ten days of life. There could be no more convincing argument as to the urgent need of greater study of congenital diseases and diseases of the newborn.

On the subject of morbidity, statistics were less available, and it was necessary to depend to a certain extent on the mere opinion of the pediatrist. It was doubtful if there was a pediatrist present who had not the deepest conviction that at least fifty to seventy-five per cent. of his cases of difficult feeding could have been averted had he had the opportunity of supervising the infant from birth.

Even though it might be disputed whether the obstetrician should turn over to the pediatrist all his infants at birth, there could be no question that both the morbidity and the mortality might be lowered by doing so at two weeks of age. When the obstetrician discharged the mother, it would seem advisable that he recommend that a pediatrist be consulted for a thoroughly physical examination of the child and for purposes of obtaining dietetic and hygienic advice for future use. The follow up work now being done by the Babies' Welfare Association was a start in the right direction so far as public institutions were concerned. Most of the lying-in hospitals in the city reported the discharge of their obstetrical patients to this association which saw that the milk stations and a visiting nurse from one of the charities, in the neighborhood of the patient, did all that was necessary to get the baby started right in life. Last year 4,000 were cared for and the numbers were growing as the association was becoming known.

The proper correlation of the pediatrist and the obstetrician could best be brought about, 1, by giving as much attention to the appointment of a pediatric staff of lying-in hospitals as was given to the appointment of an obstetrical staff; 2, the pediatrist, once having been appointed, should make his daily rounds and study and observe his cases from a clinical, laboratory, and pathological standpoint as he did now in his own children's and babies' wards; 3. the obstetrician should educate the laity to expect that his duties would be ended, as far as the infant was concerned, after it had been washed and dressed, with the possible exception of the care of the cord, and, 4. if the obstetrician did care for the infant as well as the mother up to the time that the mother's convalescence was completed, he should recommend that the infant be then put in the care of a pediatrist.

The Need and Value of Systematic Prenatal Care.—Dr. Ralph Waldo Lobenstine declared that in no field of preventive medicine was there to be found a greater opportunity for accomplishing such far reaching results as in prenatal care, which, to be of real value, must be systematic, intelligent, and untiring, and must begin with the perfect understanding and cooperation of the expectant mother. There was a terrible lack of real oversight of the parturient in the city of New York, largely due to the failure to apprehend the consequences of neglect. Prenatal care prevented, or at least lessened the frequency of many of the serious complications of pregnancy and many unnecessary maternal deaths; it better prepared the mother for labor and lessened invalidism and, finally, it had a deep influence upon the welfare of the infant. It was truthfully stated that ninety per cent. of American women were without proper prenatal care; in consequence, the loss of infant life was very high during pregnancy, labor, and the early post partum weeks, while between 15,000 and 20,000 women lost their lives annually from causes directly or indirectly attributable to child bearing.

Health statistics were particularly difficult to deal with in this country because of the incomplete registration area; in the registered areas there were to be found fairly accurate mortality statistics, but the birth records were still incomplete and the stillbirth records far from trustworthy. Improvement in the statistics of stillbirths would be favored by the adoption of some such law as the English Notification of Birth Act, which would further the development of better medical prenatal supervision. If these statistics were accurate and available, many lessons would be learned to the betterment of the human race.

About 80,000 infants died in utero from antenatal causes, and to this number must be added the great number of spontaneous abortions, of which there were no records and which were more or less dependent on the same causative factors. In New York city alone there were reported to the department of health in 1915, 6,419 stillbirths and 5,062 deaths under the age of one month. These early deaths were dependent on the same causes that were responsible for the intrauterine death of the fetus. All too often the child was physiologically unfit to maintain an independent existence. Both intrapartum and intrauterine mortality could be greatly reduced by proper measures.

The more common antenatal causes were syphilis, alcohol, renal and cardiac disease, sexual excess, deficiency in food supply of the mother, subnormal state of father or mother at time of conception, fatigue, and bad physical environment during pregnancy. The less tangible antenatal factors were gonorrhea, heavy use of tobacco and opiates, and the complex toxemias of pregnancy, the lower grades of which received far too little attention from the obstetric attendant, as they were often responsible for conditions of malnutrition, acidosis, and probably hemorrhagic disease in the infant. The evil effects of overfatigue, particularly when repeated, were well known.

The ultimate blame for the present high mortality in both mother and child was to be attributed to the following conditions: Ignorance or indifference on the part of a large section of the community in matters concerning parturition, poverty, insufficient obstetric training of the general practitioner, the midwife question, and lack of adequate prenatal care The remedy was to be found in publicity without exaggeration, general improvement in social conditions, elimination of the midwife, adequate, practical, and safer medical attention, greater hospital facilities, and more adequate home nursing. The system of training, almost universally prevalent in this country, afforded the average doctor a scandallously small amount of practical obstetrical experience, either before or after graduation. The general practitioner who by choice or by fate engaged in confinement work among the very poor, was deserving of the deepest sympathy.

Every woman should find it possible to obtain regular, systematic, prenatal care during the greater part of her pregnancy, there should be more clinics really doing prenatal work in fact and not only in name, and there should be closer cooperation of all the various agencies engaged in welfare work, and particularly an ever increasing widening throughout the country of the work of the visiting nurses, which was admirable, although the scope of their activities was not yet fully appreciated. The best solution of the question of prenatal care of the poor parturient woman might prove to be some form of industrial insurance. When the need and value of systematic prenatal care were more fully understood, the mortality statistics would be lowered, the home would become a better place, and the standard of community life would be advanced.

Accidents and Disease of the Early Weeks.—Dr. L. E. La Fetra said that injuries to the infant, as the result of prolonged labor, difficult forceps extraction, or abnormal presentations, might be grouped as affecting the head, the neck, and the extremities. Serious injuries to the head were those that resulted in intracranial hemorrhage. The loss of the sucking reflex was a most important sign of serious brain lesion. The commonest result after recovery from brain hemorrhage was spastic paralysis of one side of the body or of both lower extremities, and when more than two extremities were involved there was nearly always mental impairment. Immediate operation should be done if the hemorrhage could be localized.

Of the diseases and disorders to which the newborn infant was subject, among the congenital defects the most important was heart disease. Congenital hypertrophic stenosis of the pylorus was also important. Spina bifida, with or without meningocele, added gravely to the prognosis in proportion to its size and the accompanying conditions. Cleft palate and hare lip added to the difficulty not only of feeding but of keeping the mouth clean and of preventing respiratory complications. Another defect was club foot. Constitutional disease was shown in hereditary syphilis and also by sclerema, general debility, chondrodystrophy and mongolism. Cretinism was not evident during the early weeks.

Among the acquired diseases, most important in the early days were acute infections. These included gonococcus ophthalmia and vaginitis, though the former could be entirely prevented if physicians were careful about instilling nitrate of silver. Erysipelas was not frequent, but was peculiarly fatal to young babies. Tetanus was formidable, but much less so since its antitoxin was used intraspinously. Of recent years sepsis in the newborn had become an important chapter of the increasing knowledge of infantile diseases. It might be caused by a great variety of germs such as the pyogenic cocci, the diplococcus of pneumonia, the colon bacillus, Bacillus pyocyaneus, the influenza bacillus, and the bacillus of Friedländer. In rare instances the infant was born septic, or became infected through aspiration of infected liquor amnii. The umbilical cord was the most frequent entrance port for sepsis, and next in frequency was the skin. The mucous membrane of the gastrointestinal tract was frequently the port of entrance. Because of the undeveloped condition of the skin and mucous membrane, the newly born were exceedingly susceptible to septic infection, and the younger the child the less the resistance so that the premature infant was most easily attacked. Breast fed children were attacked less often than those artificially fed and this was explained on the basis of the transmission to the baby of alexins through the mother's milk. In the treatment of sepsis, prophylactic measures were the best. After the condition had arisen, in addition to proper feeding, airing, and nursing, all the avenues of elimination should be encouraged. The most promising treatment was either transfusion, or the injection of normal blood or serum.

In the treatment of pyloric stenosis a careful trial of dietetic and medicinal measures should be made before deciding upon operation. The important points for deciding to operate were progressive loss in weight, lack of food residue in the stools, and prolonged retention of food in the stomach. Among the surgical procedures, the Rammstedt operation of partial pyloroplasty was probably the best. It should be emphasized that the aftercare of operations was exceedingly important.

Comparative Value of Methods for Treating the Umbilical Stump.—Dr. John O. Polak said that it was through the umbilical cord that the majority of infections of the newborn child took place. Made up as it was of bloodvessels which communicated directly with the fetal circulation, the slightest breach in technic in managing the cord stump which would allow the entrance of bacteria into these vessels produced a morbidity and in some instances a mortality for the infant. Satisfactory methods of treating the navel cord were indicated by, 1, the temperature of the child during the desiccation period; 2, the degree of icterus and the time of its disappearance; 3, the day on which the slough separated; 4, the condition of the stump after separation; 5, the frequency with which hernia followed; and, 6, the influence which the particular method of treatment had on the body weight of the infant. The ancients anticipated the danger attending umbilical infection by severing the cord with a hot iron. At the Long Island College Hospital during the last four years four methods had been given a trial. In the first series the cord was cut at a distance of seven or eight cm. from the umbilicus, tied near the distal end, and then turned over and tied a second time proximal to the first ligature, the loop of the cord being wrapped in alcohol soaked gauze and a belly band sewn on. The baby did not get a full bath until the cord dropped off, but the gauze and alcohol dressing was renewed every day or two. Later, the single ligature of the cord was employed. In another series the method suggested by Dickenson was employed, the technic of which was as follows: The cord was clamped at birth and cord and clamp wrapped in sterile gauze until the obstetrician had attended to the needs of the mother; then, after fresh gloves had been donned, an incision was made through the amniotic covering at the skin margin and the vessels were isolated and ligated with fine iodized catgut; the cord was then cut away distal to the ligature, the vessels were allowed to retract, and the skin margin was closed with sutures; a sterile dressing was applied and the binder sewn on. Since last June, this method had been modified and made less surgical; at birth the cord was clamped from five to ten cm. from the navel, and the child put aside until the mother had been returned to bed, when the clamp was removed, the cord stripped of its jelly, and a fine nosed Kelly clamp placed at the amniotic skin juncture; when this was removed an iodized catgut ligature was firmly tied in the crease, and the cord cut away with a knife.

Hemorrhage from the cord after careful ligature and blood in the stools and vomitus were often regarded as signs of hemophilia. A systematic daily examination of every infant's stool by the resident of the hospital often disclosed the first sign of blood, and not a few babies' lives had been saved by this daily inspection, for with the first appearance of blood an injection of whole blood from the mother was given subcutaneously to the child which had usually checked further bleeding. Serum was not only difficult to obtain, but had to be checked up by a Wassermann before its employment.

The mouth of the newborn was a common avenue of infection. The epithelium of the tongue and buccal cavity was the infant's sole protection against infective processes and should not be removed by the overdiligent nurse who attempted to cleanse the mouth of mucus with a gauze covered finger. Primary mucus could be got rid of by inversion of the child and stroking of the neck and thorax from the abdomen toward the head, stripping the neck of mucus, or by aspiration with a catheter. For two years washing the baby's mouth before and after nursing had not been done.

Experimentation with silver, protargol, and argyrol solutions had shown that a twenty-five per cent. solution of argyrol in each eye at birth gave good protection against gonococcic conjunctivitis, without danger of ulcer.

Care and Feeding during the First Month.—Dr. Godfrey R. Pisek said that it would be generally conceded that the first month of the infant's life was the most important one from the standpoint of care and feeding. The latest mortality statistics for the first month of life in greater New York showed that during the first eleven weeks of 1916 fifty per cent. of the deaths occurred in the first month of life, which high mortality could be lowered by active measures of prevention and correction. Attention was called to certain basic principles underlying the feeding of infants in the first month of life which, if transgressed, were apt to bring trouble or even disaster.

The attitude of pediatrists had changed considerably in the last five years in regard to the feeding of infants, but there was a unanimity of opinion that breast milk was the infant's birthright which it should not be denied. But in spite of this and of the fact that eighty-five per cent. of infantile deaths were among those artificially fed, they were still being removed from the mother's breast for insufficient reasons by the physician or nurse. In many cases insufficient breast milk could be supplemented by one or two bottles of artificial food a day. In this way the supply could be kept up, at the same time allowing a period of freedom for the mother. In his case book the records showed that thirty per cent. of the children in his care were receiving mother's milk only, 48.8 per cent. were on the bottle, and the breast, and 22.5 per cent. were receiving the bottle exclusively. Blameworthy were those who removed the baby from the breast, not because of the accepted contraindications for nursing, but basing their decision on the fact that no milk had appeared in forty-eight or seventy-two hours, or on one hasty and inaccurate examination of the milk, or because there was some vomiting after nursing, or because of an occasionally abnormal stool, or because the mother or attendants thought the breast milk did not agree.

Every effort should be made to have the baby receive breast milk alone, or at least part breast milk, during the first month of life. Even a small amount of breast milk aided in the digestion of cow's milk. Complete emptying of the breasts was the best method of assuring a good supply, and yet this simple means was frequently overlooked. If artificial food was necessary, it should be low in fats and proteins, but high in sugar, until after it was certain that the infant had adapted itself to cow's milk, when the strength in the other elements could be increased. Mixed feeding should not be introduced in the first month if at all avoidable, as greater resistance was secured after a month or two on the breast alone. If it had been satisfactorily determined that the amount of secretion was constantly deficient, then a bottle feeding should follow each nursing period. The care of the pathological newborn would extend to beyond the limits of the allotted time, and any unsuccessful attempts at artificial feeding should be at once discontinued and the help of a wetnurse secured.

Should circumstances demand that the baby be artificially fed during its first weeks of life, the physician should realize that this was the most sensitive and precarious period in the baby's existence and that one mistake might endanger the child's life, whether this was in the food itself, in the mixture, or in its preparation. Simplicity in feeding was rapidly gaining ground, and if they kept in mind the caloric needs, the protein needs, and at the same time adapted the food to the digestive capacity of the particular infant, success was quite assured. The caloric requirements were not to be fulfilled until the end of the second week. Boiling the milk in the first weeks was often necessary to prevent the formation of tough curds. A gain in weight could be expected only when the food was given in utilizable form and in such quantity that the caloric needs (100 to 120 calories to the kgm. of body weight) had been supplied. The amount of food allowed depended on the period selected and should be calculated on a twenty-four hour basis.

At no time was it so necessary to inculcate regularity of habits and to abide by the laws of hygiene as in the first month of the baby's life, and obstetrician and pediatrist should join hands, for on them devolved in a large measure the responsibility of reducing mortality among the newborn.

Syphilis in Mother and Infant.—Dr. J. R. Losee said that there were many theories on the transmission of syphilis from the parents to the offspring, but for the present it was necessary to reason from the history and clinical findings. Many men who had had syphilis and who were very thoroughly or only partially treated, married and had healthy children; on the other hand, the wives of men under the same conditions of treatment and in apparent good health, gave birth to macerated fetuses and syphilitic children. There was no definite means by which a parent, subject to latent syphilis, could be assured that all his children would be born free from manifestations of the disease. The paternal theory, that the spermatic fluid affected the ovum which went on to the development of a fetus which in turn affected the mother, seemed hardly possible. There was no doubt that several cases of pure spermatic infection had occurred, as many women were affected directly after marriage. The maternal theory, in which the mother was affected primarily and the fetus secondarily, was quite probable and easy to explain. The fact that a patient denied symptoms of primary or secondary syphilis, when questioned after being delivered of a macerated fetus, and had a positive Wassermann reaction, did not prove that they were not present some time before or during pregnancy. As most of the stillbirths from syphilis took place in the latter months of pregnancy, it was fair to assume that the fetus was infected from the mother through the placenta, but whether the placenta could transmit spirochetes without showing pathological evidence was an unanswered question, so that they might draw some relation between the nonsyphilitic children of syphilitic parents and the normal placenta.

A consideration of the effect of syphilis on the offspring included both the transmission of the infection in its active form, in which the fetus either died in utero, or was alive and showed symptoms during the first year, and the transmission of the latent form of the disease, in which the child was normal in every respect at birth and during the first year, but acquired typical syphilitic lesions later in life. Comparatively few infants born of syphilitic parents went through life without at some time presenting symptoms of the disease. Maternal syphilis had always been considered to play a considerable part in the etiology of abortions, macerated fetuses, premature births, and stillbirths, but it was fair to assume that the same etiological factors were present which had been said to cause abortions in nonspecific women. Intrauterine death of the fetus from the sixth month to term had long been known to be due in most instances to syphilis, and thirty-five to forty per cent. of stillborn children were due to syphilis.

(*To be continued.*)

Letters to the Editors

SOME CHARACTERISTICS OF POLIOMYELITIS.

New York, *August 28, 1916.*

To the Editors:

I was assistant demonstrator of diseases of children at Jefferson Medical College, Philadelphia, from 1896 to 1901, and therefore saw many cases of infantile paralysis among children; I have also seen yellow fever in the West Indies. The similarity of the spread of these two diseases in epidemics has been impressed on me. Both are filth diseases, both flourish in hot weather and cease in cold weather, owing to the fact that the mosquito, being the carrier of yellow fever, perishes in cold weather, and I believe the same will be found in infantile paralysis. Both diseases spread more rapidly in hot, humid weather, slow down in clear, cool, windy weather, owing to the activity or quiescence of the mosquito, and the fact must be taken into consideration that the early part of the summer in this latitude was extraordinarily wet and that there were more mosquitoes than there had been for years. I find also that in the poorer parts of greater New York, where the disease has flourished, there are proportionately fewer doors and windows screened against flies and mosquitoes than in other sections. This is important to know, as after the first case occurs the opportunity of mosquitoes to bite infected persons is greater in proportion to the scarcity of screening. While I believe that any biting insect, such as the fly, bedbug, roach, or flea, will carry the disease from person to person, also sanitation will decrease the spread, as it destroys filth and also these pests, as it does in bubonic plague and yellow fever, but the mosquito is not destroyed in toto by sanitation as it is employed today in the temperate zone, unless mosquito destruction is striven for also. The disease spreads in the houses of the wealthy and well to do in spite of sanitary measures, and is not always confined to the poorer and unsanitary parts of cities and towns. It will be found that the disease flourishes in places where the mosquito is most plentiful. In some parts of New York, where there are thousands of children to the block there are no cases—also no mosquitoes; while in places with fewer children to the block there are many cases—also mosquitoes. If you read the history of the yellow fever epidemic of 1877 in the Mississippi Valley, starting at New Orleans, you will be startled at the similarity of the history of that epidemic to the present epidemic of infantile paralysis, starting from greater New York as a base, and spreading more to the small suburban towns and cities by railroad and steamer, where also there are more mosquitoes than in the larger cities, just as yellow fever spread in the small towns of the Mississippi Valley. A person would leave New Orleans, fleeing from the plague, already infected by yellow fever, would stop at an uninfected town 100 miles away, thinking he was safe, be taken down with the disease, be bitten by mosquitoes, and when these mosquitoes had bitten other people, the disease became epidemic in that town. Hence the shotgun quarantine of towns and villages against travelers and strangers. Thus, a mosquito biting a child fleeing from New York, and already infected with the disease when it left New York, bites other children, and there are more cases. They also bite adults, but adults with few exceptions are immune and are not affected. Now if medical men followed the example of the army officers in Cuba and had children already ill with the disease bitten by mosquitoes in a jar, and then had the hand and arm of a monkey introduced into that jar and bitten by the same mosquitoes, as was done in yellow fever, the matter would soon be proved. (If this has been done I have never heard of it.)

In my opinion, after all sanitation is accomplished and cities and towns are cleaned up, flies swatted, etc., the patient should at once be placed in isolation *under a mosquito curtain,* so that no mosquitoes could reach him, and the mosquitoes should then be free to bite other children not yet ill. An active mosquito campaign should then be started, just as is done in the tropics in yellow fever. It must not be forgotten that this season has been very favorable to the propagation of mosquitoes, and to my mind this explains the spread of infantile paralysis in the Catskills, in Orange and Sullivan counties, New York, and in many towns in New Jersey, where sanitation is good and which ordinarily are the most healthy places in the country. This also explains its spread along the coast and in the houses of wealthy people living on splendid country estates, where every precaution is taken, but there is no mosquito destruction. One case in the neighborhood is all that is needed to spread the disease.

Chas. S. Braddock, Jr.,
Late Chief Medical Inspector,
Royal Siamese Government.

AGGLUTINATION TESTS: ERRATA CORRECTED.

Brooklyn, N. Y., *August 30, 1916.*

To the Editors:

In your review of my article from the *Medical Record* for August 12th, in an effort to be brief, unavoidably perhaps, you fell into error in several important respects.

You state that agglutination tests "were unsatisfactory," whereas the figures given show that with cases of variola the blood serum specifically clumped, in dilutions as great as one to 160, the cultures of the bacillus from variola. The same was the case with the bacillus cultivated from vaccine virus, when tested against the blood serum of animals used to produce vaccine virus. Your statement evidently was based upon the fact brought out that the bacillus derived from vaccinia virus was agglutinated by variola serums to a slightly greater extent than was that derived from cases of variola. Also, I think you should have stated that all controls were negative, and that the tests indicated distinct differences in the nature of the bacilli derived from varicella compared to those from variola and from vaccine virus. Further, that in regard to the variola bacillus, "the longer this organism is cultivated the nearer does its relationship become to the vaccinia organism."

A brief summary of the findings of my article follows: 1. By the technic given, the bacilli described may be seen in large numbers in smears made from cases of variola, from vaccine vesicles, and from vaccine virus (especially Noguchi's pure culture virus). Likewise a similar shaped organism is to be found in smears from vesicles of varicella cases. 2. By the special method of regularly watering Löffler serum cultures (of the organism in question) with a mixture of lime water and bouillon, the bacilli described can be developed (in approximately ten days) from, a, Cases of variola (vesicles and blood); b, vaccine vesicles; c, vaccine virus (including Noguchi's pure culture in rabbit testicles); d, varicella vesicles (not forgetting the evidence that this organism shows points of distinct difference from the preceding). The minute bipolar bacillus of the original material develops to a much greater size when cultivated as described. 3. Specific agglutination was obtained in dilutions of specific serums, as great as one to 160, of the bacilli from variola and vaccine virus. 4. Specific complement fixation tests were obtained with antigen made from bacilli from variola and vaccine virus, when tested against the blood serum of variola cases and recently vaccinated persons. 5. Differences between the bacilli derived from variola and varicella were sufficient to establish the two as distinct organisms.

H. Greeley, M. D.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

On Modern Methods of Treating Fractures. By Ernest W. Hey Groves, M. S., M. D., B. Sc. (Lond.), F. R. C. S. (Eng.); Surgeon to the Bristol General Hospital; Consulting Surgeon to the Cossham Hospital, etc. New York: William Wood & Co., 1916. Pp. xii-286. (Price, $2.75.)

This is a small compact work, usually well supplied with photographs and skiagraphs, which takes up modern methods under three main heads, massage and mobilization, extension, and operative measures, although it deals mainly with the last. The author considers that both absorbable bone pegs and plates with short screws are unsatisfactory, while encircling wires are of use only in very oblique fractures. Mechanical efficiency, he avers, can be obtained by the use of long plates and transfixing screws or bolts or by long intramedullary pegs of metallic magnesium which act as a powerful stimulus to callus formation. Extensive experiments on animals are described, which show that the periosteum is the product and not the producer of bone and that the callus grows mainly from the outer or periosteal surface of the living bone, but also partly from the medullary surface and cut ends.

The Pathology of Tumors. By E. H. Kettle, M. D., B. S. (Lond.), Assistant Pathologist, St. Mary's Hospital, Assistant Lecturer on Pathology, St. Mary's Hospital Medical School, etc. With 126 Illustrations. New York: Paul B. Hoeber, 1916. Pp. viii-224. (Price, $3.)

In the present wealth of our literature on tumors, a new book dealing with the subject should have some special reason for its appearance. The author should have something new to present to specialists, or some advantage in the way of presentation, especially for students. This volume is apparently based on material gleaned from other textbooks, or verified in clinical and laboratory work, and does not bear the stamp of an original investigator in the subject. The descriptions are too brief for any one seeking intimate knowledge of any particular tumor such as we should find by referring to one of the standard books on the pathology of neoplasms. The book's value is chiefly that of printed notes of the author's lectures, illustrated with good pictures of sections, and it could well be utilized by a student hearing those lectures. As a contribution to the subject of the pathology of tumors, the book has only limited value and an interest chiefly local.

Venesection. A Brief Summary of the Practical Value of Venesection in Disease. For Students and Practicians of Medicine. By Walton Forest Dutton, M. D., Fellow American Medical Association; Member Medical Society of the State of Pennsylvania, etc. Illustrated with Several Text Engravings and Three Full Page Plates, One in Colors. Philadelphia: F. A. Davis Company, 1916. Pp. viii-220. (Price, $2.50.)

This seems rather a pretentious volume for a subject of such comparatively slight interest as venesection, but it is obviously the intent of the author to make this therapeutic procedure more popular than it now is. We cannot, however, read the scores of conditions in which he advocates venesection as a part of the treatment without the feeling that he has become unduly biased in its favor. This feeling of bias is made the stronger when we scan the other measures of treatment which he often advocates along with bloodletting, for if he really believed that the latter was the most important element, he would scarcely recommend such a host of other remedial measures as is often the case. He describes the technic of venesection, but his method does not seem to be the best or the simplest for the general practitioner, although it may be entirely satisfactory in hands which have become thoroughly used to it. Reference is frequently made to leeching, wet cupping, and the use of the artificial leech, but no description of the technic of any one of these procedures is given. The book, however, is not devoid of interest or value, for the author has given a most excellent historical review of the practice of venesection from the dark ages down to the present time; but so far as making out a strong case for the value of bloodletting, he seems to have left the impression that he would have it employed rather indiscriminately in a host of different conditions for which indications are not at all clear.

Ultraviolet Light by Means of the Alpine Sun Lamp. Treatment and Indications. By Hugo Bach, M. D., Bad Elster, Saxony, Germany. Authorized Translation from the German. New York: Paul B. Hoeber, 1916. Pp. 114. (Price, $1.)

This small volume is replete with points of practical interest. A description of the new model (1913) alpine sun lamp as designed by the author, Brieger, Nagelschmidt, Koenig, and Hagemann, is followed by a comparison between its effect and the effect of sunlight. Instructions as to technic, method of application, duration of treatment, intervals between treatments, etc., are given in detail; also how it can be employed in diseases of the respiratory tract—inhalation. The immediate and remote effects of the treatment are enumerated, and the final chapter is devoted to case reports and to a résumé of the diseases in which this method of treatment may be used to advantage.

Interclinical Notes

There are many articles to interest the educated physician in the *Scientific Monthly* for September, e. g., The Scientific Investigation of Cancer, by Dr. Leo Loeb; Substances without Chemistry, by Dr. John Waddell; Science and Feminism, by Dr. Robert H. Lowie and Dr. Leta Stetter Hollingworth; and The Origin and Evolution of Life upon the Earth, by Dr. Henry Fairfield Osborn. To an educated man with a little imagination, the *Scientific Monthly* offers ten times the relaxation provided by the story journals, to say nothing of the chance of giving some hint on disease or prophylaxis that may make the reader famous.

* * *

If we had the power to award a gold watch for the best annual epigram, we think that this year's timepiece would go to F. P. A., of the *New York Tribune,* in honor of the last quatrain in his translation of Horace, II, 2, which appeared August 31st:

> So, Sallust, let them gather gold who may!
> The graft is bad. I prithee, don't begin it.
> A well filled purse, as Chesterton might say—
> There's nothing in it.

* * *

This Journal was the first, we believe, pointedly to direct the attention of physicians to the importance of the teeth as a factor of health. Dr. Matthias Nicoll writes on the subject of oral hygiene in the handsome *Outlook* for August 23d. "Happily," he says, "the medical profession has at last come to realize that the field of dentistry is not isolated or independent, but touches at many points the field of general medicine and surgery." Yet we remember well the day when a similar remark would have evoked from the physician a sneer to the effect that the dentist had better attend exclusively to his own pathological researches.

* * *

Health! exclaims *Leslie's* for August 24th. The biggest enterprise ever projected for the prevention of disease is the Institute of Hygiene and Public Health to be established by the Rockefeller Foundation in connection with the Johns Hopkins University at Baltimore. It is intended that the new institute shall make as notable and original a contribution to humanity as the now world famous Rockefeller Institute for Medical Research has made in its field. The campaign of the foundation against the hookworm disease, and more recently the battle of the American Red Cross with typhus in Serbia, have convinced the directors of the foundation that what the world needs is men scientifically trained for the promotion of public health, sanitation, and preventive measures generally. The director of the institute is to be Dr. William H. Welch, professor of pathology at Johns Hopkins University, and all the facilities of this great university and the Johns Hopkins Hospital will be at the disposal of the new school. Every city and State which has heretofore found difficulty in securing health officials adequately equipped for the administration of scientific sanitation will be benefited by the new institute. The Rockefeller Foundation is to be commended for its original and far seeing contribution to the public health, especially in the present investigation of the causes of infantile paralysis, the results of which will be shared by all the world.

* * *

The *Survey* for August 5th tells how just after millions of dollars worth of munitions of war had exploded only a mile away on July 30th, the patients on Ellis Island sank again quietly to sleep. Although shrapnel and bullets rained down upon buildings and grounds; windows were blown out; locks and hinges were wrenched away; tiles loosened in patches upon the roofs; window panes and transoms were either pulverized, bitten into, or jarred into patterns like all over lace; yet out of more than 500 persons on the island, not one was seriously injured.

Meetings of Local Medical Societies

Monday, *September 11th*.—Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn.

Tuesday, *September 12th*.—Federation of Medical Economic Leagues of New York; Medical Society of the County of Schenectady; Newburgh Bay Medical Society.

Wednesday, *September 13th*.—Alumni Association of Norwegian Hospital, Brooklyn; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society.

Thursday, *September 14th*.—Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; Blackwell Medical Society of Rochester; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Villages of Canandaigua.

Friday, *September 15th*.—Mount Vernon Medical Society.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending August 30, 1916:

Corput, G. M., Surgeon. Directed to proceed to New Orleans, La., when necessary to transact station business.

Currie, Donald H., Surgeon. Granted four days' leave of absence on account of sickness, from July 26, 1916.

Foster, M. H., Surgeon. Directed to proceed to Philadelphia, Pa.; Camden N. J., and Wilmington, Del., to observe precautions taken to prevent interstate spread of poliomyelitis.

Fricks, L. D., Surgeon. Bureau letter dated July 25, 1916, amended so as to grant three days' leave of absence from August 12, 1916.

Gassaway, J. M., Senior Surgeon. Directed to proceed to Evansville, Ind., to take temporary charge of Marine Hospital during the absence of Surgeon J. H. Oakley.

Lanza, A. J., Passed Assistant Surgeon. Granted two days' leave of absence on account of sickness, August 19 and 20, 1916.

Leake, J. P., Passed Assistant Surgeon. Directed to proceed to Alexandria, Va., for investigation of a suspected case of poliomyelitis.

Liddell, T. J., Assistant Surgeon. Directed to proceed to New Orleans, La., for observation of method of fumigation of vessels by cyanide gas; thence to Mobile Quarantine Station and assume charge.

Lloyd, B. J., Surgeon. Bureau telegram dated August 5, 1916, amended to grant seven days' leave of absence from August 8, 1916.

Nute, A. J., Acting Assistant Surgeon. Directed to proceed to Greenwich, Conn., for examination of detained alien.

Safford, M. V., Assistant Surgeon. Relieved from duty in New York city and ordered to rejoin station at Boston.

Smith, L. H., Assistant Surgeon. Granted one day's leave of absence, August 20, 1916.

Stiles, C. W., Professor. Directed to deliver an address on public health at Community Meeting at Emmitsburg, Md., September 2, 1916.

Von Ezdorf, R. H., Surgeon. Directed to proceed to Washington, D. C., for conference regarding field investigations of malaria.

White, M. J., Surgeon. Directed to proceed to Brunswick, Mo., to investigate reported outbreak of typhoid fever.

Wilbert, M. I., Technical Assistant. Detailed to represent the service at the meeting of the American Pharmaceutical Association at Atlantic City, N. J., September 5 to 9, 1916.

Births, Marriages and Deaths

Married.

Guilford-Gearing.—In New Bedford, Mass., on Thursday, August 24th, Dr. Henry M. Guilford, of Hartford, Conn., and Miss Bertha A. Gearing.

O'Leary-McEvoy.—In Newark, N. J., on Wednesday, August 16th, Dr. Daniel Vincent O'Leary, of Albany, N. Y., and Miss Mary Agnes McEvoy.

Silvey-Wilson.—In Waterbury, Conn., on Sunday, August 27th, Dr. Francis Leroy Silvey, of Albany, N. Y., and Miss Genevieve E. Wilson.

Wile-Work.—In Colorado Springs, Col., on Thursday, August 31st, Dr. Udo J. Wile, of Ann Arbor, Mich., and Miss Katherine A. Work.

Died.

Allison.—In Punxsutawney, Pa., on Friday, August 25th, Dr. Samuel C. Allison, aged eighty-six years.

Assenheimer.—In Far Rockaway, N. Y., on Thursday, August 24th, Dr. Augustus Assenheimer, aged sixty-seven years.

Baker.—In Lynn, Mass., on Tuesday, August 22nd, Dr. William H. Baker, aged seventy-two years.

Bergeron.—In Warren, R. I., on Monday, August 21st, Dr. Seraphin E. Bergeron, of Fall River, Mass., aged sixty-three years.

Boyle.—In Colon, Panama, on Tuesday, August 22nd, Dr. Stacy Watson Boyle, of Middlebury, Vt., aged twenty-nine years.

Byam.—In Rochester, N. Y., on Sunday, August 20th, Dr. Lucius W. Byam, of Mumford, N. Y., aged seventy-two years.

Dailey.—In Gloversville, N. Y., on Monday, August 21st, Dr. Lawrence J. Dailey, aged fifty-eight years.

Estabrook.—In Brookline, Mass., on Sunday, August 20th, Dr. Edward L. Estabrook, of Minneapolis, Minn., aged seventy-one years.

Fritchey.—In Philadelphia, on Friday, August 25th, Dr. John A. Fritchey, of Harrisburg, Pa., aged fifty-eight years.

Gay.—In Boston, Mass., on Saturday, August 26th, Dr. Warren Fisher Gay, aged fifty-one years.

McLaughlin.—In Stockton, Cal., on Tuesday, August 22nd, Dr. James H. McLaughlin, of Sutter Creek, Cal., aged fifty-four years.

Marple.—In Kennebunkport, Maine, on Wednesday, August 30th, Dr. Wilbur B. Marple, of New York.

Meggenhoffen.—In Chillicothe, Ohio, on Wednesday, August 23rd, Dr. Edward Meggenhoffen, aged sixty-three years.

Milton.—In Oakland, Cal., on Saturday, August 19th, Dr. Joseph L. Milton, aged forty-six years.

Morrison.—In Detroit, Mich., on Thursday, August 24th, Dr. John W. Morrison, of Greensburg, Pa., aged ninety years.

Newberry.—In Lizella, Ga., on Sunday, August 27th, Dr. M. J. Newberry, aged fifty-four years.

Sharp.—In Camden, N. J., on Thursday, August 24th, Dr. Ezra B. Sharp, aged fifty-five years.

Travers.—In Saratoga, N. Y., on Thursday, August 24th, Dr. Osmond J. Travers, aged sixty-five years.

Ward.—In Pennington, N. J., on Thursday, August 24th, Dr. John Wesley Ward, aged seventy-seven years.

Wireback.—In Pittsburgh, Pa., on Sunday, August 20th, Dr. Nevin H. Wireback, aged thirty-four years.

New York Medical Journal

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Original Communications

EPILEPSY.*

Recent Studies into the Cause and Pathology,

By Charles A. L. Reed, M. D.,

Cincinnati.

The mere fact that I, a surgeon, am asked to address you on epilepsy, heretofore presumably a topic belonging exclusively to the realm of internal medicine, is of itself a circumstance which would seem to call for some explanation. It is proper, therefore, for me to state that my identification with the subject was primarily practical and entirely accidental. It grew out of the fact that, for a number of years, I have been dealing in a surgical way with the causes of constipation as they exist in displacements, adhesions, distortions, and malformations of the intestines. It so happened that some half dozen of these patients presenting themselves in the course of several years had epilepsy,—a circumstance to which at the time I gave no attention. Then, later, it happened that these patients reported that they had recovered, not only from their constipation, but, much to my surprise, that they were well of their epilepsy. It was a short series of cases, but one hundred per cent. of apparent recoveries on the basis of even so short a series, recoveries from so recognizedly incurable a disease, was a coincidence that arrested my attention and prompted the hope that some tangible connection might be demonstrated between the constipation, between the intestinal states underlying the constipation, and the epilepsy —a connection so tangible that it might serve as a definite basis for subsequent treatment of the malady. It was with this approach to the subject, an approach at once accidental, independent, and unique, that I went afield to find such facts as might tend to the solution of this baffling problem of the ages.

The beginning was made in the clinical field. It was here that, starting with the always present constipation, obvious or masked, I found myself forced to give attention to various sequent phenomena which had not previously been taken into account or, if given consideration at all, had been accorded only a subsidiary relation to the disease. In this way, I speedily became convinced that infection, obviously originating in the intestines, was essential to a rational explanation of the conditions as I saw them. I even went to the extent of announcing this conclusion, arrived at deductively, long before the actual demonstration of what today must be recognized as its underlying facts. This conviction was so strong that I inaugurated a series of experimental studies by placing Dr. E. P. Hyatt, formerly of Syracuse University, in charge of my laboratory. These investigations, conducted under my direction and parallel with my clinical work, have led to certain developments which I look upon as being of so much importance that I have had no hesitation in laying them before the profession. In presenting them again today, I shall reverse the order by which the synthesis of the subject has been achieved in my hands, and shall accordingly begin by presenting its later developments.

The one fact of fundamental importance, the very last to be developed, is that we have found and are finding in epileptics an organism that we are not finding in nonepileptics. It is a rather large spore bearing bacillus, and may be procured from the blood, occasionally by direct smears, more frequently by culture. In the early stages of development, it may be recognized as a short, thick bacillus with blunt ends. Even in this stage, it is very motile and goes through various evolutions in the hanging drops. As it becomes older it assumes the form of a chain which, however, still manifests the characteristic motility. About this time the sporulation becomes evident and progresses relatively to the age of the organism, until finally, after the lapse of from twelve to fifteen days, the organism proper disappears, leaving the spores in great numbers to reinaugurate the cycle. The organism stains best to carbol fuchsin, although Abbott's spore staining method may best be employed to show both the organism and the spores. In consequence of the high resistance of the spores, the organism is immune to pure phenol.

This organism was subjected to experimental study on rabbits. Intravenous inoculation was practised with the result that the animals were attacked by convulsions that were typically those of epilepsy. The initial cry, the fall, the convulsion, the torticollis, the lateral nystagmus, all lasting from three to five minutes, followed by a period of stupor, and this in turn by a period of from a few hours to a few days of perfect health, characterized

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the manifestations in rabbits, just as they characterize essential and typical epilepsy in the human subject. Animals in which the dose was very large died *in statu epileptico;* others in which it was smaller had a series of typical convulsions, after which they recovered, thus showing the ability of natural immunity to overcome the infection in the absence of a focus of continuous supply. In some instances the disease developed in rabbits after taking the organism through the mouth. In all cases in which the disease developed in rabbits, whether by inoculation or ingestion, the organism was recovered from the blood of the animals. It seems from this that our conclusion that the organism in question does bear a causal relation to epilepsy, in other words that it is Bacillus epilepticus, is justified by the entire conformity of our experiments to the law of Koch.

The extracorporeal existence and conduct of the organism have not been determined. The fact, however, that Hinkelmann has found in the mouth a phenol-proof spore-bearing organism with a morphology in its early stages analogous to that of Bacillus epilepticus in its early stages, prompts me to believe that the two may be identical. I have found Bacillus epilepticus in the small intestines, in the cecum, in the vermiform appendix, in the transverse colon, in the mesenteric and the mesocolic lymphatics, and in the blood of the same patient. It seems, therefore, that footprints of the organism can readily be traced from without inward. We have traced it from food to blood by way of the alimentary canal in rabbits. We have kept the spores alive but not active *in vitro* for four months —nonnutritive media being employed for the purpose. In view of all these facts and the additional fact that it is voided in the feces of both human and animal subjects, it seems that this spore bearing organism, like the spore bearing bacillus of tetanus, has its primary abiding place in the upper stratum of the soil. It is furthermore readily understandable how it may easily be carried from the soil to the mouth, how its resistant properties enable it to withstand the digestive ferments until it takes up its abiding place in the cecum, whence, under the pressure of colonic stasis, it is forced into the circulation.

This brings me to the next link in the chain of etiological sequence, the link, however, which was the very first to force itself upon my attention. It consists in the fact that constipation is the one clinical condition most constantly correlated with epilepsy and in the further fact that, underlying this epilepsy and this constipation is some form of mechanical interference with the fecal current. This mechanical interference, while constant in principle, is very variable in detail. Thus, I have found some form of ptosis constantly present. A large, flabby, and mobile cecum, generally well laden with semisolid fecal matter, is the usual condition. Then there are retardative angulations at the hepatic flexure, in the middle of the festooned transverse colon, at the splenic flexure, and at the redundant sigmoid. There are frequently found adhesions of both the ileum and the colon—especially near the terminal ileum—giving rise to what Sir Arbuthnot Lane calls "ileal stasis." There frequently exists ptosis of the stomach with adhesive exudate binding down the entire duodenum. These are the chief conditions which, singly or in numbers, are presented in the individual case, and for the relief of which judiciously selected surgical measures are required. I am not, however, discussing the details of therapy, medical or surgical; but I do wish to emphasize the fundamental etiological significance of mechanical stasis in epilepsy. I have found it in some form constantly present in over four hundred cases of which I have x ray records, and in nearly 2,000 cases of which I have otherwise recorded histories often verified by physical examination. I have said, "in some form," for in some instances the constipation is intermittent and recurrent; in other cases it is masked, by which I mean that "regular" daily movements are shown by the barium test to be retarded movements sometimes many days behind time; while in a few instances, possibly two per cent., I have encountered chronic diarrhea, due to deep infection, with resulting catarrhal conditions of the intestine, all following previous long standing constipation.

If, now, there is an organism, as I have shown; if that organism may enter the alimentary canal, as I have shown that it can and does; if it is forced from the alimentary canal into the circulation by the anatomical disturbance of mechanical stasis which are sequelæ that I have demonstrated to be present in one hundred per cent. of my cases; if these things are true the immediately consecutive stages of the pathological process intervening between absorption and convulsion become matters of interest. Here, however, we have to deal only with phenomena, clinical and pathological, which, in a general way, conform to the well recognized conduct of infections. Thus with the establishment of any systemic infection, we have toxemia, next, acidosis, and, finally, the superhydration otherwise called edema of various structures. The toxemia of epilepsy is shown by the constant tendency to a subnormal temperature and by the elimination of various toxic products in the urine. *Chronic acidosis, profound, always obstinate, often almost irreversible, exists in one hundred per cent. of epileptics.* It is but natural that acidosis of this character should be followed by edema especially marked in organs and structures upon which the primary infection exercises a selective action, just as Rosenow has shown that different strains of streptococci cause edema, often with pus forming results in different localities, as, for instance, the stomach, gallbladder, and joints, according to the predilection or "elective affinity" or "selective action" of the particular strain involved in the process. And so it would seem that Bacillus epilepticus exercises its terminal effects by producing a terminal deinsulating edema of the conduction paths of the brain, as in purely convulsive disturbances; or of both the conduction paths and the cortex, as in convulsions with psychic explosions. This process of selective action finds analogies in the terminal effects of various infections, as, for example, when the pneumococcus "selects" the lungs: the meningococcus, the meninges; the tetanus bacillus, the nerve trunks; or the gonococcus, the mucous membranes. As a matter of easy and frequent observation, the edematous process in epileptics with advanced infection and profound acidosis may be seen in puffiness about the eyes and ankles, often associated with slight albuminuria, indicating a general process of which that in the brain is but one, although a primary and essential manifestation. Another analogous process is found in toxic pregnancies in which, as in epilepsy, the associated edema reaches its apogee immediately preceding convulsion.

It seems, therefore, if we are really going to make diagnostic studies of our cases of epilepsy, studies that will enable us to determine what is actually the matter, it will be necessary to broaden our usual methods of investigation. The formal neurological examination, by which the actual pathology of the disease has been systematically overlooked for ages may be continued on the ground that it does no harm and may occasionally be useful in detecting important secondary changes. But whatever else is done, the actual examination of the case must embrace, first, the blood with reference to the presence or absence of Bacillus epilepticus, and for the further purpose of determining the blood values; next, the careful x ray examination of the abdominal viscera with reference to determining more particularly the position of the stomach and intestines and the transit of ingesta through them; third, the repeated analyses of the urine and saliva with reference more particularly to the existence and degree of acidosis. I may go a step farther and assert, as I do, that, in the light of evidence now in the hands of the profession, any examination of epileptics that stops short of these features, necessarily stops short of diagnostic accuracy. Every epileptic has the right to know the condition of his intestines and the condition of his blood, and it is the obvious duty of the medical adviser either to give the information or put the patient in the way of obtaining it. This obligation rests with singular force upon institutions in which large numbers of epileptics are held in custody. I am gratified to state that in certain of these institutions, careful investigations are being made along the lines that I have indicated. In every instance in which I have been requested to do so, I have sent to these institutions, public and private, both cultures and slides of the organism, together with literature, and I am gratified to state that, in a number of instances, I have already been favored with confirmatory reports. The following letter from Hinkelmann, which I have permission to cite, is an example:

> I beg to state that I have obtained both the organism and the spores of your Bacillus epilepticus directly in blood smears from a case of epilepsy. I took the blood about three hours after the patient had had a convulsion, and according to my special procedure, the details of which will appear in a coming article of mine. I obtained masses of both the organism and the spores. The spores are identical with those shown in your cuts and very characteristic. When once seen, one will always recognize them again. I am having photographs made from my slide and will add these to my illustrations of my coming article on the dissemination of bacteria in the blood. . . .
>
> I am fully convinced now that your organism is the cause of the seizures of epileptics. My finding it in an isolated case so far distant from the source of first investigation adds much to the proof. I also made cultures which show the motile organisms present. I note they are especially active and have a still higher motility than typhoid bacilli.

As every investigator, of whom or of whose work I have knowledge, contemplates publication of his findings, I naturally desist from mention of names or institutions. The same motive obtains, for even more obvious reasons, in the instance of institutions of another type, from whose medical officers I have received letters, from some of which I quote. One says: "Your work impresses me most favorably, but unfortunately we have neither an x ray outfit nor a hematological service and cannot take up the investigation." Another writes: "Your conclusions are logical and I would like to comply with your request to investigate the question of the infectious nature of epilepsy in at least some of the fourteen hundred inmates that we have here, but I am sorry to say that we have no equipment with which to do it." Still another complains: "I have been trying ever since I came here to get the outfit to do the very work that you have done, but my B-o-r-e-d won't budge in the matter."

In another instance I found that the several hundred epileptics in an institution were being made the subject of "research," but on inquiry I ascertained that there was neither an x ray plant nor a hematological service in the place, that no x ray picture had ever been taken, that no blood examination had ever been made, and that all the "research" had been psychological in character!

I do not wish to be understood as objecting to any possible research that may throw the slightest light upon what has been a baffling problem through the ages. I am not asking that any rational course of investigation with reference to the nature and cause of epilepsy shall be abandoned, at least until its possibilities have been exhausted. I do, however, urge that careful and unprejudiced investigation shall be made along these newer and, I believe, more promising lines. I do this the more insistently in view of the fact that these diagnostic and etiological studies can be made without hazard to the thousands of patients now aggregated in our increasingly populous institutions.

UNION CENTRAL BUILDING.

REED'S BACILLUS OF EPILEPSY.

By A. J. Hinkelmann, M. D.,
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Through the work of Reed,[1] the question of a specific organism as the exciting cause of the seizures of epilepsy has been most ably set forth. Having previously worked from a different basis with an organism I believe to be the same as that isolated by Reed, and having since the appearance of his articles, succeeded in finding the organism in the blood of an isolated case of epilepsy, I am in a position to add a few facts to what Reed has already said. I am sure they will be of further aid to the profession in the direction of reaching final conclusions as to the significance of the organism.

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[1] Charles A. L. Reed, *Journal A. M. A.*, January 29 and May 20, 1916.

Method of invasion of the human system. Under this head, Reed has made very clear the point that the organism is evidently taken into the intestinal tract by way of the mouth, and enters the blood through a cecal or an appendicular focus and leaves the question open as to the danger of communication. What would be the consequence in case the organism was ingested by a normal individual, and to what extent may those with predisposing lesions expect to escape infection?

On the basis of experiments I conducted during the summer of 1915, and before I had any knowledge of the pathology of the organism, it may be stated that it is a very frequent inhabitant of the intestinal tract of probably the majority of people. My conclusions at the time of my experiments were that it is one of the regular members of the so called intestinal bacteria.

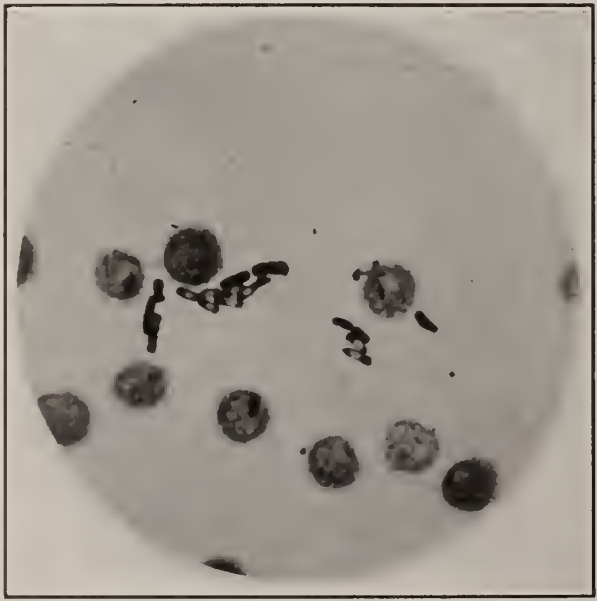

Fig. —Bacillus epilepticus taken directly in blood smears from an epileptic patient five hours after a convulsion.

My interest in the organism was its high resistance to germicidal agents, and through this fact it becomes an easy matter to demonstrate its presence in the intestinal flora and also that it is commonly present. It will live in phenol solutions of from five to ten per cent. for many hours, and a much higher strength is necessary to kill it instantly. Among the very large number of different bacteria that are usually found in the intestines, it is commonly the only one that will survive a thorough treatment of the stool with a five or ten per cent. phenol solution.

My method of isolation was as follows: From twenty-five to thirty grams of solid feces were made into an emulsion with fifty c. c. of a five per cent. solution of phenol and allowed to stand for thirty minutes or an hour; cultures were made on agar slants and incubated. I have never made such cultures from the stools of epileptics with the view of noting how numerously the organism is present, but in normal individuals a loopful of the emulsion spread over an agar slant will yield from one to six colonies after twenty-four hours of incubation.

The organism is highly hemolytic, and to this fact may be due a part of the pathological conditions present in epileptics. Cultures made on blood agar plates will show a hemolytic spot at the point of a growing colony long before the colony itself becomes visible. In the case that came under my observation, I found it abundantly present in the capillaries, and both the spores and the organism could easily be demonstrated in smears from the blood directly.

CONCLUSION.

In view of the fact that the organism does enter the circulation and there multiplies into great numbers and is so generally found in the blood of epileptics, the conclusions of Reed as to its specific nature become at least very plausible. It would be hard to conceive that an organism with such a high hemolytic property could enter the circulation and multiply to such numbers as smear preparations from the blood indicate without producing diseased conditions within, and resulting in corresponding clinical manifestations without.

At any rate, what has already been established in regard to the organism makes the question worthy of serious consideration and extensive investigation. The universal presence of the organism in the intestinal flora is no argument against its probable pathology, but simply adds to the importance of the gateway through which it enters the bloodstream, in considering the treatment.

If further investigation finally establishes that Bacillus epilepticus is the exciting cause of the seizures of this disease, little probably can be hoped for in the way of prophylaxis or cure through efforts to prevent the organism from entering the intestinal tract or to eradicate it when present. Our best attention probably will have to be directed toward lesions which open the way for it from the intestines into the circulation.

THE PATHOGENESIS AND TREATMENT OF EPILEPSY.

A Preliminary Report,

By Henry A. Cotton, M. D.,
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(From the Laboratory of the New Jersey State Hospital, Trenton, N. J.)

Recent investigations in the field of epilepsy have shown a tendency to depart from the old fatalistic hereditary congenital hypothesis, which was largely a matter of speculation and deduction, to theories based on firmer pathological foundations. Thom (1) has shown a dreet heredity in 126 cases of epilepsy out of 157 cases investigated, that is, the parents or grandparents had epilepsy.

It must be emphasized in considering epilepsy that it is probably not a unit or distinct homogeneous disease process, but rather a symptom of several pathological conditions. Among the more recent investigations in this field is the work of Reed (2), whose conclusions were that, 1, epilepsy is an infection; 2, the infecting organism finds its way under circumstances of forced absorption from the alimentary canal into the blood; 3, the conditions that enforce absorption from the alimentary canal consist in mechanical distortions with resulting constipation in the form of either obvious or masked stasis. His treatment consisted in the removal of the anatomical abnormality of the colon, thereby relieving the obstructive angulation of the duodenum where the specific toxin or poison was elaborated, restoring the normal drainage of the bowel. Overeating and constipation have long been recognized factors in the production of the convulsions. There is probably an intestinal stasis and an accompanying absorption of toxic products in many epilepsies, which may of itself be a cause of the convulsions; or the toxicity may be due to some deeper seated cause.

Another view lately brought forward is that disturbance of the pituitary gland may be the cause of the convulsions. McKenna, Johnston, and Heminger (3) have recently studied the skulls of epileptics and out of 115 cases found bony changes in the region of the sella turcica in eighty per cent., while in nonepileptics bony changes were found in only ten per cent. In some case, pituitary enlargements or tumors, some thickening of the clinoid process, and thickening of the bone of the anterior fossa were observed.

We deal here with certain facts which have developed as a result of the work with the Abderhalden reaction in the laboratory of the State Hospital at Trenton. In an investigation of sixty-nine cases of epilepsy, the patients ranging from fifteen to forty years of age, we found that a large percentage gave a positive reaction to suprarenal gland, but were negative to other glands tested; i. e., pituitary, thymus, thyroid, pancreas, testes, and ovary, with one exception—a case lying in status epilepticus that gave a positive reaction to pituitary. Out of twenty-seven cases of epilepsy in this hospital, the blood serum was positive to suprarenal in twenty-four, and one to pituitary as has been mentioned. In the other three cases, the Abderhalden reaction was absolutely negative for all glands. These cases when analyzed were found to be as follows: One infantile paralysis with hemiplegia, one traumatic case, one alcoholic epileptic. The remaining forty-two cases were from sources outside of the hospital, all were tested, and all were positive to suprarenal.

It is significant also that in over 200 cases examined by this method and which included dementia præcox, manic depressive insanity, alcoholic insanity, general paralysis, and senile dementia, all except the so called idiopathic epileptics gave a negative reaction to suprarenal. So we have to admit that at last we have obtained a constant reaction of the suprarenal glands practically limited to epilepsy. Also that the other groups investigated were negative to adrenal. This finding was somewhat of a surprise, as we were investigating primarily dementia præcox and manic depressive insanity. But in several obscure cases, seen in consultation, with convulsions coming in the adolescent or adult life, an Abderhalden test was made to see if it would throw any light on the subject. As these cases apparently were the result of severe fright some months before the onset of the convulsions, this finding was significant, but it prompted us to examine all our patients suffering from epilepsy, with the foregoing result.

In order to study further the relation of this gland to epilepsy, it is necessary to understand some of the physiological activities of the suprarenal. Cannon (4), in his excellent work, has devoted considerable space to the adrenal gland and has given us a solution of this perplexing problem. It could not be said that an excess merely of the suprarenal extract would cause the convulsions, as it has not been proved that such is the case. But Cannon has proved conclusively that one of the principal physiological actions of the suprarenal is the inhibition of smooth muscle fibres such as are found in the intestines. It also relaxes the smooth muscles of the bronchioles and alters the distribution of the blood, driving it from the abdominal viscera into the heart, lungs, central nervous system, and limbs. And Cannon also states that it renders more rapid the coagulation of the blood. This latter phenomenon has been noted in epilepsy and some writers have given the rapid coagulation of the blood as a cause of epilepsy, notably Turner (5) and others. Adrenaline also raises the blood pressure, another physical sign almost constant in epileptics.

Cannon demonstrated not only that great fear produced an excessive secretion of the suprarenal gland, but he made known the fact that the smooth muscle of the intestine was extremely sensitive to adrenaline and became inhibited when it was present in the blood in the dilution of one in 200 million. Thus, we can readily conclude, from the physiological viewpoint at least, that excessive suprarenal secretion would have a very deleterious effect upon the intestinal peristalsis by directly inhibiting the smooth muscles. Hence, the relation between excessive suprarenal secretion, intestinal stasis, and the accompanying absorption of toxic products, as the result of this stasis, can be readily conceived.

We assume then that excessive adrenaline secretion or hyperactivity of the adrenal glands, as shown by positive Abderhalden tests, stands in a causal relation to epilepsy. At present we do not know what the Abderhalden means, so we must explain any reaction by the results found in experiments upon animals. Such experiments with animals reported by Corson-White and Ludlum have shown that this Abderhalden suprarenal reaction does occur after removal of the pituitary and experimental removal of the external function of the pancreas.

1. Dogs in which the pituitary gland has been extirpated soon show definite changes in other glands, first an atrophy of the testicles, and later a slight hypertrophy of the suprarenals, with a positive Abderhalden reaction to suprarenal. This phenomenon has been demonstrated in a number of animals. This relation of the pituitary to the suprarenal gland may account for that type of epilepsy due to a dysfunction of the pituitary gland through trauma or disease of the pituitary gland.

2. Experimental removal of the external function of the pancreas also produces a suprarenal gland reaction.

3. In two dogs irritation of the duodenum by scarifying the external surface, gave a doubtful reaction to suprarenal. This phenomenon may have some bearing upon the fact that inflammatory conditions of the duodenum or a toxic condition due to disturbances of the anatomical relations, such as obstructive angulations, etc., may act upon the suprarenal glands, causing an excessive secretion which in time would further interfere with the intestinal peristalsis, causing more absorption of the toxic products.

The last to be considered is the psychogenic factor, fright. We have undoubtedly cases in our series to which the whole condition could be attributed alone to fright. In these cases the convulsions did not appear until late in life, in one case eighteen years and another twenty-one years, and the convulsions were usually of a mild character, especially in one case occurring almost always at night, only occasionally during the day, and following extra eating at parties, etc. In all these cases the patient never had any previous convulsions, there was no evidence of heredity, and the convulsions could not be attributed to any other cause.

These four conditions which would apparently affect the suprarenal gland are all that we are able to demonstrate at present, but there may be other pathological causes for such overaction of the adrenals. We are of the opinion, however, that these are sufficient to cover a majority of the cases of epilepsy in our series.

TREATMENT.

From the fact that both pituitary gland and pancreas inhibit the activity of the suprarenal gland, it would naturally follow that either one or both glands could be used therapeutically to accomplish this purpose. At first we used the pituitary gland, both the anterior lobe and whole gland, but our results were unsatisfactory. In some of the cases the convulsions increased and in others no effect was noticed.

Then the extract of pancreas was used, half grain tablets three times a day. In this we were much more successful, and many patients while taking the pancreatin did not have convulsions. But in some when the gland was stopped the convulsions returned. In others no convulsions have occurred after discontinuing the gland. The time of the treatment of our cases is too short for us to make any positive statements regarding cures. We can only say that administration of pancreatin has had a decided effect in stopping the convulsions. Nor do we assert that this treatment will alone suffice. It is highly probable that it should be supplemented by surgical procedures in conditions of the intestines indicated by the x ray after a thorough use of the pancreatin has failed. The action of the pancreas in stopping the convulsions can be explained in several ways. In the first place it has a definite effect upon the suprarenal gland, inhibiting its activities. It is also an aid to digestion, and by this function the contents of the duodenum are more quickly digested and the proteins are more rapidly broken down to less toxic products. As in other pathological conditions, the duration of the disease has a distinct influence on the prognosis. It is not to be expected that in an old epileptic of years' duration, where pronounced dementia has supervened, any curative effect will be produced by any treatment. And it must be further borne in mind that it is essential to differentiate the type of case to be treated. In epilepsy, which is due to syphilis, alcohol, trauma (certain types) associated with infantile paralysis, idiocy, etc., we can offer little hope from this method, especially as these cases exhibit a negative reaction to suprarenal.

Unfortunately we have not had time to study our cases by means of the x ray. Both skull and abdominal examinations should be made and existing abnormalities corrected. A complete study of the metabolism should also be made further to confirm the facts here presented. We hope to supplement this preliminary report by a further communication embodying such studies as we have outlined.

CONCLUSION.

From the facts deduced by others and presented in this paper we conclude that:

1. At least one type of epilepsy is probably a disease process dependent upon absorption of toxic or poisonous products from the intestinal canal.
2. This stasis may be produced by an overaction of the suprarenal gland.
3. Hyperactivity of the adrenal gland may be caused by, a, dysfunction of pituitary, b, dysfunction of pancreas, c, irritation of duodenum, d, severe fright or emotional disturbance.
4. Treatment by administration of pancreatin should be employed in preference to surgical procedures.
5. Surgical procedures should be employed in long standing cases where other treatment fails.

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216 SOUTH FIFTEENTH STREET, PHILADELPHIA.

TOXIC MANIFESTATIONS OF EPILEPSY AND THEIR RATIONAL TREATMENT.

By RALPH H. SPANGLER, M. D.,
Philadelphia.

Post mortem examinations have revealed no definite pathogenesis for the so called idiopathic or essential epilepsies. The primary or exciting cause has never been determined. The organic epilepsies, such as those arising from traumatic lesions of the skull, brain, or its membranes, and those which are associated with focal organic disease of the brain, such as tumor or thrombosis, may be explained by direct irritation of the motor cortex. But how to account for the more subtle attacks or those diagnosed as genuine epilepsy, is a more difficult problem, unless the indefinite theory of inherent irritability of the cortical cells is accepted as an explanation.

From time to time it has been contended by certain investigators that an excitant of epileptic seizures might be found in toxic or autotoxic causes. To prove this contention it is necessary to demonstrate the formation of poisonous substances in the gastrointestinal tract, and their absorption into the blood, or to find one or more toxins developed by disturbance of general body metabolism.

Since the bloodvessels must ultimately carry any abnormal substance to the brain, to act as an exciting cause of the epileptic attacks, the toxin must at times be in the blood serum or in the corpuscles.

In a paper (1) read before the Pennsylvania State Medical Society, September 25, 1912, I cited some well known facts of common observation to physicians who had under their care many cases of epilepsy. Attention was called to the fact that epileptics in whom develops an acute fever or an infectious disease, as a rule show no epileptic symptoms during the intercurrent disease; the same subsidence of the epileptic convulsions and border line symptoms with their concomitant manifestations is often observed in cases of pregnancy. Again, operations performed for reasons that have no bearing on the epileptic condition, or with which there is associated much loss of blood, nearly always cause a temporary suspension of all epileptic symptoms. It was suggested that these conditions might be explained by the fact that through a demonstrable alteration of blood conditions, associated with a lengthened clotting time, the accumulation, so to speak, of substances in the blood, which may possibly act as an etiological factor of the epileptic attack, are prevented from forming in sufficient quantities to induce seizure. Or, perchance, incompatible poisons of an intercurrent disease may counteract the toxin which ordinarily accumulates in an epileptic and excites the seizure.

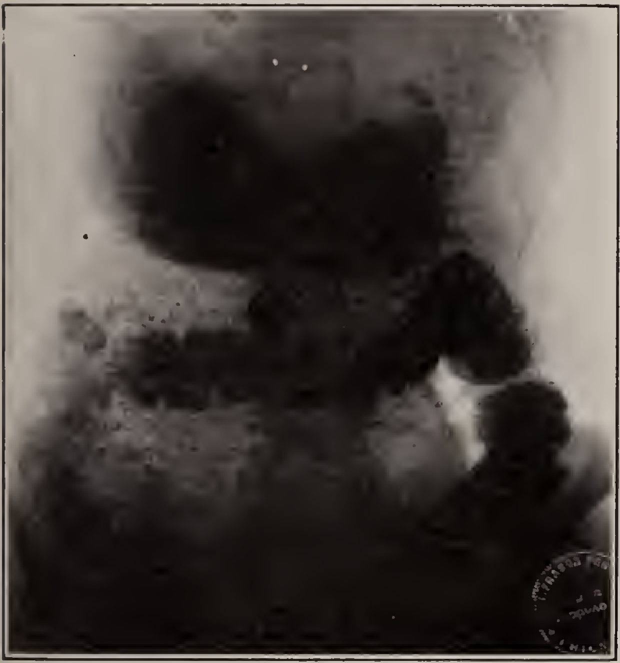

FIG. 1.—Illustrating position of stomach and colon in a case of epilepsy, when patient is lying down. (Plate by M. F. Percival.)

It was suggested that the blood of an epileptic may contain what might be called an epileptic toxin, which toxin accumulates more and more from time to time, until a certain intensity is reached with shortened coagulability of the blood, and an explosion (the epileptic attack), as it were, takes place. The question whether the hemogenetic change was due to an autointoxication I felt needed further careful investigation.

ANIMAL EXPERIMENTS.

Krainsky (2) found that the subcutaneous injection of blood taken from an epileptic patient just before a single attack or from patients in status epilepticus, caused the death of an animal in four or five days. Injection of the blood during the interparoxysmal periods gave no such results. He concluded from his experiments that the blood of epileptics contained a poison which gave rise to recurring convulsions. He said that the poison was the carbamate of ammonium. He stated that the injection of ammonium carbamate into animals produced symptoms comparable to those induced by the injection of the blood of epileptics. In a further series of experiments, Krainsky found carbamic acid present in the blood of epileptics. He then treated epileptics with lithium carbonate, and found it temporarily beneficial.

Extensive studies of the urine of epileptics have been made in search of a toxic cause for epilepsy. No constant connection has been found to exist between variations in the amount of urea, uric acid, chlorides, indican, or the presence of sugar, albumin, or peptone, and the occurrence of epileptic seizures.

The injection of the urine of epileptics into animals, done originally by Bouchard (3) in 1885 and later by Voisin and Peron (4), produced toxic symptoms, but Bouchard, in 1894, and Roncowin (5) both found that normal urine injected into animals produced symptoms of toxemia.

Bra (6), in 1902, described a parasite found in the blood of epileptics. He has found it in fresh blood at or near the time of an attack; he cultivated it in ordinary medium; it was reproduced when injected into the blood of rabbits; and finally the rabbits thus treated had convulsions. Out of 100 patients examined he isolated the microorganism in seventy. Rabbits inoculated with his organism died in clonic convulsions. The number of "neurococci," as he calls them, increased with an impending attack and diminished again afterward, until none could be found during interparoxysmal periods.

Reed (7) has recently (1916) described an organism similar to Bra's and calls it Bacillus epilepticus. He confirms Bra's findings, thinks the principle of immunization should hold good in these cases, and is investigating the possibilities of a vaccine. To the best of my knowledge, at this writing, laboratory investigators have not corroborated these findings.

With a view of ascertaining the degree of toxicity common to epileptics' blood, Boston and Pearce (8) inoculated rabbits with the blood of epileptics and record the following interesting observations:

> The blood from a thirty-five year old male epileptic was drawn after the last of four severe seizures in twenty-four hours. Ten m. were injected subcutaneously into a rabbit; four days later, more blood was drawn and twenty mils

injected into the same rabbit, and after another three days' lapse, a third inoculation of twenty mils was made. The count of this rabbit before injection was about normal. The count, seven days after the first injection, four days after second injection, and twenty-four hours after the third, was: Hemoglobin, fifty-five per cent.; red blood cells, 4,680,000; white cells, 5,600. Differential leucocyte count: Polymorphonuclears, fifteen per cent., all showing some eosinophile granules; large lymphocytes, fourteen per cent.; small lymphocytes, twenty-five per cent.; eosinophiles, forty per cent.; myelocytes, six per cent.

A similar experiment was made with another rabbit, using defibrinated blood. The differential count of this rabbit before inoculation was: Polymorphonuclears, four per cent.; with fine eosinophile granules, sixteen per cent.; large lymphocytes, twenty-five per cent.; small lymphocytes, fifteen per cent.; myelocytes, five per cent.; myelocytes with eosinophile granules, one per cent.; eosinophiles, twenty-four per cent. Leucocyte count, 8,000.

Forty-five mils of defibrinated blood was injected from the same patient (who had had no attacks for twenty-three days) into the peritoneal cavity of this second rabbit. Forty-eight hours later, the differential count was as follows: Polymorphonuclears with eosinophile granules, twenty-nine per cent.; large lymphocytes, four per cent.; small lymphocytes, nine per cent.; large mononuclears, three per cent.; eosinophiles, fifty-four per cent.; transitionals, one per cent. Leucocyte count, 17,000.

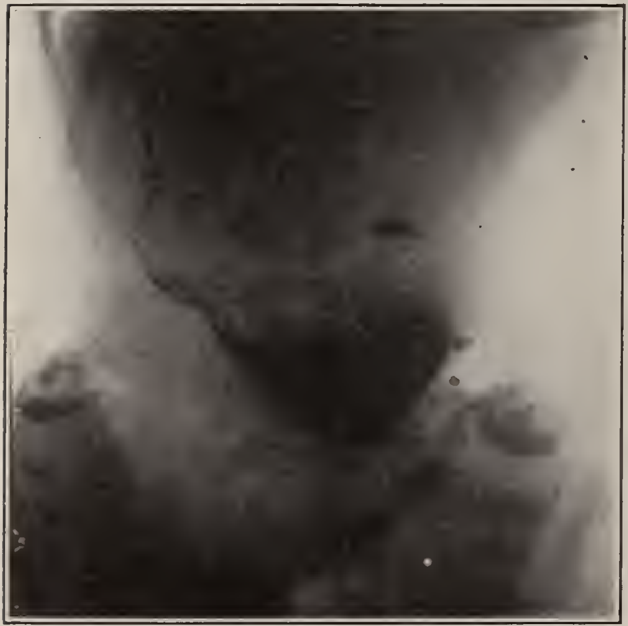

FIG. 2.—Showing ptosis of stomach and colon in same case when patient is standing. (Plate by M. F. Percival.)

It would seem from experiments with this case that there was a profound toxemia set up in both rabbits, as shown by the definite blood changes seen in the animals.

The blood of a second epileptic patient who was having from one to four major seizures a day was withdrawn, and twenty mils of his defibrinated blood was injected into another rabbit at three day intervals. The hemoglobin in this rabbit before first injection was fifty per cent. and it gradually rose until after the second or last injection it was sixty-six per cent. The leucocytes were 9,000 before inoculation; 14,000, twenty-four hours after first injection, and fluctuated between 18,000 and 10,000 until the sixth day after the last injection. The red corpuscles fell from 6,000,000 to 2,856,000 twelve days after the first injection. The eosinophiles rose from one to fifty per cent. after the second injection. The polymorphonuclear cells fell from thirty-seven to three per cent. within twenty-four hours after last injection, and rose to eighteen per cent. six days later.

The tendency to widespread alteration in the proportional relation of the blood cells and the marked increase in the leucocytes point toward toxemia as a probable factor in this disease. It is interesting that these changes are in striking contrast to those noted in the leucocytosis of an ordinary septic process, where the polynuclear cells show a decided increase. After each inoculation Boston and Pearce found that an eosinophilia developed similar to that observed in the blood of patients suffering from a parasitic disease. This appears to suggest a possible relation between epilepsy and parasitic infection

As control tests Boston and Pearce injected the blood of two healthy students into the peritoneal cavities of two healthy rabbits. The blood of these rabbits was examined daily for a week and no alteration was found in the hemoglobin, the red cells, or the leucocytes.

In discussing my paper of September 25, 1912, above referred to, Dr. L. N. Boston cited the following circumstance: He injected twenty c. c. of defibrinated blood from a case, not known at the time to be idiopathic epilepsy, into the vein of an anemic patient. Seven days later, the patient had two epileptic seizures. These were followed by one to three attacks daily for a period of four or five days, when the patient died of exhaustion. Boston reports that a similar inoculation was performed in another case of anemia by Dr. F. P. Henry (9) and the patient acquired true epilepsy.

With the foregoing observations and interesting facts in mind I have continued to investigate the toxic manifestations of epilepsy for the past four years, and have had the opportunity of examining and studying over 300 cases in private practice. Careful and systematic clinical records have been kept, and many laboratory examinations, with accurate data, have been recorded.

Occasion is taken at this time to report my further personal clinical observations, some of which have been already cited by other investigators, and to record certain laboratory findings for the purpose of correlating more definitely the recognized toxic manifestations of the so called idiopathic epilepsies.

CLINICAL OBSERVATIONS.

The temperature was recorded twice daily in ninety epileptic patients in my private sanatorium over periods of time ranging from one month to three years. In eighty per cent. of these cases the temperature range was uniformly subnormal. At times it was as low as 96° F. and during interparoxysmal periods usually ranged between 97° and 98° F. Within twenty-four hours of an attack the temperature frequently rose to between 98° and 99° F., and following an attack at times it would touch 99° or even 100° F. A fluctuating, subnormal temperature is almost a constant characteristic symptom of epilepsy.

The pulse rate in epilepsy, as in many conditions associated with nervous symptoms, exhibits many oscillating phenomena. In my early observations of epileptics I frequently noted that the pulse rate was abnormally slow. In some cases there is regularly slowing of the pulse rate for from twelve to twenty-four hours before a seizure. The pulse rate of all my sanatorium patients is taken night and morning and a review of these records shows a tendency to a slow pulse rate, ranging from forty-four to sixty-four beats a minute in sixty-five per cent. of the cases. During the attack and for some time (varying from a few to twenty-four hours) after an attack, the pulse is accelerated, but in many instances the slow pulse rate is present until the actual convulsion occurs.

The blood pressure of over 300 epileptic patients has been taken, and a review of case records shows that in the cases unassociated with organic conditions it has ranged from ten to thirty points below what is considered the normal average for the age of the patient. A systematic investigation in ten cases is appended in the following table:

					Systolic			Diastolic			Pulse Pressure		
Case No.	Sex.	Age.	No. of tests.	Normal (Faught).	Average.	High.	Low.	Average.	High.	Low.	Average.	High.	Low.
1......	M	45	14	133	101	113	90	78	90	70	23	33	20
2......	F	58	16	*129	109	120	100	82	90	70	27	35	25
3......	F	30	40	125	101	108	95	85	88	82	16	20	13
4......	M	41	59	131	111	130	103	80	90	70	31	40	25
5......	F	45	36	123	104	115	93	80	90	75	24	30	15
6......	M	23	28	123	114	128	102	86	105	78	28	40	15
7......	M	20	6	120	112	140	102	86	110	72	32	35	25
8......	M	14	32	117	108	120	100	84	90	80	24	30	15
9......	M	20	44	120	109	120	95	81	98	72	28	35	20
10......	F	38	11	119	106	110	100	86	95	78	20	24	15

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*Faught subtracts 10 mm. in female patients when computing normal averages.

CLOTTING TIME OF THE BLOOD.

For three and a half years the writer has studied carefully the clotting time of the blood in each case of epilepsy that he has had the privilege of examining. A review of the case records shows that more than 9,000 clotting time tests have been made on 380 cases. A Boggs coagulometer was used in making all the tests, and in order to eliminate variation in personal equation and have as nearly uniform results as possible, the writer made all of these estimations.

In a previous series of cases (10) reported the average clotting time was 3.04 minutes. The longest clotting time in this series was four minutes; the shortest 1.5 minute. In the present series of 100 cases the average clotting time was 3.14 minutes. The longest clotting time in this series was six minutes, the shortest 1.5 minute. The tests referred to in these two series were all taken during the interparoxysmal periods and before treatment was instituted. Dr. John Turner (11) has shown that the clotting time of the blood is quickened just before and during the period that a patient is having attacks.

The normal average clotting time of the blood with the Boggs instrument is given by Hinman and Sladen (Boston and Anders, *Diagnosis*) as being five minutes and six seconds. It is generally admitted, however, that under normal conditions comparatively wide variations in the clotting time of the blood may be found in the normally healthy subject, when any of the established methods for determining the same are employed. Some workers with the Boggs instrument have made the normal limit between three and eight minutes (Simon, *Clinical Diagnosis,* 7th edition). It has been conclusively proved to the writer's mind that most cases of so called essential epilepsy show the phenomena of shortened clotting time of their blood. The fact that this time in some cases falls within the limit of what may be regarded as normal, say three to eight minutes with the Boggs instrument, does not prove that the epileptic's clotting time is perfectly normal and not abnormally short.

The clotting times in this series of 100 cases were divided as follows: Seven fell between one and two minutes, forty-five between two and three minutes, thirty-three between three and four minutes, thirteen between four and five minutes, and two between five and six minutes.

These findings indicate that, in this series of 100 cases, in only two per cent. of the cases did the clotting time, during interparoxysmal periods, exceed the normal average of five minutes and six seconds. In ninety-eight per cent. of the cases it was below the normal average, and in fifty-two per cent. of the cases it fell below the shortest limit of what may be considered the normal range (three to eight minutes).

ALKALINITY OF THE BLOOD.

The alkalinity of the blood was tested in a series of twenty-one epileptic patients and in three control cases. These patients and control cases were all on the same diet, which was a general mixed one, consisting essentially of fruits, cereals, green vegetables, eggs, and milk, with meat only once daily. The patients included fourteen males and seven females. The control cases were all male.

There was a total of 314 tests made. The blood was taken daily between 10 and 11 a. m. in each case, and in five of the patients and two of the control cases the tests were also made between seven and eight p. m. A general summary of the results is tabulated below:

PATIENTS.

Case number.	Lowest.	Highest.	Average.
1..................................	159	212	171
2..................................	133	184	163
3..................................	212	239	196
4..................................	140	239	174
5..................................	140	212	167
6..................................	186	239	213
7..................................	180	212	196
8..................................	133	212	174
9..................................	140	266	176
10..................................	133	176	159
11..................................	176	239	212
12..................................	140	212	176
13..................................	176	266	196
14..................................	156	212	185
15..................................	159	159	159
16..................................	184	196	188
17..................................	140	212	159
18..................................	159	176	167
19..................................	212	212	212
20..................................	218	218	218
21..................................	176	256	239

CONTROL CASES.

Case	Lowest.	Highest.	Average.
1..................................	176	266	214
2..................................	176	239	204
3..................................	218	218	218

General average for the 21 patients, 186.
General average for the 3 control cases, 212.

The Dare hemalkalinometer was used in making the tests. According to the Dare method, 20 c.mm. of normal blood is neutralized by two c. c. of reagent or 266 mgm. of sodium hydrate to 100 c. c. of blood. Therefore, the 266 point line is considered as normal in the tabulated chart.

It will be noted with the diet used that the control cases averaged 212 or fifty-four points below the normal average, while the patients averaged only 186 or eighty points below the normal and twenty-six below the control cases. Only twice in all the tests did the alkalinity of a patient's blood reach the normal point of 266.

In comparing the alkalinity of a patient's blood at the time of an attack with the alkalinity at times when no seizures occurred, it was found that while the general alkalinity in interparoxysmal periods was lower than the average as established by Dare, and also lower than the control cases by twenty-six points; nevertheless, on days when seizures occurred it was found that the alkalinity of the blood was not appreciably influenced by the attack itself. It was observed, however, in a patient or a control to whom hypodermic injections of crotalin were given, that the alkalinity of the blood was increased from fifty-three to eighty points within twenty-four to forty-eight hours after the injection.

GASTROINTESTINAL MANIFESTATIONS.

A coated tongue, fetid breath, gastric disturbance with its various manifestations, intestinal flatulence, and constipation with its associated evidence of so called autointoxication, are almost constant symptoms in epilepsy. In some cases stasis of the intestinal current resulting from ptosis or twists along the course of the primæ viæ as revealed by the x ray (Figs. 1 and 2), cause pronounced absorptive intoxication as emphasized recently by Reed.

The foregoing clinical observations, including a fluctuating subnormal temperature, slow pulse, low blood pressure, shortened clotting time, and lowered alkalinity of the blood, together with constipation and its associated manifestations, are generally recognized evidences of a low grade infection or toxemia. In addition to calling attention to these commonly observed toxic manifestations in epilepsy, I wish to record some definite data from a detailed study of blood examinations in relation to epileptic phenomena.

Cell	Normal Range (Howell.) Percentage.	Range in 100 Cases of Epilepsy, (Spangler.) Within Normal limit.	Above normal limit.	Below normal limit.	Average for the 100 cases in the present series.
Small Lymph	20-25	39 per cent.	51 per cent.	10 per cent.	27.11 per cent.
Large Lymph	1 or less	2 per cent.	98 per cent.	......	9.31 per cent.
Polymorphonuclear	60-75	59 per cent.	3 per cent.	38 per cent.	60.1 per cent.
Eosinophiles	4 or under	88 per cent.	4 per cent.	8 per cent. absent	2.19 per cent.
Transitionals	2-10	13 per cent.	......	87 per cent.	0.78 per cent.
Basophiles	1 or less	31 per cent.	26 per cent.	43 per cent.	0.51 per cent.

BLOOD COUNTS IN 100 CASES OF EPILEPSY.

I studied the blood in a series of 100 cases of epilepsy before treatment was started. These patients came from thirty-six different States, none of them were institutional, all were from well to do families, so that locality, climate, lack of nutrition, etc., may be eliminated when considering the blood conditions. The series comprised thirty-nine females, whose ages ranged between ten to sixty years, and sixty-one males, whose ages ranged between three to sixty-five years.

The hemoglobin was estimated, a red and white count taken in each case, and 2,204 differential leucocyte counts were made. The hemoglobin in this series averaged eighty-four per cent.; the red cells averaged 4,640,037, and there was only occasionally evidence of degeneration. The white cells ranged between 3,650 and 9,360 during interparoxysmal periods. Shortly after attacks they varied from 8,000 to 37,500. As a general rule, my experience would indicate that an epileptic attack is almost invariably followed by a tendency to leucocytosis (12).

DIFFERENTIAL LEUCOCYTE COUNTS.

A study and analysis of the differential leucocyte counts in this series of 100 cases of epilepsy is most interesting. The following table summarizes my findings:

FUNCTION OF EOSINOPHILE CELLS IN EPILEPSY.

In going over the 2,204 differential leucocyte counts in this series of 100 cases, rarely was there found an increase in the percentage of eosinophile cells above the normal (four or five per cent.), either before or after an attack. Occasionally there was recorded a six or eight per cent. of eosinophile cells after a seizure, but it was the rule to find no such evidence of eosinophilia.

In contrast to these findings, the experience of Boston and Pearce (see above), who found, beside a general leucocytosis, an increase of from twenty-four to fifty per cent. in the eosinophile cells of rabbits after they injected the animal with blood from epileptics, is most significant, especially since no actual convulsions were produced in the animals thus inoculated.

Foster (13) has shown that the virus of diphtheria produced an eosinophilia when inoculated experimentally into animals. He concludes that the function of the eosinophile in diphtheria is to antagonize the toxins of the disease. He also found that eosinophilia produced in guineapigs was phagocytic for the diphtheria bacillus.

The foregoing facts and experiences seem to indicate that while in an epileptic patient there is often produced, at the time of an attack, a *general leucocytosis,* preceded by or associated with other toxic manifestations (irregular subnormal temperature, slow pulse, low systolic blood pressure, decreased alkalinity, and shortened clotting time of the blood), there *is not* present an eosinophilic leucocytosis such as is produced in an animal by the injection of the toxic blood from an epileptic patient.

Is it not possible, therefore, that this inability on the part of an epileptic patient to produce an eosinophilia (negative chemotaxis), when his system is surcharged with toxin, may account for the occurrence of the attack? In other words, if a patient in whom there has accumulated enough toxin to produce an attack, could acquire an eosinophilic leucocytosis of sufficient proportions to counteract the toxin (i. e., become positively chemotactic to eosinophile cells), the possibility of an attack occurring would be greatly lessened; or if an eosinophilia can be produced in a patient, is it not possible (by the formation of antibodies or the phagocytic action of the eosinophile cells) to neutralize the toxin and avoid the attack?

TREATMENT.

A rational therapy for epilepsy, based on the toxic manifestations detailed above, which has proved of value in the writer's experience, includes a mixed easily digested diet, systematic exercise, and free evacuation of the bowels. Sulphate of magnesium often acts best, but in certain cases of stasis with malposition (ptosis or twists) of a part of the intestinal tract, operative correction, as advocated by Reed, may be necessary. At times, the use of salol, oxgall, or lactic bacillary tablets, according to the individual indications of the case, are of value. In some cases an antacid or bitter tonic is serviceable, and in others diaphoretic and diuretic medication is of much help. In short, a common sense eliminative and corrective therapy must be instituted to combat the toxic manifestations as evidenced in the particular case.

The tendency to shortened clotting time of the blood, so uniformly present in many of the cases of epilepsy which it has been my privilege to treat, is best overcome with properly regulated doses of crotalin administered hypodermically. Crotalin also tends to increase the alkalinity of the blood, which is usually low in cases of epilepsy. Moreover, crotalin will produce an eosinophilia (14), a condition which, as I have shown in this paper, seems to be desirable for the purpose of counteracting the toxin which is present in the blood of epileptic patients. In fact, the patients who have responded most satisfactorily to treatment in my hands are those in whom properly regulated doses of crotalin have produced an eight to twelve or fifteen per cent. eosinophilia, and in whom a clotting time (Boggs instrument) of six minutes or over is maintained. The following case reports well illustrate these facts:

CASE I. Male, aged twenty-four years. Parents, two brothers, and two sisters living and well; grandfathers on both sides were alcoholic and suffered from paresis. Patient was fourth in order of birth, full term child, and development was normal. Whooping cough the only illness of childhood. At eighteen years of age had grippe, and two months later a convulsion. There occurred two attacks the first year; four or five the second year; the third and fourth years, attacks occurred from two weekly to a month apart; the past two years the seizures were at intervals of ten days to a month and a few times had two attacks in twenty-four hours. His attacks were all of the major form with no definite aura, but with a typical cry, tonic and clonic convulsion, biting of the tongue, occasional incontinence of urine; frequently the left shoulder would be dislocated during the attack.

He had been taking 150 grains of bromide daily when he came under my care. This patient was under my immediate care from July 7, 1913, to September 8, 1915. Bromide was gradually reduced, and at the end of two months entirely withdrawn. Crotalin solution by hypodermic injection was started and continued at from five to seven day intervals. Fel bovis, salol, and pituitary extract were administered at various times and the bowels kept regulated with Epsom salts.

During the first eight months of crotalin treatment fifteen major attacks occurred. Twice there were two seizures in one day and the longest interval between attacks was six weeks. The last attack occurred March 2, 1914. Grain 1/150 of crotalin was continued at weekly intervals for one year; then for six months at ten day intervals. It is now a little over two years since any attack has occurred, and it has been six months since any crotalin was administered.

The clotting time of the blood in this case was three minutes fifteen seconds before using crotalin, and during the first year of its administration fluctuated between four minutes fifteen seconds and six minutes fifteen seconds. The clotting time was taken weekly for a year after the attacks stopped, and fluctuated between six minutes and six minutes forty-five seconds—only on one occasion did it drop below six minutes during the year.

A differential leucocyte count was made two days after each crotalin injection, and the percentage of eosinophile cells in these counts ranged from five to sixteen per cent., and their average for the two years and two months of continuous treatment was 9.29 per cent.

CASE II. Man, aged twenty-five years. Referred by Dr. William R. Barron, of Columbia, S. C. Diagnosis, major and minor epilepsy. Parents living and well. Parental grandfather had epilepsy. Father was alcoholic and subject to migraine. Oldest child, full term, normal birth, no spasms during childhood. Measles and mumps as a boy. "Fainting spells" began at twelve years and continued from one to two months apart until sixteen years of age, when typical convulsions began to occur and a diagnosis of epilepsy was made and bromide treatment started. Bromide and sedative treatment was continued for seven years, and the last year there occurred (March, 1913, to March, 1914) eleven major convulsions. The longest interval between attacks during this year was seven weeks.

The patient was under my immediate care from April 15, 1914, to September 11, 1914. Crotalin in doses ranging from grain 1/200 to grain 1/100 was administered at from five to eight day intervals, and a capsule containing fel bovis, salol, and phenolphthalein was used to regulate the bowels. One attack occurred May 30, 1914, during the five months he was under my personal care. Then he returned home and the crotalin injections were continued by Doctor Barron and he was free from attacks until May 20, 1915 (ten days less than a year). This was the last attack he had had at this writing and it is now five months since crotalin injections were discontinued.

The clotting time of the blood in this case was four minutes thirty seconds before starting crotalin and fluctuated between five minutes and six minutes thirty seconds during the five months he was under my observation. A differential leucocyte count was made two days after each crotalin injection, and the percentage of eosinophile cells ranged from six to thirteen per cent. and averaged for the five months 10.1 per cent.

CASE III. Man, aged thirty-two years; father died at sixty-six years of nephritis; mother living and well; one brother and a sister living and well. Family history negative as to epilepsy, insanity, and alcoholism. Patient second in order of birth, full term, noninstrumental delivery; no spasms in infancy. Diphtheria at six years and soon after began to have petit mal seizures. First major attack at fourteen years. He has had major attacks from one to three months apart for last ten years. During this time has rarely gone a week without a minor attack, and it was a frequent occurrence to have a series of ten or a dozen lapses (petit mal) in a day.

The patient has been under my immediate care since March 21, 1914. Crotalin solution varying from grain 1/400 to 1/200 at a dose has been administered at six to eight day intervals. The bowels had been regulated with cascara, oxgall, and phenolphthalein at bedtime and a weekly dose of magnesium sulphate. Lactic bacillary tablets had been used from time to time for intestinal disturbance.

Since the crotalin treatment was started this patient has had one major attack, November 27, 1914. Seventeen months elapsed after this attack occurred and the lighter seizures entirely disappeared.

The clotting time of the blood in this case was three minutes before starting crotalin, and for fifteen months at the weekly tests has ranged between five and a quarter and six and a half minutes. On only three occasions, however, during this time has it dropped below six minutes.

A differential leucocyte count was made two days after each crotalin injection, and the proportion of eosinophile cells has ranged between four and eighteen per cent. The average proportion of eosinophiles in 106 weekly counts has been 8.2 per cent.

CONCLUSIONS.

1. The attacks, in many of the so called idiopathic cases of epilepsy, are caused by a toxin which is carried in the blood. The exact nature and origin of the toxin is at present undetermined.

2. An accumulation or intensity of this toxin in an epileptic will cause an attack, associated with a general leucocytosis, but *not an eosinophilia.*

3. The blood of an epileptic injected into an animal causes a general leucocytosis with a *marked eosinophilia,* i. e., the epileptic toxin thus inoculated into an *animal* exerts a *positive chemotaxis* for the eosinophile cells.

4. A patient afflicted with epilepsy in most instances does *not* produce, or has lost the power to produce an eosinophilia; the toxin is not antagonized and an attack occurs, i. e., in a patient afflicted with epilepsy the toxin is *negatively chemotactic* for eosinophile cells.

5. The clotting time of the blood is shortened before an epileptic seizure. The range of the clotting time of the blood in eighty-five per cent. of the cases, in the foregoing series of 100 patients, was shorter during interparoxysmal period (1.5 to 4.5 minutes) than it is in normal subjects (three to eight minutes as given by most investigators).

6. The alkalinity of the blood is lower in cases of epilepsy than in control, nonepileptic subjects on the same diet.

7. The writer has demonstrated that the hypodermic injection of crotalin, in properly regulated doses, has produced moderate degrees (eight to fifteen per cent.) of eosinophilia, has lengthened the clotting time, and increased the alkalinity of the blood in certain epileptic patients, thus greatly modifying the character of the seizures and in some cases holding the attacks in abeyance indefinitely.

8. The eosinophilia produced in an epileptic patient by crotalin injections seems to antagonize the epileptic toxin and, possibly by the formation of antibodies, neutralizes the toxin and prevents attacks.

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Treatment of Morphinism.—W. C. Ashworth (*Charlotte Medical Journal*, August, 1916) advises the substitution of pantopon for morphine. It can be given hypodermically and internally. The withdrawal of pantopon is attended with less discomfort to the patient than is the case with morphine.

PELVIC INFECTION.*

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Pelvic infection! What a broad term to designate a condition which, if correctly diagnosticated, proves the fallacy of its application! To say that pelvic infection is an infection in the pelvis does not indicate anything and conveys but one conclusion—that the pelvis as a whole has become the seat of bacterial activity. It does not, however, designate what part of the pelvis, or carry with it any pathological or anatomical significance whether we are dealing with endometrial, cul-de-sac, annexal, or parametrial involvement.

It is established that each of these conditions can exist alone, in consequence of, or subsequent to the other. In each and every instance of pelvic inflammation, however, an intelligent and indicative classification can be demonstrated following the incipiency of bacterial invasion; their propagation, the pathological disturbance they create, and the clinical signs.

The term, pelvic infection, therefore, is ambiguous and misleading in its general application. It should be applied only to crown a classification with proper subdivision of those parts especially involved in the infective process. As an example, we know that the gonococcus has a predilection for Bartholin's duct, the urethra, and the cervical canal, and that the internal os acts as a barrier to bacterial migration. We also know that this germ is distinctly a surface rider, but very rarely penetrating beyond the submucous coat and dying if pent up in its own secretion. It destroys tissue which terminates finally in fibrotic change of any and all parts attacked. Its final seat of most serious activity is in the form of salpingitis, and not pelvic infection.

It is not this form of infection which interests us, however, but the puerperal type of bacterial invasion, particularly into that portion of loosely connected cellular tissue situated between the folds of the anterior and posterior peritoneal layers, otherwise known as the broad ligaments, containing the vascular, neurotic, and lymphatic supply to the uterus and annexa. Its topographical determination is made up of certain zones of location within the boundaries of distinct, closer peritoneal infolding, giving them characteristic names according to their locality.

I advise my readers to refresh their memories concerning the elementary anatomy of the pelvic peritoneum, particularly of what is known as the parametrial space.

Now, how do bacteria enter the parametrial space? The protective resistance of pelvic infection depends upon a number of factors: 1. The integrity of the uterine epithelium; 2, the virulence and number of bacteria; 3. the situation and site of entrance and their ability to propagate, and, finally, 4, organic resistance. The severity of the condition depends on the virulence, accentuated by the character and quantity of the bacteria. The site of invasion leads to the character of the general disturbance, whether mild or severe. Another point is the question of dealing with a single or mixed infection.

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*Read before the North Hudson Physicians' Club, Weehawken, N. J.

The bacteria enter the genital tract through the uterine canal. They may produce all the symptoms of a severe general infection, and yet the virulence, activity, number of bacteria, etc., are not sufficient to overcome epithelial resistance. Upon the epithelial surface the putrefactive, sapremic disturbance goes on, limited to a septic endometritis or metritis. It produces an intoxication of the general system, but the true bacteria are not conveyed any further, If the phagocytes and other concomitant phenomena of inflammatory reaction are sufficient to confine the infection to the endometrium, a foul smelling discharge, or seropurulent, bacteria-holding leucorrhea presents itself. If the infection enters the uterine wall, a localized, tender, soft, boggy uterus with painless annexa is the only physical sign of the existing metritis. Metritis is always secondary to endometritis, but the latter can exist alone. A high temperature, full, bounding pulse, foul, seropurulent, or bloody discharge, flushed face a few days after labor, exhibit all the signs of toxemic absorption from endometrial parasites unable to break through nature's epithelial and leucocytic defense.

The gonococcus, on the other hand, acts in a different manner. The germs may remain in the arbor vitæ of the cervical canal, passing unnoticed until proper conditions, such as the puerperal or abortive state, bring about a rapidly ascending and virulent infection. Active germicidal propagation and turflike dissemination of the rapidly growing cultures soon convey the germs to the tubes. Continuity of tissue, leucocytic amebas, and ciliated epithelium play an important part in this conveyance, but the final result is salpingitis in its various forms, with the formation of pelvic peritonitis, or a cul-de-sac abscess. The diseased condition involves the cul-de-sac and pelvic roof only and bears no relation to the subperitoneal layers.

In parametritis we are dealing with a vastly different condition. Before broad ligament disease develops, there first must be injury and secondly bacterial existence. Furthermore, the true bacterium itself must enter the parametrial space. If a staphylococcic or streptococcic infection enters the genital tract, it makes little difference how much damage it does to the uterus if the true germ does not enter into the parametrium; parametritis will never develop. Sapremia will not produce it, toxins will not cause it, and the gonococci will rarely penetrate the submucous coat and enter the cellular tissue of the broad ligaments. Furthermore, the tissues of invasion must be receptive and the soil for propagation favorable. The soft, boggy condition of pregnancy offers an excellent medium for this infection. Retained placenta, lacerated cervix, septic endometritis are but sites of bacterial invasion from which the true germs enter the parametrial space, and the mode of conveyance, or extension of infection, can only be through the muscular wall or contiguous tissue by means of the lymphatics or blood stream.

In this way we distinguish a thrombophlebitic, or lymphangitic type of infection. In the thrombophlebitic we find the formation of dry, brownish black, or reddish yellow thrombus, hard in consistence, the veins of the pampiniform plexus and uterus swollen, clotted, and edematous. As the infection increases, the clots soften and a thick, reddish brown, purulent mass blends with the gradually softening venous wall and surrounding tissue in the form of an exudate or edema (Martin). It is this form which may suddenly develop pulmonary, cerebral, cardiac, or other remote thrombi lodgment, producing characteristic symptoms of the parts invaded, or producing the general metastatic infection called pyemia. Every case of phlegmasia alba dolens bears a close relation to parametritis due to femoral thrombus.

In the lymphatic type the pelvic cellular tissue is diffusely infiltrated, greatly edematous and pustular, with distended yellowish strands, purulent, greasy plugs filling the glands. The lymphatic system accompanying the vessels, the distended vessels, and sacs are mostly found lateral to the uterus along the ovarian and uterine veins radiating toward the infundibular pelvic, or along the base of the broad ligament (Martin). The edema or exudate of parametritis is the response of living tissue to infection. It exists in all conditions and to the gynecologist should be the compass for therapeutic exhibition. It is localized in the parametrium itself and its object is to keep the bacterial activity within bounds, or destroy its virulence.

In every broad ligament inflammation, the first stage is marked by albuminous fluid distending, swelling, and saturating the pelvic cellular tissue and its interstices, to form a gelatinous mass. This is the first physical sign of parametritis appreciable to the touch. With increase of hyperemia in the course of the inflammatory reaction, the edema correspondingly increases. As the virulence is severe, the reaction will be more active and the exudate more extensive.

The second stage of exudate formation is lymph coagulation with fibrin taking the place of the cellular connective tissue, gradually decreasing the albumin and forming a coagulated, fibrinous mass (Veit, Martin). Accompanying this pathological change there is a marked increase of cellular element in the form of binucleated cells arranged in such a way that every space and interstice of the network of fibrin may be filled with them. This is plainly palpated and demonstrated as the "induration of broad ligament exudate," the hardness we feel being the dense cell wall accompanying the fibrin changes. If the virulence of the bacteria overcomes the cellular fibrin deposit, gradual, insidious, and progressive dissolution from within outward takes place in the form of an abscess. Cell destruction and proliferation are continually battling for supremacy. It means either encapsulation with fatty metamorphosis and absorption, a parametrial scar, or breaking through to follow lines of least resistance (Sellheim).

The location of this reaction depends upon the site of bacterial lodgment, which can be in any of the parametrial spaces, but from a general diagnostic standpoint we shall always find that the first physical sign of all broad ligament infection is thickening along the lateral uterine edge, either at the upper portion or at the base of the broad ligament. From these parts the infection radiates to the parauterine, paravesical, or pararectal space wherever the bacteria find lodgment and inflammatory reaction takes place (Martin). Within these spaces and along the line of least resistance, the disease produces characteristic symptoms. In the paravesical, it manifests itself in bladder irritation, from frequent urination to pain following urination, from cystitis to a sudden flow of pus after rupturing into the bladder; or the edema may spread through the precervical space over to the opposite side and form a bilateral paravesical exudate. This exudate does not always remain localized, but may follow the round ligament course and enter the inguinal canal, the anterior abdominal and subserous cavity, even to the prevesical space.

In the parauterine space containing the ureteral, ovarian and uterine arteries, the exudate may travel along the ureter under the mesosigmoid to the nephritic fossa, break through the diaphragm into the pleural cavity, or, encroaching upon the ureteral conductivity, bring about urinary disturbance. Constrictive or obstructive interference causes kidney stasis, which may lead to uremia. It may also work its way laterally beneath the iliac peritoneum to the anterior abdominal wall.

In the pararectal type, the rectal symptoms are the most pronounced in the form of a tenesmus, or a marked increase in dejections, even to diarrhea. The exudate may be conveyed through the retrocervical space to the other side, or follow the sacrouterine ligaments around the rectum to the lumbar vertebra and, simulating a Pott's disease, point into the groin or gluteal region, even with bone destruction. The obturator and sacrosciatic foramen and anterior crural space have been known to be the line of exudative progress. Following the retrocervical space, the edema may work upward in Douglas's fold, or downward, separating the retrovaginal septum.

The ultimate result of all parametrial infection is either the formation of an abscess, localized, or breaking through the lines of least resistance; fatty metamorphosis with encapsulation and very slow absorption (Burschbeck and Ettinger); or the development of a scar (Freund). In the two latter instances, the effect upon the uterine circulation not only disturbs its equilibrium, but may bring about chronic functional manifestations which finally affect the organ itself in the form of a marked fibrosis. The greater number of menorrhagic symptoms in women are directly traceable to broad ligament involvement during puerperum or abortion. The termination of parametritis is exudative, purulent, or with scar formation and contraction—the first immediately dangerous to life, the second developing into a chronic parametritis and invalidism.

SYMPTOMS.

Acute septic parametritis begins with pain, high temperature, and chilliness or chill. It may occur early or late, even after the patient is doing her housework. Incubation in any disturbed pregnancy arises through an erosion, injury, or normal puerperal involution. Pain is the prominent symptom; although it may be slight, it is always present, and every pain in the lower abdominal quadrant, especially to the side, should be considered seriously. If an exudate is not felt and only slight abdominal and vaginal tenderness with low temperature is found, we must be on our guard. An exudate may exist and not be palpable, but tenderness is always present in the early stages and is situated at the lateral edge of the uterus. We seldom find it at the pelvic wall. It is unilateral in the early stages, but twenty-four hours may mark its rapid progress over to the side. Deep respiration, jars, coughing, or the slightest movement causes pain, and respiration is usually increased. Continued pain, high temperature, and tenderness, with a palpable exudate at the end of twenty-four hours, indicate the extension of infection. Virulence controls rapidity and the entire local picture.

Severe conditions, however, may not show any constitutional effects, whereas mild exudates may create profound septic exhaustion. Vomiting indicates peritonitis; lochial odor means nothing when the infection has reached the broad ligament. Temperature ranges from 100° to 101° F. with septic remission, the pulse balancing from 100 to 120. Sudden rise of temperature, 103° to 104° F., and pulse with increase of pain means extension of exudate or pus formation. We should make frequent vaginal examinations. The harder the exudate, the better the immediate prognosis. The temperature is also safely diagnostic, as it becomes fixed in four to seven days. Reducing slowly to normal means resolution; rising higher, purulent solution. A temperature suddenly falling means rupture, especially if it rises again. In this way, the temperature may rise and fall for some time, depending upon free or obstructed drainage. Pus formation usually occurs in the first two weeks.

In parauterine parametritis, we always measure the quantity of urine passed in twenty-four hours. A patient may acquire uremia from kidney stasis due to ureteral distortion, constriction, or occlusion.

COURSE.

The course of a typical parametritis can be summed up in the following stages: 1. Infected area hard to map out, but tender and painful; 2, edematous, soft mass at edge of uterus in one of the various zones, presenting corresponding and marked symptoms as the edema increases; 3, exudate, increasing and spreading over toward the pelvis anteriorly, laterally, or posteriorly; 4, exudate filling pelvis in the zones of infection with accompanying abdominal tenderness and muscular rigidity, displacement of the uterus to opposite side of exudate, and beginning induration extending along lines of least resistance; 5, high temperature, pain, and tenderness increasing, with constitutional symptoms more pronounced, indicating abscess formation which usually happens on the eighth or tenth day. We make frequent blood counts; leucocytosis of 12,000 or over calls for surgical interference; we must not wait until resistance has been lowered; 6, cessation of pain, tenderness, and fever, and pulse recession indicate resolution.

The diagnosis is always digital and a metritis is always present. The tubes and ovaries can be palpated only in the early stages. In the latter period they ride above the mass.

There is another form of parametrial infection. An uneventful puerperium may exist with the exception of slight discomfort and chilliness and a bare rise in temperature. It is wise to watch these cases carefully. Usually we are dealing with retained secundines, or the patient has received improper care. At any rate, she has an infection, and local resistance is retarding the typical signs of broad ligament disease.

In the meantime, however, slowly, insidiously, and definitely, a marked induration has formed in the broad ligament which at the end of three weeks can be felt encircling the uterine neck, toward the pelvic brim, and in the hollow of the sacrum. If a cervical laceration exists, it begins from the tear and extends to the side. The uterus may be displaced in any direction and the exudate may completely encircle the rectum, or be diffused to one side. The sacrouterine ligaments are thickened or shrunken and tense. The final manifestations may be psoas muscle adhesions, producing lower spinal deformity, painful walking, and marked neuralgias from involvement of the hypogastric and ganglion of Frankenhäuser in the form of severe psychiatric, crural, and pelvic distress. These patients present marked organic change in the form of chronic metritis, fibrosis, or atrophy and have frequent recurrence of spontaneous abortion or premature birth.

Next in frequency during pregnancy, abortion, or the puerperal state is pelvic peritonitis or perimetritis, brought about in the majority of instances from postpuerperal douches, washes, dirty instruments, or plastic operations. From a prognostic standpoint this is more serious because it may rapidly spread to general peritonitis. The condition arises from the tubes, the infection having reached them from the uterus. The resulting peritoneal extension is not controlled by the bacteria which have caused it, but by the amount of peritoneal response arising from virulence, resistance, and exudative propensity of its serous coat which controls the formation of the parametritic mass and adhesions. If the serous outpouring is so rapid that the adhesions cannot form because the lymph change does not take place, a rapidly filling cul-de-sac will soon present itself. On the other hand, if the abdominal opening of the tube closes up during the process of the reaction, the tube either ruptures, filling the cul-de-sac with pus, or it does not rupture, and following its normal direction outward, upward, backward, and downward, the tube falls behind the posterior peritoneal sheath, becoming adherent, the fimbria attaching themselves even down into and upon the floor of Douglas's pouch.

Perimetritis manifests itself either as a serous or a purulent cul-de-sac exudate, or an adherent annexal mass, adherent to all adjacent and surrounding tissues. Wherever the infected tissue comes in contact, serous and finally fibrinous adhesion takes place. The onset is stormy and the chill pronounced. The fever is continuous and high, and there is a corresponding pulse. Pain is not constant nor continuous, as in parametritis, and it is not localized to one side. Abdominal tenderness is more pronounced than vaginal. Meteorism and tympanitis usually occur, and nausea and vomiting are frequently present. Dry, heavily coated tongue and lips finish the picture of marked peritoneal irritation. Exudate formation varies, and involves only the cul-de-sac; it is never lateral, and is always behind the uterus, bulging into the posterior vaginal vault like a large egg. It increases downward, and the tubes and ovaries can always be palpated unless an extensive exudate is present. The uterus is pushed forward in anteflexion against the pubes, while in parametritis the displacement is forward and to the side. Parametritic exudate always begins at the lateral edge of the uterus and spreads over to the pelvic wall. Perimetritic exudate is always behind the uterus. The parametritic mass is fixed, while the cul-de-sac mass is movable. The former is hard and has an indurated feel, while the latter is soft and doughy. The posterior vaginal wall is thickened from cul-de-sac extension, and the exudate may burrow between the posterior vaginal and the anterior wall of the rectum; this will never happen in parametritis.

TREATMENT.

In the treatment of puerperal infection or septic abortion, the first point to consider is the presence of severe bleeding. It makes no difference whether fever is present or not; every case of severe bleeding calls for immediate and rapid interference. This is accomplished by careful digital curettage in the presence of fever, and combined digital and instrumental otherwise. The danger of hemorrhage overshadows that of infective extension.

It is always advisable to deal carefully with the curette. We never use a sharp curette—a dull, spoon shaped intrument is much better. The use of the curette in every pelvic infection is dangerous in inexperienced hands. Histories carefully tabulated show that a large percentage of severe septic explosions and a high mortality are directly traceable to its use in the early stages of these conditions.

It is poor surgery to enter the puerperal or aborted uterus, either digitally or with instruments, upon the mere suspicion of retained placenta and the presence of fever. I am strongly opposed to curetting the puerperal uterus unless the patient is bleeding or we are dealing with a sapremic condition and are positive that there is something in the uterus. First we try to establish these two points before interfering.

Sapremia always manifests itself with a marked odor, and placental tissue can always be felt upon exploration. When the temperature rises in these cases we are dealing with either septic endometritis, metritis, parametritis, or perimetritis. We must establish a definite diagnosis before doing anything radical, such as curettage. If the bacterial activity and extension are confined to the endometrium (which is rare), natural resistance has its hands full looking after the phagocytic and reactive formation. Is it fair to break down nature's work, open new areas of infection, destroy resisting ones, and stimulate septic absorption? The first principle in reactive inflammation is rest. Why should we disturb it with curette or digital destruction, thereby breaking up thrombophlebitic or lymphangiotic plugs for further extension? On the other hand, is it not apparent that a curette will never reach the site of a metritis, parametritis, or perimetritis?

In every case of pelvic infection, it is not a question of retained placenta or secundines, but only and specifically a knowledge and consideration of the true variety and virulence of the bacteria causing the infection. To the general practitioner this is one of the most difficult problems. In hospital practice, better facilities are offered for frequent blood cultures, taking from twelve to twenty-four or forty-eight hours to develop. In the meantime, discouraging symptoms may compel interference.

Theoretical ideals classify interesting scientific principles, but they very often lead to unhappy results. The blood will give the resistance and antibody index, but will it always give the virulence of the aerobic leucocyte streptococcus we are dealing with? While we are waiting for the pathologist, the patient may die.

Winter, Walther, Voit, Shotmüller, and others have shown us that if bacilli coli communis or streptococcic bacteria are present it is safe to curette, but if the hemolytic streptococcus is present, we treat the cases expectantly, depending upon spontaneous placental expulsion, or later removal after bacterial virulence has abated.

I believe the matter is not a question of curettage as much as it is a question of drainage and, further, that the eye experienced in clinical signs tells more, and tells it more quickly than waiting for the microscope. The old theory that sapremia is always a local condition, while septicemia is a general one, has been exploded by Shotmüller, who has shown the streptococcus existing in each. Putrefactive and virulent hemolytic bacteria can exist together. If curettage brings the temperature down, virulent bacteria are absent and we are dealing with a toxemia; if it does not, they are present. Curettage, then, adds to their activity.

There are three cardinal points in treatment: 1, local; 2, drainage; and, 3, constitutional. It is better to utilize the three, and be on the safe side, than to adopt one and fail.

Infection in the pelvis is the same as infection in any other part of the body. An abscess may become circumscribed and walled off, throwing off its septic débris; or the virulent bacteria may overcome the wall of resistance, break through, and extend. The treatment in the former is locally operative by incision and drainage, but in the latter by further incisions and counterdrainage high above and along the site of original infection. In pelvic infection we have a local, adjacent, or general condition. If a foul smelling discharge is present we are dealing with saprophytic destruction, and the early indication for curettage exists. If, however, there is the slightest tenderness in the broad ligament, with or without an exudate, and the uterus is tender, we are dealing with a metritis or parametritis, and the treatment must go directly to and beyond the original site of infection.

The main exit of pelvic drainage is at the infundibulopelvic layer and base of the broad ligament; hence to these parts the treatment must be directed. We can accomplish this only by thorough and early pelvic drainage in the form of iodoform gauze strips placed fanlike through the cul-de-sac up to the infundibulopelvic and posterior layer of the broad ligament.

In the very early stages this is sufficient, but in the presence of an exudate, or abscess, we must also break into the broad ligament, and put into this space an extra iodoform gauze drain beside the others. We do not wait until an abscess forms, but drain as soon as the diagnosis is established.

We never curette a uterus unless we have a foul smelling discharge, and even then we supplement the treatment with pelvic drainage. What evidence have we that there are no virulent bacteria present? Pelvic drainage is the foresight of prevention, and is harmless in its application.

In perimetritis or cul-de-sac mass, drainage speaks explore the uterus with a uterine spoon scoop or our gloved finger, and if we find the uterus empty, we get out quickly. We depend entirely upon the pelvic drainage. We push streptococcic serum of the strongest polyvalent variety (twenty million), administered every three hours if necessary. We stimulate freely. High Fowler's position, Murphy drip, saline hypodermoclysis, active diuresis, catharsis, and diaphoresis help the patient more readily to eliminate and throw off septic material.

In perimetritis or cul-de-sac mass, drainage speaks for itself, and curettage is positively contraindicated until a later date.

In conclusion, I will say that a correct diagnosis of pelvic infection is the first essential. We do not treat the term as a disease but as a localized condition divided as to classification. In sapremia we curette and drain the pelvis; in septicemia or parametritis, we explore the uterus and drain the pelvis. We never curette when the broad ligament or annexa are involved.

In following these few simple rules as a principle, and making a careful, correct diagnosis, with timely and early treatment, we shall, in the majority of instances, bring about happy results and complete recovery in seemingly hopeless cases.

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HEMIPLEGIA.*

Its Prophylaxis and Treatment.

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The successful treatment of any condition means primarily the removal of the cause, but far better than cure is the prevention of disease. The present day prevalence of apoplexy, some cases quickly fatal, and others resulting in years of invalidism, makes this one of the real issues to be met by the medical profession. It is not only our duty to relieve the sufferings of those already afflicted, but we should do our best to point out means of prevention. When it is fully realized that many attacks can be prevented, there will be a better appreciation of the responsibilities that we should feel to be ours.

The purpose of this paper is to consider the subject of hemiplegia from the standpoint of prevention, as well as to take up the line of treatment of the secondary stage, or the so called chronic form. This is to be from the physiotherapeutic side, omitting drug therapy entirely, as drugs have been found inefficient in these cases.

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The consideration of a subject of such vast importance will warrant a brief review of the etiology, symptomatology, and pathology of hemiplegia. No type of cases other than those of hemorrhage will be considered.

Hemiplegia is complete when the face, arm, and leg are all involved, and incomplete when only one or two parts are affected. The damage done by the hemorrhage depends upon the site of its occurrence. It may be in the motor cortex, it may affect the pyramidal fibres in the corona radiata and internal capsule, the cerebral peduncle, or the pons varolii. The facial effects are upon the same side as are those of the arm and leg, owing to the fact that the facial muscles stand in the same relation to the cortical centres, as do those of the arm and leg. This paralysis is partial, owing to an involvement of the lower portion of the nerve, but is usually well marked in character. It may involve the orbicularis oris in a slight way, and be perceptible only during emotion and excitement. When protruded, the tongue is deviated toward the affected side, which is due to the involvement of the hypoglossal nerve, and the lack of involvement and opposition of the geniohyoglossus of the sound side. With a right sided hemiplegia there may be aphasia, and when this is not present, there is usually a slowness and, at times, a difficulty of speech. As a rule the arm is most involved, but cases vary in this respect. The muscles of the thorax and abdomen always escape. This is explained by Broadbent by "supposing that as the spinal nuclei controlling these movements on both sides, constantly act together, they may, by means of their intimate connection, be stimulated by impulses coming from only one side of the brain." Sensory disturbances are variable. There may be hemianesthesia, but often there is only a numbness or slight impairment of sensation. When there is loss of sensation or sensory power, it is from a lesion in the retrolenticular portion of the posterior limb. Total anesthesia, according to Dana, is either functional or of subcortical origin, and is less common in hemorrhage than in softening.

Disturbances of the special senses are not constant, yet there are cases where there is some diminution of the sense of smell as well as of the taste and hearing. Gower thinks that homonymous hemianopsia of the halves of the visual field is of frequent occurrence, but often overlooked. In some cases under the writer's care there has been great impairment of vision, but it has not been definitely shown in each case to be the result of the hemiplegia.

In the second stage there is usually a return of the reflexes which were abolished during the active stage. The deep reflexes are increased, and there may be ankle clonus. The plantar and other superficial reflexes are usually lessened, and as a rule the sphincters are not involved. If, at the end of two or three months, there has been no gradual restoration of function, the paralyzed parts undergo certain changes. The leg may recover some power, but the foot drags. Secondary contractures or late rigidity appear, together with an exaggeration of the old symptoms, and these may be without further hemorrhage. The arm is usually more involved in these changes, and the rigidity may affect the elbow, wrist, and fingers, more than the shoulders. In some cases under the writer's care, the shoulder and fingers were most involved.

It has been stated that the leg contractures are not so painful as are those of the arm. In my experience the reverse has been true. Whether these patients have been suffering from contractures alone or with an associated neuritis, it has been hard to determine, particularly in cases where there has been no previous history of neuritis. In all there has been the usual favorable response to the treatment that would be applied to a neuritis.

The loss of power usually affects the muscles of the foot in a particular manner, and with the knee flexed in the effort to walk, there occurs the characteristic half circle swing of the foot. Late in the second stage, there may be some muscular atrophy, as well as other features that are not constant, such as tremor, athetosis, arthropathies of the affected side, and postparaplegic chorea (Osler).

Consideration of the etiology of cerebral hemorrhage brings us to the study of the conditions that apply to the cardiovascular system. As prophylactic measures suggest themselves by this study, they may as well be considered together.

The vessel changes that are the result of a persistent hypertension, frequently developing into arteriosclerosis, are potent etiological factors. As a primary cause of these changes we have various forms of poisons, intestinal toxemias from dietetic errors, and overeating, therefore care in eating as well as in diet itself, offers one measure toward prophylaxis. Meat proteins in excess appear at present to be held responsible largely for these toxemias, and with poor elimination, a growing hypertension becomes apparent, which if noticed early will be of little account, as it can be readily handled by ordinary measures. Exclusion of meats, using milk as a substitute, and allowing the vegetable proteins, together with other suitable food products, will do much to prevent an extension of the condition. As excessive eating is recognized as a factor, patients should be warned against it. These simple measures may prevent simple hypertension from progressing, but when not successful, more radical measures must be resorted to. Elimination must be kept free, and if constipation is pronounced, physical measures must be resorted to, as well as the use of mineral oil, agaragar, and occasional doses of castor oil. Colonic flushings may often be of benefit, preferably using the normal saline solution, and in quantity that will not overstretch and paralyze the bowel. Vibration over the course of the colon, and over the spinal centres that govern the abdominal organs, often acts efficiently. In addition, the sinusoidal current to these nerve centres is valuable, as by this method there is not only nerve stimulation, but increased peristalsis and secretions. Reducing the waste products by these methods will counteract the morbid process which affects the depressor nerve, causing "constriction of the arterioles through which the anterior pituitary and the thyroid apparatus are supplied with blood," according to Sajous, who further states that "the supply of adrnoxidase (besides thyroidase) being diminished, the metabolic activity in the vascular walls is reduced, and the chief pathogenic process is thus controlled."

Massage may be used as an adjunct in suitable cases, bearing in mind that it acts in a manner similar to exercise, therefore in cases of high blood pressure it must be used with caution, if at all.

In all cases the frequent use of the sphygmomanometer is of great importance. Not only should the systolic pressure be taken, as is the rule, but the diastolic also, by which means that pulse pressure can be estimated. According to present day thought, the diastolic is the important one, if one only is to be considered, but in the writer's estimation it is best to take all, by which can be obtained the best information of the condition of the whole cardiovascular system. Leading the simple life, taking the proper amount of exercise and rest, all tend toward restoring cardiovascular tone. It is by such prophylactic measures that degenerative changes may be prevented. Here is where the family physician plays an important part, and if he meets the situation, he can be in position to save many a life.

So much for prophylaxis. In considering the treatment of hemiplegia from the purely physiotherapeutic standpoint, we must depart from the customary paths that have been well trodden for so many generations, and as this savors of the unorthodox, many may pass it by without investigation. As the measures that will be considered later have been well tested, they will be mentioned with the hope of their receiving favorable consideration.

In treating hemorrhagic hemiplegia we must bear in mind that the outcome depends largely upon the time that has elapsed since the onset, as well as the severity of the attack, and the personal idiosyncrasies of each case. Prognosis should always be guarded, as responses to treatment vary.

The first consideration is that of hypertension. Following the attack it is lessened, but when the patient applies for treatment in the secondary stage it has often risen to a dangerous point, and needs urgent attention to prevent recurrence. In some cases we find a condition of broken compensation, which means disaster.

To reduce the hypertension, we use the method of autocondensation. This is given from a high frequency apparatus that will deliver a d'Arsonval current. The couch upon which the patient lies has a cushion three inches thick made of floss or hair, under which is a metal plate of the same length and width, connected with one side of the apparatus. Reclining upon this couch, the patient grasps a metal handle which is connected with the other side of the apparatus, completing the circuit. The current is given in suitable amperage according to the needs of the case. It is rarely necessary to give over 650 m. a. of current, and often better results are obtained from a much smaller amperage, for instance, 350 m. a. The treatments last from twelve to fifteen minutes, and should be given daily, until the reduction reaches a point that is approximately the compensatory pressure. While it is impossible to determine this point definitely, it may be considered to have been reached when the circulation is at its best, and the patients feel best. This can be readily seen, as the mentality improves and various sensations disappear that have been disturbing to the patient, such as dyspnea, etc.

The effect of autocondensation is explained by de Kraft as follows: The warming effect of this current is different from that obtained by any other method. It occurs from within the body, not from without, and all of the cells participate. As a result of the heating of the blood and muscles, the entire heat regulating apparatus of the body is exercised, owing probably to direct stimulation of the sympathetic system. The blood is rushed to the surface, and the venous congestion is relieved. Splanchnic anemia ensues and visceral engorgements are relieved. The blood stream, returning to normal channels, carries a fresh supply of oxygenated blood to the various diseased parts, and as well all over the system. This equalizes the circulation and relieves the high pressure. The effect of this reduction of the cardiovascular load is at times wonderful, particularly upon the mental state of the patient. Cheerfulness and hopefulness replace dullness and melancholy, alone sufficient warrant for such treatment, contributing much toward a favorable outcome.

In addition to autocondensation we have mechanical vibration as a supplementary measure for reduction of the pressure. This is usually applied to the second and third dorsal interspaces for a period of five minutes at each treatment. This inhibits the functional activity of the vasomotor centre, permitting the bloodvessels to dilate. According to Foster, "blood pressure may be made to rise and fall by afferent impulses passing along nerves other than the depressor. The effect of the afferent nerve stimulation is similar to that caused by stimulation of the depressor."

If there is cardiac insufficiency, the vibration should be given also in the interspaces of the seventh cervical and first dorsal vertebræ. According to Dr. Arnold Snow, this probably acts through the pneumogastric nerve filaments of the rami communicantes which connect the sympathetic with the second and third dorsal nerves.

For restoration, as far as possible, of the muscle and nerve tone, we have the use of the slow surging sinusoidal and the interrupted constant currents. With these there are other modalities of value, but the two mentioned are perhaps the most used. The sinusoidal currents are of the smooth type, producing no painful responses, yet their action is most profound and energetic.

Its application is made by the use of well soaked pads of felt or cotton over metal, the larger or indifferent one being placed over the spine, the area chosen according to the part to be treated. If this is the arm, then the pad is applied to the lower cervical area, and if the leg, then to the dorsal portion. The smaller pad usually has a handle, and is applied in a labile manner to the motor points and muscles wherever needed. Treatments last about twenty minutes. For superficial effects the rapid sinusoidal current is considered of value. Some forms of apparatus give a combination of the two currents, the rapid superimposed upon the slow, and this is said to have a decided effect upon restoration of the nerve cell tone.

If preferred, with the sinusoidal currents, there may be used alternatingly the interrupted galvanic. This latter has been for years the one preferred, but as it causes painful contractions, it is not so well borne by the patient, and this is soon made known to the operator.

For relief of spasmodic pains of the neuritic type so often seen late in the secondary stage, the static wave current offers the best means in a large percentage of cases. This is applied by means of a flexible metal plate about two and one half by six inches in size, wet, placed on the bare skin, attached to the positive side of the machine by a conducting cord or wire, with the negative side grounded. The amount is regulated by the separation of the discharging balls on the end of the sliding rods, the discharge of the current being interrupted at the rate of from 120 to 300 times a minute. Fifteen to twenty minutes is sufficiently long for each treatment, as it is not desirable to fatigue the patient.

This fatigue would be the result of too strong and too great an amount of muscular contraction, which acts in the same manner as so much exercise. The amount of pain caused by the treatment of the sore nerves will be another factor toward fatigue, therefore it is the better part of wisdom to proceed with caution as to the doses. The current is distinctly sedative in effect, it relaxes muscular spasm, and at the same time has a distinct metabolic action, by causing cell gymnastics. This is mainly local, but it also has some general effect, as the current is not confined to the area under the plate.

The matter of removal of the hemorrhagic clot has given the profession much thought. This is illustrated by the use of the iodides during the long past. Some have used cerebral galvanization with some degree of success, but the writer cannot speak from experience in this matter. It appears to be the logical method, granting that the current can be made to go directly through the skull and brain. This has been questioned by some, who state that the current follows the path of least resistance, which would be around the skull, thus not meeting the demands of the case. This questions remains to be solved.

By the outline given, it can be readily seen that the treatment of hemiplegia is largely symptomatic. The same holds true in drug therapy. Our present knowledge offers nothing better. After all, prophylaxis offers the best solution of the whole question, and it therefore behooves us all to be on the alert in the future, to teach our friends and patients the ways and means of guarding their lives so as to prevent this catastrophe.

Physiotherapy offers more than any other plan of treatment, when hemorrhage has actually occurred, if applied with common sense. It may fail signally, for after all, to use a modern phrase, "it is the man behind the gun" who counts more than any other factor.

MARYLAND AND PACIFIC AVENUES.

SECONDARY SYPHILITIC LESIONS OF THE TONGUE.*

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Secondary syphilitic manifestations on the tongue, although far less common here than on other mucous membranes, such as the lips, vulva, or anus, are not infrequently met. Those who have written on this subject are unanimous in this respect and in my own experience out of 617 patients with syphilis I found forty with lesions of the lingual mucosa. The mucous patch is unquestionably the most frequent, but, as I shall show, we may encounter the majority of the other elementary lesions which characterize the group of syphilides. Only, the seat of these lesions on an essentially motile organ, whose surface is unceasingly in contact with food, drink, and saliva, brings about differences in their external aspects which are often very great. In the study of these lesions the strictest account should be taken of the special structure of the lingual mucosa. This is not the place to describe the mucous membrane of the tongue; I shall simply recall the development of the papillary layer, the intimate adhesion of the mucous tissue with the underlying muscular layer, and lastly, the thickness of the epithelium, which is the seat of a continual and abundant desquamation.

All writers on syphilis have described lingual mucous patches, but usually, under this vague denomination they have included nearly all the lesions which may occur on the tongue during the secondary period. Certain other forms, generally of later manifestation, such as tubercular and ulcerative syphilides, have been confounded with the manifestations of the tertiary period, namely, the gumma. However, we must point out that this distinction has been made in recent years, particularly by Rollet, Gubler, Buzenet, and Julliard.

The erythematous syphilide, so frequent on other mucosa, particularly that of the isthmus of the throat, the first symptom of generalization of the infection in many cases, is at least rarely seen on the tongue, and the only reference to it that I have been able to find is by Rollet, who says: "Mucous patches on the tongue are sometimes composed of simple erythematous spots, smooth, surrounded by normal mucosa with its more or less projecting papillæ. This projection of the papillæ causes the erythematous plaque to appear depressed."

By what is expressed in this sentence it is seen that, in the mind of the author, this lesion enters into the group of mucous patches. Therefore, I shall not deal further with this syphilide, which I should not have mentioned, had it not been for the foregoing quotation, which drew my attention to the subject.

Of all the syphilides of the tongue, mucous patches are by far the most frequent, to such an extent, as I have already said, that some writers have comprised under this name all the secondary accidents. In my total of forty cases of lingual syphilis, thirty-five were mucous patches, eighteen being in males, fourteen in women, and one in a child with hereditary syphilis. Out of a total of

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130 males presenting mucous patches, Basserlau found eighteen in whom the lesion was on the tongue, while Devasse and Deville noted six instances on the tongue out of a total of 186 females presenting this lesion.

It must not be inferred that this lesion is uncommon in children. The contrary is true, and the great frequency of mucous patches in the corners of the mouth, throat, and tongue in early life is known and explained as one of the ordinary ways of transmission of syphilis from nurse to infant, the breast being the seat of specific lesions.

The commonest site of lingual mucous patches is the dorsal aspect and borders of the tongue; they are often seated on the tip of the organ, less frequently on the inferior aspect. This difference in site also results in a difference in shape and aspect of the patches. Those seen most frequently have been described as opaline. On the top of the tongue it occurs as a slight elevation above a surrounding healthy mucosa, covered by a bluish white coating, almost transparent, in fact opaline, quite accurately likened to an area of mucosa to which nitrate of silver has been applied.

The shape of the patch is regularly rounded or oval, and with the magnifying glass, under the epithelial and fibrinous layers which form a kind of false membrane, we may see the papillæ projecting more than in the normal state, in themselves forming the relief of the mucous patch, which is simply an advanced degree of the preceding state. The patch may project much more markedly, forming true vegetating plaques; however, we never meet the large cauliflower patches on the tongue, such as are seen on the vulva and anal borders.

Often in these cases the grayish pseudomembranous aspect has disappeared and is seen only on the borders of the lesion. On the other hand, we sometimes observe ulcerations which connect this form with the ulcerating type. The forms that we have described differ greatly from the primitive type of mucous patch, for I have not spoken of the circumscribed raised edges nor of the central depression found on other mucosa, particularly on the lips and inside of the cheeks. This, I infer, is due to the essentially papillary texture of the tongue. As to a fetid secretion, the tongue, being continually moving and incessantly covered with saliva, drink, and food, does not present this to such a pronounced degree as other parts of the body. However, it must be said that where there are lingual mucous patches the breath is always disagreeable.

Beside the projecting patches, the top of the tongue is the seat of more or less deep fissures, with callous, white, punched out borders, with a fundus often difficult to see, unless the borders are separated by the fingers, and which is either ulcerated or healthy in appearance. Hot drinks and food are taken with difficulty by the patient.

The ulcerating form remains to be described and is found more frequently on the borders of the tongue, particularly where there is a point of irritation, such as a decayed tooth, at the two extremities of a space left by an extracted tooth, and in smokers who always place the pipe stem in the same place. Here we find large and deep ulcerations with indurated and projecting borders, covered by the characteristic whitish pellicle of a mucous patch and with a red bottom which bleeds easily. More often it is filled with a whitish detritus that is found in nearly all buccal ulcerations and makes the diagnosis difficult.

Sometimes the edges of the tongue present actual festoons of mucous patches, with ulceration, or at least deep impressions, opposite each tooth.

There is still one more characteristic which separates mucous patches on the tongue from those on other parts of the body, due to the manner of development and duration of the lesion. The mucous patch is one of the very early manifestations of the secondary period. Occurring after the roseola and general lymphatic involvement, it is contemporary with the papular syphilide to which it is related; its study is full of interest. Like the latter, the mucous patch appears in untreated cases at about the third month of the infection, usually disappearing much later than the papular syphilide and prone to recur. As to mucous patches on the tongue, although they may occur at an early date of the infection, at the same time as the roseola, for example, they may well appear at a much later date, from eighteen months to two years, for example. They are also much more stubborn to ordinary treatment, 606 being sometimes the only drug to have any influence on them.

As in other regions, lingual mucous patches may be transformed into vegetations, although this rarely happens. I will simply mention the pseudomembranous plaques described by Martin under the name of syphilitic diphtheria. They are as infrequent on the tongue as they are common on the lips and vulva. In the order of succession of syphilides, we meet only three forms which on the tongue represent the group of late syphilides, namely, the tubercular syphilide, ulcerating syphilide, and one other form that I have not found described in the textbooks and which I will, for the time being, call intermediary late lesion.

Secondary tubercles on the tongue are not a common lesion, but if we go carefully over the records of cases published under the head of lingual gummata, we shall come to the conclusion that not a few of these are, in reality, simply tubercles. For this reason I shall here record *in extenso* a case recently under my observation.

Case. E. Q., aged twenty-two years, entered hospital June 20th last. The patient had never been ill. Ten weeks earlier he had been treated at another hospital for a chancre, and while he was there a roseola appeared. He left hospital because he would not submit to treatment. Four or five weeks later, he noticed a generalized eruption of pimples, as he expressed it, and consulted a pharmacist who gave him some simple diaphoretic. The eruption continued to increase and he then consulted a homeopathic physician who treated him for a month without success. For the past six weeks there had been developing on the legs a number of scabs, as the patient describes them, under which considerable pus was found. Marked alopecia for the past month. No sore throat.

Status præsens. General debility with anemia. The entire body surface was covered with disseminated tubercles, varying in diameter from three mm. to one cm. Their surface was flat, slightly raised above the surrounding skin, and they presented the characteristic reddish brown color. On the back, the centre of the tubercles was slightly depressed and ulcerated, some being covered by a white, thin exudate. On the arms we found, mixed with the lesions, a number of dark green crusts under which pus had accumulated. On the legs some of these crusts had disappeared leaving deep clean cut ulcers with a fungous base which bled readily.

At some spots on the back some of the tubercles were surrounded by groups of small papules which were beginning to be covered by a slight scab, and from their arrangement recalled the lesion which had been described as a stellate syphilide. At some spots the central tubercle had disappeared without ulceration, leaving behind a cicatricial depression surrounded by a broad, ham colored area presenting a few slight scales.

For six or seven weeks the patient had noticed that there was something on the tongue and lower lip. The lesion was indolent and he noticed it only because his tongue was very dry in the morning. On the dorsal aspect of the organ near the middle, five rounded ulcerations were seen, having a diameter of about 0.5 cm., isolated from each other, having a slightly indurated base, and limited by slightly raised edges. The lesions were of a darker red than the rest of the lingual surface. The bottom of the ulceration was a grayish yellow and partially filled with pultaceous matter of the same color. These lesions appeared to be similar to the ulcerated tubercles present on the cutaneous surface.

On the upper lip was a lesion which marked the transition of a cutaneous into a mucous tubercle. On the mucous portion was seen, as on the tongue, a grayish ulceration surrounded by an indurated raised edge, while that portion of the lesion situated on the skin presented an ulceration covered by a blackish scab.

The post cervical and inguinal lymph nodes were enlarged; those of the submaxillary region and floor of the mouth could not be palpated. Active specific and tonic treatment was instituted and the lesions soon began to improve.

I shall be brief in the description of lingual tubercle because it has an evolution quite the same as that occurring on other parts of the body. Beginning as a papule with a broad base, palpation shows that the induration exists in the entire thickness of the mucosa, but is quite independent of the underlying muscular structures. A certain number of lesions may be present, but they are always isolated from each other even when ulceration takes place. I have never seen them take on larger dimensions than one cm., and the ulcerations that I have observed have never taken on the serpiginous or phagedenic course sometimes met on the skin, particularly of the lower limbs.

The induration of the base sometimes extends a little in breadth, but never in depth. The edges are reddish brown, the fundus, more or less fungous and bleeding easily, is filled with a pultaceous detritus to which I referred when speaking of the mucous patch. The lesion which the lingual tubercle at this period most resembles is the primary chancre.

Whether the tubercle ulcerates or not, it always leaves a cicatrix which differentiates it from the mucous patch, but the cicatrix is not deep, is stellate in shape, nonretractile, and never involves the underlying structures, as is the case of gummata and various other lingual ulcerations.

Other forms of lingual ulceration are to be found in syphilitics which do not have the tubercle as a starting point. The recorded cases do not state the nature of the initial lesion giving rise to the ulcer, and in my own cases I have never been able to discover the nature of the original lesion; however, by analogy with what takes place in cutaneous ulcerating syphilides, it may be surmised that the starting point was a pustule. But since these lesions are indolent, the patients discover them only by chance or because there is a mechanical hindrance to mastication. Then the pustule, which is a very transitory element, has disappeared to give place to ulceration.

These ulcerations have a greater tendency to extend, to take on the serpiginous form, than those arising from tubercles. Like the latter, they do not react to any extent on the neighboring lymph nodes. They are indolent and often coincide with pustulocrustaceous or ulcerating syphilides on the skin, but they may occur without other specific lesion being present. It is in just such cases that the diagnosis is difficult and the real nature of the lesion is mistaken. But by taking a careful history of the case, and from careful consideration of the special characters presented by the ulceration, it is possible to make a correct diagnosis.

The cicatrix of an ulcerating syphilide of the tongue has much resemblance to that produced by a tubercular syphilide, and it only differs by the usually more considerable extent of its surface.

The limits of this paper prevent me from entering into a discussion of the late intermediary lesions to which I have referred; they coincide with other late secondary lesions, sometimes even with tertiary lesions. Suffice it to say that they are more indurated, with very irregular borders, and occur on the back and edges of the tongue. The fissures are deeper and their edges, which are indurated, are composed of hypertrophied papillæ. They never assume the opaline milky aspect of the mucous patch, even when they are of long standing. Usually they involve a considerable portion of the tongue, but do not give rise to an ulcerative process. I have not been able to convince myself that smoking has any influence in their production; certainly, giving up the use of tobacco does not cause them to disappear under treatment any more quickly, and I have seen them in patients who did not use the divine weed.

MEDICINE AND SURGERY IN MODERN WARFARE.*

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It is supposed to be a far cry from the day that Ambroise Paré operated on the field of battle, using heated irons to cauterize the bleeding stumps after amputations, while his patients lay in a dead faint from shock. Today—four centuries later—there are still places "somewhere in France" and "somewhere in Russia" where mediæval surgery holds sway and modern medicine and surgery is an almost unknown quantity. It seems as if cataclysmic upheavals of human passion and greed scatter to the four winds the knowledge that generations of physicians and surgeons have labored to amass.

It has been said by Weiting Pasha that the essential and proper conservation of the health and effectiveness of an army consists in the proper organization and administration of its sanitary service. It would be better to say that the effectiveness of an army is best maintained by the introduction of as much and if possible all of the modern methods that medical science has made available. The results obtained by those who most closely approximate the conditions that are present during peace, indicate most clearly their necessity even in times of war. It should not be considered impracticable when we realize that it has been possible for one nation to carry on an extensive warfare on four fighting fronts and be able to show at the end of almost two years of fighting a mortality of less than two per cent. The nation concerned does not owe this low mortality rate to any special knowledge on the part of its medical service. It is due to the fact that it has made it possible for modern scientific medicine and surgery to be utilized at the front. The higher mortality rate of the other combatants and their neglect of this measure are very apparent.

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When war is declared, it becomes necessary for great bodies of men to be assembled at very short notice at places with which they are unfamiliar. This holds true for the members of the medical profession such as ours who are not required to familiarize themselves with military conditions. It is this unfamiliarity that leads to the belief that military medicine and surgery differ radically from the medicine and surgery of peace. This is not so, and most of the men who have had experience in military medical matters will bear this out. The conditions under which medicine and surgery must be practised are different, and it is these conditions that must be met and overcome before good results can be obtained. A knowledge of urgent surgery is essential on the part of those who are sent to the front as well as the ability to organize one's efforts so as to help the greatest possible number in the shortest possible time. This applies as well to the man in the dugout as to the man who is put in charge of a base hospital miles away from the front. It behooves both to realize that their help may be called upon suddenly for a tremendous number of the injured. Their service should be so organized that help can be readily and efficiently given. This does not apply only to surgical conditions, but as well to medical conditions. Epidemics are the greatest scourges of the war, infinitely more deadly than bullets. There are likewise certain conditions that arise during the war which necessitate special knowledge on the part of the physician. Where he himself cannot supply it, it is his duty to arrange to have access to this knowledge. In England, where compulsory military service was an unknown factor, prominent members of the medical profession have received military rank so that their services might be taken advantage of. Field consultants have been appointed, whose duty it is to go from hospital to hospital, control the work that is being done, and obviate mistakes that may occur. In France as well as in Germany medical congresses are held at the various posts so that men may be made familiar with the newest therapeutics and be taught to watch for unfamiliar conditions.

The organization of new or reserve hospitals is a contingency with which medical men should be familiar. When war is declared, it is invariably found that the number of existing hospitals is far insufficient to meet the demands. It becomes necessary to create new hospitals to take care of the increasing number of wounded and sick. The creation of these new hospitals necessitates likewise the creation of new executive positions. Physicians often entirely unfamiliar with hospital work find themselves confronted with the management and the administration of a large hospital. There is no opportunity even for investigation into a man's ability properly to conduct such a hospital. The hospital is created sometimes under the jurisdiction of the Government, sometimes under the jurisdiction of the Red Cross, most often by the generosity of an individual or group of individuals. Properly to equip such a hospital, realizing at the same time that it is a creation of a few months or of a few years only, is often a difficult problem. The easiest way out of the difficulty is to equip it completely with cheap, but durable apparatus, but it is essential, and this must always be borne in mind, that these hospitals be completely equipped in order that the results may be productive of good.

In Serbia, during the first and second Balkan wars, it was found necessary to convert armories, public schools, churches, and administrative buildings into hospitals. In those in which the equipment was fairly complete the results were good, although it was quite true that there was no reserve hospital in Serbia, let alone a military hospital, that did not suffer from want of equipment.

There are few countries today which are commonly classed as civilized that do not have modern equipment in their larger hospitals. What is more difficult is the creation of a modern hospital out of a preexisting building. In Serbia, at the time of the second Balkan war, some generously inclined individuals undertook to equip a vacant armory as a reserve hospital. After a few days of strenuous work they turned this hospital over to us with a tremendous feeling of pride. To our great astonishment their idea of completeness consisted in equipping the armory with about thirty beds, and 300 straw filled mattresses. The necessity of operating room equipment, of dressing room equipment, of a sterilizing outfit, of a portable dressing carriage within the wards of the hospital, such common things as bed pans and urinals, never seemed to occur to them. The installation of a bath tub for bathing the patients likewise did not seem necessary, although there are some people in Serbia who bathe regularly.

This is what will face many of us should a sudden emergency arise, and this is what the medical profession of America should be prepared for. The best example of what a reserve hospital should be, to my mind, is the American Ambulance Hospital of Paris. A consideration of the work accomplished, considering its inception and organization, demonstrates the necessity for thorough preparation. The ambulance now comprises fifty wards, with 575 beds, but with provision for 625 patients in case of emergency. Two general, one special, and two dental operating rooms have been equipped with the most modern appliances; two x ray plants have been provided, and pathological, research, and dental laboratories have been installed. Sterilizing, disinfecting plants have been constructed, and ultraviolet ray apparatuses for sterilizing the water supply have been initiated on every floor. Six isolation wards have been prepared in a remote part of the building, and fifty rooms provide quarters and dormitories for the surgeons, graduate nurses, orderlies, and ambulance men. In the housekeeping department, the kitchen has been fitted with modern appliances, and has a capacity for supplying meals for more than 1,000 persons. Two mess halls have been arranged and furnished for the working staff. The offices of the various departments occupy fifteen rooms, and fifteen store rooms have been provided for food, and surgical and medical supplies. Workshops have been installed for carpenters, plumbers, electricians, painters, and locksmiths, as well as for cleaning and repairing the clothing of patients, and for repairing house and ambulance cars. The linen department has been provided with every facility for storing and handling clean and soiled linen, and arrangements with the American Hospital have placed its steam laundry at the disposal of the ambulance. A complete system of house telephones has been installed, and extensive work has been carried out in steam fitting, electric lighting, plumbing, gas fitting, installation of bath tubs, glazing, doorhanging, drainage, in fact everything required to transform a partially completed building into a modern surgical hospital. Finally, through the generosity of friends, and the collaboration of the municipal authorities of Paris, the unsightly grounds surrounding the hospital have been converted into lawns and flower beds and made available for convalescent patients and their friends.

The difference between a large, poorly ventilated, badly lighted, unhygienic, comparatively filthy armory, containing 600 beds, if a straw filled mattress can be considered a bed, and the foregoing is apparent, and may be said to mark the difference between medieval war medicine and surgery and modern medicine and surgery.

This brings us to the nursing during warfare. This is one of the most important matters that confront the military doctor in time of war. There are two classes of people that we draw on at such a time for nursing. There are the men assigned by the war office for nursing duty, who are as a rule untrained, not very strong, and not particularly efficient, and on the other hand, the horde of volunteers, made up very often of social butterflies, who are willing enough, but entirely unfamiliar with the drudgery and self sacrifice that nursing demands. The greatest number of the latter class lose interest very rapidly, and those that do not, find their lack of training a handicap that is not easily overcome. Their usefulness is limited very often by their awkwardness and lack of discipline.

In England, Kitchener in the early days of the war refused to permit any but properly trained nurses to be assigned to service at any one of the English hospitals in France. He, likewise, after consultation with the medical authorities, insisted that all volunteers undergo a course of training for at least six months in a base hospital in England before they were permitted to cross the channel. The soundness of this order is apparent today in the decreased mortality rate at the British hospitals on the continent, compared with that of other allies. This is a necessity in preparedness that must not be overlooked, and we sincerely hope that this precaution will be taken on the part of those to whose care the lives of our fellow countrymen are intrusted.

To whom shall this work be given? We are gradually outgrowing the idea that a medical degree is the only qualification necessary for a doctor in war time. We have realized that the soldier is as much entitled to special care, and the very best of care, when he risks his life for his country, as when he falls sick in the less trying times of peace. In fact, it may be said, he is entitled to better care, and that country that does not properly protect him in the event of sickness or injury is undeserving of his sacrifices. To get him off the field of battle quickly, to administer first aid immediately, to place him where the surroundings and care are such that his return to health is expedited, that is our duty.

The ambulance service is a very important item in France. The use of light automobile ambulances in conjunction with the sanitary trains, as well as the use of hospital ships, has greatly facilitated the transportation of the wounded. To go into detail in regard to the equipment of these ambulances would require more space than is possible in a short paper. It may be said in general that they should be equipped to render first aid, as well as to facilitate transportation of the wounded. At the base hospitals, this is comparatively easy of attainment, but at the very first dressing station, the application of modern medical and surgical principles is more difficult. The primitive life of the soldier in the trench as well as in the field, makes it impossible for the surgeon at the first field dressing station to administer anything more than elemental first aid. With a comprehensive arrangement it should be, and often is possible to remove the wounded or sick soldier in a few hours to a second dressing, or, as it is commonly called, casualty clearing station, where he can receive what may be properly termed up to date treatment.

In the English as well as the French army they have instituted mobile laboratories and automobile operating ambulances, making it possible to have as complete an equipment as is necessary for this kind of work. This does not obviously overcome the obstacles to quick removal of soldiers occasioned by continuous fighting. Tuffier has cited a case of a soldier who remained wounded in the woods of the Vosges mountains for eight days without help, and many of us have encountered similar cases.

What is to be done for the wounded is a subject that has agitated the minds of the leading medical men of the combatant nations. The lack of uniformity in treatment has in no small measure contributed to the mortality lists. Sir Almroth Wright and Sir Berkeley Moynihan have both insisted on the necessity of adopting a definite uniform procedure so that a patient may not be subjected to as many different kinds of treatment as the number of physicians he encounters. The following excerpt from the report of the American Ambulance Hospital in Paris indicates somewhat the nature of war surgery:

> The cases treated may be divided into two general classes. First, gunshot injuries; a large majority of which have involved compound and multiple fractures, and, second, gunshot wounds of the face involving the maxillæ, and requiring the intervention of dental surgery. This latter class has greatly increased in number, owing to the unique facilities of the American ambulance for their treatment. The number of patients received during the year ending August 31st has been 2,622, of whom 1,968 have been discharged, cured or improved. One hundred and seventeen have died, and 537 remained under treatment. The death rate has been 4.46 per cent.
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> It would be erroneous to draw conclusions from the foregoing figures, but it may be stated that the chief factor of gravity for the patients has been the infection of their wounds, and that the intensity of infection has been almost absolutely proportioned to the interval of time between the injury and admission to the hospital. During the first half of September, 1914, patients were brought by our own ambulances directly from the battlefield to the hospital; almost all of these recovered with slight infection or no infection at all. The comparison with cases reaching us later on, six days or more after injury, is most eloquent in this respect. One infection in particular, gas gangrene, seems to be chiefly governed by this factor of delay.
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> In general, the patients received at the ambulance have received only first aid, or have undergone operations of an imperative nature before admission; at times, however, when it was necessary to evacuate hospitals nearer the front, patients have arrived who had been under treatment during extended periods. In jaw cases this delay has sometimes been so long as six months, resulting in most difficult conditions in the way of treatment.

There is another surgery that becomes necessary several months after the first casualties, and that is the surgery of repair, which includes the suturing of nerves, operations for late cerebral abscesses, plastic surgery of the face, eyes, and limbs. This is where the necessity for men trained in the specialties becomes very great. War medicine and surgery become then practically special medicine and surgery and the specialist is as much of a desideratum in war as he is during peace.

A Röntgen laboratory is absolutely necessary. It is to be wondered that efficient surgery could ever have been carried out in previous wars without this invaluable aid. Portable x ray laboratories are today a possibility, and no surgeon should attempt surgical relief of fractures or relief for any acute traumatic injury of warfare without having recourse to them. If a skilled röntgenologist is not available the surgeon should familiarize himself with the ordinary technic of screen examinations in order to aid in the localization of projectiles.

The removal of projectiles is still a subject of debate. Some insist that all projectiles should be removed, and base this on the assumption that most projectiles of modern warfare are infected the moment they enter the tissues. Some have even gone so far as to assert that the bullet, despite its rapid flight, does not sterilize everything it comes in contact with. I do not coincide with this view, and the recent researches on the presence of gas bacillus in wounds carried out by Rogers and Benet would seem to substantiate this. They found that shell fragments caused forty-two per cent. of all the wounds that they examined and were responsible for sixty-one per cent. of gas infections, while rifle bullets caused forty per cent. of the wounds and twenty-five per cent. of the infections. Tuffier insists that all projectiles should be removed and the pieces of clothing which invariably are carried in, be taken out. He has been instrumental in introducing the early disinfection of wounds. While this obviates in some measure the necessity for the removal of projectiles, the experience of those who have had occasion to see a great number of wounded soldiers leans toward the rapid and early removal of all projectiles when accessible.

With regard to the disinfection of wounds, the use of Dakin's solution, iodine, peroxide of hydrogen, and carbolic acid has been the subject of extended investigation, and still more extensive criticism. Pierre Delbet insists that the time honored antiseptics are just as capable of producing good results as the new fangled borated hypochlorite mixtures. Sir Almroth Wright would have it that wounds are best treated by the use of hypertonic citrated salt solution. There are others who maintain that the ideal method of treating wounds is to expose them to the air or to the concentrated light of several powerful electric lamps. The safest course to pursue is to use all of these methods. There are some cases that are best treated with strong antiseptics, there are others in which the more recently advocated methods are of great value.

The medical diseases most commonly seen are those produced by infectious agents. Typhus, cholera, relapsing fever, epidemic cerebrospinal meningitis, typhoid and paratyphoid infections, dysentery of the bacillary and amebic forms are most often met with. Weil's disease, now considered to be due to a spirochete, as well as relapsing fever, necessitate the use of the modern arsenical preparations, and the hospital that is not equipped to administer salvarsan or allied products intravenously cannot hope to obtain as good results as those that are equipped. The establishment of a convalescent home is likewise a factor deserving of consideration. Isolation hospitals for venereal diseases and for the highly contagious diseases of war help diminish the mortality rate.

We realize today that just as the aeroplane is a necessary factor in modern strategic warfare, so in the war that medical men carry on against the universal enemy, that medical aeroplane, the laboratory, becomes of prime importance. The Royal Army Medical Corps found it necessary to create mobile laboratories so that the diagnosis of infectious diseases in the trenches is possible at a time and place where its spread over a wide area may be prevented. Dysentery, typhoid fever, cholera, meningitis, all of these are diseases where early recognition is absolutely necessary for proper control. The physician or surgeon has not microscopic eyes. A soldier with colic or diarrhea does not necessarily have to be infected with the bacillus of dysentery, typhoid, or cholera. The unhygienic conditions under which he lives, the irregular ingestion of foods, the poor preparation of this food, all of these may produce an acute indigestion that indisposes only the soldier affected without in any way endangering his associates. Then again we have seen soldiers apparently well excepting for a slight diarrhea, who were responsible for a widespread epidemic costing thousands of lives. If it is impossible for a physician or surgeon to carry out these measures, it is necessary that at least there be some one of easy access who can. The German army have appointed their most noted bacteriologists as consulting hygienists and their mortality rate is the best proof of the wisdom of this step.

In another country men who are very prominent in the field of bacteriology and medical research found themselves, three or four weeks after war was declared, applying bandages, stopping hemorrhages, and administering emetine tablets in the first *poste de secours,* work that any hospital steward or stretcher bearer could do with equal facility.

Several months after war had been declared some of the men who had not been captured and taken prisoners at Charleroi, were sent by a benevolent and all wise ministry of war to take charge of laboratories in which to combat the spread of infectious diseases. We cannot say what might have happened had these men been assigned at the very outset to work with which they were familiar, but the astonishingly good results of today, despite the extensive carnage, indicate that by the introduction of modern methods war has been robbed in a great measure of its horrors. To rob it of all its horror will evidently require much more than Hague conventions or Red Cross banners. We may hope that some day modern medicine and surgery will include war medicine and surgery, but until that time is ripe the only way to minimize the great loss of life and the suffering and unhappiness that war carries in its train is to make the military doctor a modern doctor.

BUSH AND HYDE STREETS.

TREATMENT OF BLADDER AND URETHRAL PAPILLOMATA.

By GEZA GREENBERG, M. D.,
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Within the last five years, rapid strides have been made in the treatment of papillomata of the bladder. Villous growths, which were formerly excised or cauterized either intravesically or suprapubically, and frequently recurred with great severity, are now treated with the most gratifying results by fulguration. Many pathologists look upon vesical papillomata as potentially malignant, and, while a large number of them finally prove to be so, this is not always the case. Some papillomata recur a number of times in the original form and do not metastatize, but produce local irritation with the various sequelæ of inflammation and infection. Death may follow the recurrent type of benign papillomata from hemorrhages consequent on severe ulcerations, or from renal infections when the neoplasms are near the ureters, causing first a hydronephrosis, and later pyonephrosis, renal calculi, uremia, etc. Others undergo malignant changes and metastasis.

Innocent looking villous growths may sometimes be malignant from the very outset, and if a section of such tumors is examined, the superficial layers may show nothing more than a benign papilloma while the deeper layers, which were not removed, may be distinctly carcinomatous. The question arises, therefore, How are such tumors to be dealt with?

Experience has taught us that such lesions recur repeatedly after operation, no matter how painstaking the technic, hence from a surgical viewpoint, all papillomata are potentially malignant, even though they do not metastatize nor cause a systemic intoxication. What should be the ideal way of dealing with such growths, in order to forestall possible recurrence without total extirpation of the bladder and transplantation of the ureters?

Since such radical surgical methods of treatment are not practicable, the safest and most expedient way is to destroy the tumor intravesically by either the Oudin or the d'Arsonval current. While growths were removed before use of the high frequency current by the galvanocautery, the results were not so good. The high frequency rays are extremely penetrating and destructive to the deepest layers of cells, and of the two currents, the d'Arsonval is the more penetrating, and the more lethal to cell life. From its action in the urethra, I have learned that it induces a mild or severe reactive inflammation according to the time of exposure and strength of current; the fibrin resulting from the action of the current on the exuded serum, probably stimulates the fibroblasts to activity, with the result of scar formation. It may perhaps act similarly in the bladder by cutting off its nutritive blood supply. The action of the high frequency current may continue for weeks after its application. I have seen growths disappear in weeks, and in one case, months after the application, which seemed ineffectual at first, had been discontinued. I observed also that it apparently induced a productive inflammation in a syphilitic urethra and stimulated the gummatous growths to greater activity; and the tissues were bathed in pus. In one case, it came from an infected and fistulous Cowper's gland, in another, from a prostatic abscess that discharged freely. It is possible that the persistence of the growths was due to the acrid discharges. The disposition of the tumor is not always the same, nor in all portions of the same growth, i. e., the villous processes dry up and drop off immediately, while the sessile portion shrivels up later.

I had occasion to fulgurate a large fibroid polyp, the size of a walnut, situated at the penoscrotal junction for a number of years. The whole tumor, except the base which was ulcerated and very painful, was fulgurated. Within four weeks, no trace was left. It did not drop off, but contracted to the level of the skin, and no mark was left on the former site. One exposure was sufficient.

Which current is best for the destruction of growths in the bladder? When the tumor is very large, for its greater penetrating action, the bipolar is to be preferred; while for smaller growths, the monopolar may suffice; care being taken not to injure the bladder wall. The action of the d'Arsonval current cannot be so well controlled as the Oudin. For all urethral polypi and papillomata, on the other hand, the Oudin is sufficient. To get the maximum amount of current, it is necessary to use at least a quarter inch spark gap. Be sure that the Leyden jars are well supplied with salt water, and that the sound muffler and the sparking bar are freed from traces of nitric acid by washing them in water. The time of exposure varies with the patient, and the character and size of the growth. The tumor itself is insensitive to the current; the nearer the current to the bladder wall, the greater the pain. The treatment of tumors near the vesical sphincter is often painful, as is also the treatment of urethral growths. Usually, no local anesthetic is necessary for the average case of vesical tumor, unless it is situated near the sphincter. Under such conditions, it is best to anesthetize the whole urethra by injecting either one per cent. of novocaine into the urethra or cocaine 0.25, 0.2, or 0.5 per cent. Quinine urea hydrochloride, five per cent. freshly prepared, may also be used with good results, except that it is irritating at the beginning of injection.

The technic depends on whether the monopolar or bipolar current is applied. In either case, a catheterizing cystoscope is used. Through one of the catheter channels a No. 6 insulated copper wire is passed, the vesical end of which goes to the tumor to be sparked, while the proximal end is connected with the high frequency machine. The current is controlled by a foot switch. We turn on the current after the growth has been located, and apply it directly to every part of the surface until it is thoroughly blanched, when parts of the villi will be seen dropping off. The length of time of exposure will depend on the size and number of villi and the sensitiveness of the neoplasm. The treatment should be repeated once in ten days to two weeks. When the bipolar current is used, in addition to the wire in the cystoscope, a cord should be attached to the other pole of the machine, bearing a metal electrode which is applied to the body, either over the suprapubic region or to the buttocks of the patient. Instead of a body electrode, a rectal one may be used. This is more effectual than the former, particularly when the growth is near the sphincter. Special catheters are provided, with sufficient insulation, through which a wire is drawn and which terminate in a blunt point which does not injure the bladder wall. This, however, can be used only with the d'Arsonval current. When fulgurating, we always endeavor to get at the base of the tumor. In some of the large growths, this is impossible until we dispose of the superficial parts. The further the growths from the sphincter, the easier it is to destroy them. When situated at the sphincter, it may be impossible to reach them by the ordinary cystoscope, and under such circumstances, it is best to use a cystoscope with the fenestrum on the convex side of the beak, which may at times be utilized for the posterior urethra immediately in front of the sphincter. When a papilloma is so placed as to be absolutely inaccessible by ordinary cystoscopic methods, then it must be operated on by the open method, using the d'Arsonval current through the suprapubic opening.

It is still too early to state positively whether recurrences will be common after this treatment, and if they are, whether the malignant changes will be as apt to recur as after the old method of treatment. The reports of most of the urologists in this country are somewhat encouraging. Of six cases of vesical papillomata treated by me in the last four years, I have been able to follow up two.

Case I. Mr. L., forty-eight years old, came to me in March, 1912, with hematuria, pyuria, frequent urination, and dysuria. Cystoscopy showed a cauliflower excrescence near the left ureter, and a smaller one at the left upper quadrant of the sphincter vesicalis. The latter was richly supplied with distended loops of bloodvessels resembling an angioma. I first applied the Oudin current with no greatly encouraging results. Under the d'Arsonval current, the tumor disappeared completely after six applications. I then turned my attention to the other growth, which bled easily. Since the base of it was high up, behind and above the sphincter, not at all accessible, I advised operation. On opening the bladder, a small papilloma with a broad base was burned off with the cautery. On inspecting the bladder, no trace of the other tumor was seen. The patient made an uneventful recovery and was free from symptoms for three and one half years after the operation. At the end of this time, he returned with the following symptoms: Intermittent hematuria, difficulty of micturition, frequency of urination both diurnal and nocturnal. Cystoscopy now showed a large curtain overhanging and almost completely occluding the internal urethral orifice. It consisted of numerous villi. The base was at the left upper quadrant; the same site as the first one for which he was operated on, but the one which was fulgurated did not recur. Besides, there was a mild irritating cystitis due to incomplete emptying of the viscus. Under the d'Arsonval treatment, all the symptoms, together with the growth, disappeared.

Case II. H. B., of Summit, N. J., forty-seven years old, German, presented himself for pain in the left lower quadrant of the abdomen a little to the left of the hypogastrium; he also had pyuria. Cystoscopy showed a large, suspicious looking villous growth, with a very broad fleshy base, completely occluding the left ureter, so much so that the ureter could not be seen. The bladder itself was not infiltrated; the urine from the right kidney was perfectly clear and normal; the left could not be catheterized. The prostate was slightly enlarged, but not indurated. His left epididymis had been in a chronic state of inflammation for about six months. Wassermann negative. By eight treatments with the d'Arsonval current, the superficial villi down to the base disappeared. I then lost sight of the patient until a year later, when I could, for the first time, see the left ureter, which was large, patulous, and discharging pus. There was no trace of any tumor left. As a result of the long continued ureteral obstruction, he had, first, a hydroureteronephrosis, later a pyoureteronephrosis. I examined him again, about two and one half years after the fulguration treatment, and still found no signs of recurrence. At the beginning, he was rather discouraged with the slow progress of the treatment. He discontinued the treatment and still the retrogression of the growth continued until its complete disappearance.

When treating papillomata in the urethra, we must be extremely cautious with the strength of the current, on account of the great likelihood of stricture formation. We always use the Oudin for the urethra. I have seen a well defined stricture develop in the navicular fossa three weeks after fulguration.

From these and many other cases reported by others, we can deduce the advantages of this over the old methods of treatment. Some urologists even report the disappearance of papillary carcinoma of the bladder under its influence. I believe that in some cases of inoperable carcinoma, it should be used to check hemorrhage. Others again have reported its good effects in removing a median prostatic bar.

Whether or not it is more curative than the open operation, it has asserted its superiority over the old method, in that it is just as radical with more conservatism, and the recurrences can be easily treated by the same process without seriously interfering with the patient's following the pursuits of his life. Some urologists in a few cases report hemorrhages to follow this mode of treatment. In my cases, I have not seen any alarming hemorrhages. I generally put patients to bed if there is bleeding, and in all cases as a routine, whether there is bleeding or not, I order cotarnine hydrochloride, three quarters grain, combined with fluid extract of ergot half to one dram, three or four times a day.

120 East Thirty-fourth Street.

AN INVARIABLE BLOOD STAIN.

Some Further Studies,

By B. G. R. Williams, M. D.,
Paris, Illinois.

So many good blood staining formulæ have been suggested to the profession that other methods seem to be uncalled for. However, about three years ago I (1) did propose one more stain and staining method, feeling justified for the following reasons:

1. The application of several dyes is a nuisance because of the necessary use of so many washing solutions, care in watching staining time, and the introduction of so many sources of error because of the complex technic.

2. The formulæ (Ehrlich's, Wright's, etc.) which fix and stain nuclei, cytoplasm, and granules, are easily applied, but do not give constant results. This criticism has been challenged, but I have witnessed poor stains where the worker was skilled and the solution properly made. It is a frequent observation that the more experienced the worker, the greater the number of failures. When the practical examination is approached, and especially if the number of blood spreads is limited, we need a method which is simple and yet invariable. We desire a technic and a solution which cannot fail, and which, regardless of the skill of the worker, will give usable results.

There are many hematoxylin and eosin combinations which are good, and this method is not stated by me to be original, except that after a study of eight years, I have finally hit upon a formula which seems to me to accomplish results which have never been realized before. The advantages over other methods are:

1. The technic is simple.
2. It is rapidly completed.
3. It gives results which are sufficient for diagnostic purposes.
4. It gives these results invariably.
5. It is practically impossible to overstain. No timing of the staining and washing is necessary. It is, in fact, a lazy man's method, but it is at the same time a busy man's method and no less valuable because of this fact.

PREPARATION OF THE INVARIABLE STAIN.

The hematoxylin used by me is the Ehrlich formula, which is made up as follows:

Mix:

Hematoxylin,	2
Acid, acetic, glacial,	10
Glycerin,	100
Alcohol, absolute,	100
Water, distilled,	100
Alum, potassium (an excess).	

Stop the container with a poorly fitting cork to permit some air to enter. Set aside for three to four months to let it ripen. Make certain that an excess of alum powder is present, and shake occasionally. Finally, filter the mixture.

The invariable stain is made up by adding to this filtrate, 0.1 gram of water soluble eosin. When this is dissolved, the mixture is ready for use.

FIXING THE SPREADS.

The invariable stain is not self fixing. Inasmuch as fixing provides perhaps the only source of error, I am inclined to place more emphasis upon the directions for fixing than upon the staining technic.

I use the alcohol-flash method of fixation, though it is possible that other good methods may answer.

First of all, light a burner, as this provides for prompt ignition of the alcohol. With a suitable forceps, seize the slide and hold with film face upward. Quickly cover the film with absolute alcohol and shake off excess by a quick movement. Immediately ignite the alcohol in the flame. Remove from the flame and move it from side to side through the air, in order to hasten the evaporation and the burning. The burning should not continue after about five seconds, but should practically flash. If the ignition is prompt and the alcohol absolute, no injury will be done to the film by either the heat or the alcohol. (If the spreading has not been properly carried out, but the films are too thick, they will soak up the alcohol and it will not flash.) When completed, the spread should be dry and perfectly fixed.

USE OF THE STAIN.

The directions are simple. After the slide cools, place it in a Coplin jar which has been filled with the invariable stain. After about fifteen minutes, the spread is stained, although better results are often obtained if it remains in longer; it will not be overstained by leaving in the mixture for several hours or days. Wash in water and dry by standard methods. The staining solution may be used indefinitely by adding to it from time to time, and keeping it covered to avoid evaporation.

RESULTS.

The picture is that given by any hematoxylin and eosin method. The nuclei are stained deep blue and the nuclear figures contrast nicely. The various granules take their respective tints. The results are satisfactory for all diagnostic purposes. I have not used the method for staining plasmodia. By the use of this stain, it is easy to diagnosticate the various anemias, leucemias, eosinophilias, and so on. Differential counting is much more satisfactory than with Wright's because of the excellent nuclear staining. The formula fills practically every qualification demanded of any blood stain.

It is not difficult to make up the staining solution, but when desired it may be secured ready for use from two large optical companies or from jobbers.

REFERENCE.

1. B. G. R. WILLIAMS: *Journal A. M. A.*, November 1, 1913.

Contemporary Comment

The Increased Cost of Living.—It costs far more to practise medicine today than it did ten years ago. In the first place, the cost of living has doubled. Today the automobile is almost a necessity in general practice to give the quick service which the public demands. And to cap the climax comes the inflated cost of drugs—a serious consideration for the physician who dispenses.

Yet in many counties in this State, gloomily remarks the *Journal of the Medical Society of New Jersey* for September, 1916, medical practitioners are working for the same scale of fees their grandfathers worked under fifty years ago—when eggs were ten cents a dozen and garage charges were unknown.

Disease Dangers of War with Mexico.—The *Maryland Medical Journal* for September reprints from the *Journal A. M. A.* for June 24, 1916, the following comments: "Today these problems should be considered again. The State militia is mobilizing; large bodies of men are already being concentrated in camps, and soon, perhaps, some will be moving to the Mexican border, if not into Mexico. The guarding of the border is likely to be the duty which will fall particularly to the militia and less trained troops. Actual invasion, if it should come, will no doubt devolve on the regular army. Typhoid and smallpox vaccination have practically removed the menace to life from these diseases under military conditions. The militia, however, has not been immunized against typhoid even approximately to the extent that the regular army has been vaccinated. The danger from dysentery, which is still a menace to men in army camps, has been materially lessened through improvements in the preservation and protection of foodstuffs and through increased facilities for the transportation of supplies. Amebic dysentery may be prevented by strict supervision of water supply and filth disposal. The use of emetine in the treatment of this condition will aid in rapidly eradicating such cases as may occur. Malaria and yellow fever, conquered through eradication of the mosquito and prevention of mosquito bites, are no longer to be feared. Cholera, preventable by cleanliness, and typhus fever, the scourge of Mexico, also have been studied, and their prevention can be accomplished by the enforcement of adequate sanitary regulations.

The sanitation of camps has developed into a science. American investigators—many of them officers of the Medical Corps of the United States Army and of the Public Health Service—have led the way, and may be depended on to carry out these measures to the fullest extent. Typhus fever is particularly a Mexican problem. It has been a factor in the present European war, and the measures instituted abroad show how completely it may be controlled. Much has been said in connection with the European war of gas gangrene, tetanus, and secondary wound infection. The frequency of these infections has been attributed to the cultivation of the soil in the region in which the war is being conducted. If this is the cause, this condition is certainly not to be feared in Mexico. Much of the warfare in Europe has been trench warfare, and diseases peculiar to this method of warfare have frequently been discussed. The problem in Mexico would appear to be a different one. In any event, it hardly seems likely that the old saying that 'disease kills more men than bullets' will hold true.

We can be sure that American medical officers of every branch of the service will do all that is humanly possible to protect our soldiers in the field. As a result of their service, the American soldier will be safeguarded so that the maximum number of efficient fighting units will be continually available to those concerned with the action of troops at the front."

Is India's Caste System Doomed?—Maeterlinck, according to the *Lancet-Clinic* for September 9, 1916, termed his automobile "that dreadful hippogriff." The miraculous beast has shortened space and time, "the two great enemies of mankind." But this is as nothing compared to its effects on a system which has held one tenth of the human race in a grip of steel. Reference is made to India's caste system. According to latest advices from Calcutta, the automobile is making it practically impossible for people to flaunt their standing by elaborately decorated equipages, since motor cars look very much alike, regardless of ownership. Despite innumerable attacks on the long domination of the Brahmans, the ineradicable effect of the Sepoy mutiny on the inhabitants, the abolition of the suttee, the influence of British administration on the thought of India's millions, it was left to "that dreadful hippogriff" to accomplish what great world movements failed to do. No matter what destructive tendencies have been charged to the fabulous winged animal, its effect on the abolition of the caste system in India entitles it to the gratitude of mankind.

The Medical Knowledge of Cervantes.—In last week's issue, observes the *Boston Medical and Surgical Journal* for September 7, 1916, we commented editorially on certain medical aspects of Shakespeare's genius, and briefly reviewed some of the recent literature bearing upon this subject. It should not be forgotten that this year is the tercentenary of the death of Miguel de Cervantes Saavedra, to whose great power we owe, in Don Quixote, a character almost the equal of Falstaff, and whose interest in medicine is reflected in many passages of his great work. Doubtless in his case this interest was partly hereditary, for Rodrigo de Cervantes, his father, was a surgeon apothecary. Miguel himself, born in 1547, entered the Spanish navy, then the most powerful in the world and offering to young men an attractive career of adventure. It is narrated of him that at the battle of Lepanto he lay ill of a fever aboard his ship, the *Marquesa*, but insisted on going above to fight. He received two gunshot wounds in the chest, and a third which permanently disabled his right hand. Perhaps his personal surgical experience at this time, and later as a Moorish captive, further increased his knowledge of the medical profession, upon which many Spanish authors have written.

Editorial Notes and Comments

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EPILEPSY AS A BAR TO MARRIAGE.

A case has recently been decided in the Supreme Court of Bronx County which is of particular interest to physicians. In this case, Elser *versus* Elser, the husband sued to annul the marriage upon the grounds that the defendant was physically incapable and that he was induced to enter into the marriage contract by her fraud in concealing from him that she was an epileptic. It was conceded that the defendant was at the time of the marriage and has since been afflicted with epilepsy. As to the first ground urged, it was shown that the exercise of the matrimonial function induced on the part of the wife paroxysms or convulsions symptomatic of the disease, and that this made copulation abhorrent to her and unsatisfactory to him, and thus lessened its frequency. In commenting on this particular phase of the case Mr. Justice Mullan said: "But as copulation was possible, no more need be said on that subject. As to the charge of fraud, I find there was none. I had a physician called to examine the wife, and he testified that statistics show that in about sixteen per cent. of epileptic cases covered by the records from which the statistics were compiled, the taint was inherited. The plaintiff's counsel urges that public policy requires an annulment decree in order to prevent the coming into the world of progeny tainted by an epileptic strain, but we have not as yet come to that refinement of civilization." The case was therefore dismissed without costs.

In the brief submitted by Charles S. Levy, counsel for the defendant, the decision in the cases of Gould *versus* Gould is cited (78 Conn. 242, page 266), in which the court says: "But no one has yet dreamed that the limits of this field of protective legislation can be extended beyond the citizens of today so as to embrace the citizens of all future generations." As the learned counsel remarks, "at present we have no remedial legislation in this State on the question of marriage which would raise the standard of children born in lawful wedlock. The question of eugenics is one for future legislators."

In the State of Connecticut it is illegal for epileptics either to cohabit or to marry, cohabitation without marriage rendering them liable to twenty years' imprisonment, while the marriage of epileptics, when the woman is under the age of forty-five years, renders the parties liable to imprisonment for not more than three years. We believe that Connecticut is the only State which takes cognizance of epilepsy in its relation to progeny. In New York State, as in other States, the concealment of communicable disease may under certain circumstances be considered ground for annulment of the marriage contract. In the communication which we publish on page 529 by Dr. Charles A. L. Reed, of Cincinnati, evidence is adduced that epilepsy is an infectious disease, though it has not hitherto been so classified. Should this contention of Doctor Reed be accepted it would have an important bearing upon any such case as that cited above. At present the courts are inclined to demand much stronger evidence to annul a marriage than is required to break ordinary forms of contract, and are averse to granting annulments for any cause except inability to perform the marriage functions. The comments in the case of Gould *versus* Gould, and the arguments submitted by the counsel in the foregoing case indicate a tendency toward recognizing eugenics as a factor in determining cases involving the domestic relations. As aptly said by Mr. Justice Mullan, "we have not as yet come to that refinement of civilization" which will justify the annulment of marriage because of the risk of producing unfit progeny, yet the trend of legislation is toward recognition of the welfare of the community as paramount to privileges and even rights of the individual.

THE SCHOOLROOM AND CONTAGION.

The schools open on September 25th; two million children in the State of New York are again to be confined within four walls. For five hours a day children in classes of thirty to sixty-five are to be brought in close contact and forced to endure rebreathed air. In most classrooms ventilation is poor; in some schoolhouses ventilating systems, theoretically good, have been installed, but through faulty planning or careless supervision the air is often vile. We recall that such was once the case even in an up to date normal school in Connecticut, where a $30,000 ventilating plant duly installed failed to function owing to the employment of an ignorant janitor's assistant.

Thus far bacteriologists and health officers have failed to convince the medical profession that anterior poliomyelitis is ordinarily spread by personal contact. Moreover, if there has been a true epidemic this summer, it is now at an end, and besides, children of the school age are in general immune to the disease. The real danger to children is from contagious diseases such as measles, scarlet fever, diphtheria, mumps, chicken pox, and especially the common cold. If school authorities take pains to see that teachers, superintendents, and head masters, the teaching force in general, and janitors of school buildings, are instructed in the necessity and method of providing effective circulation of clean air without causing drafts, not only will danger from contagion be minimized, but the working power of teachers and pupils will be greatly amplified. Probably one half the common nervous fatigue of teachers and most of the inattention and lack of interest of pupils is due to the stagnant, dusty, and too dry air of the schoolrooms. Whenever schoolrooms are badly ventilated and contagion results, in these days of enlightenment it is a question whether school boards may not be held, not only socially and morally at fault, but also legally and pecuniarily responsible for disease spread among children.

It has been clearly shown in many schoolrooms in the State of New York that an expensive system of ventilating is not necessary. A double layer of loose muslin cloth stretched over ordinary fly screens in the windows of the schoolroom is all that is needed to provide an ample supply of fresh air, without causing drafts. (See Dr. John B. Todd, Ventilation, this Journal for April 18, 1914, p. 785). This method of ventilation was adopted years ago most effectively in the Children's Hospital in Albany and elsewhere, and for a quarter of a century has been in use in many of the summer camps where contagious diseases are almost unheard of. Fine copper mesh screens in double layer are even more effective.

It has been conclusively proved in the French army that contagious diseases have decreased among armies in time of war to one third the number in time of peace. This is attributed to open air life and hyperoxygenation. In view of the justifiably critical attitude assumed by parents toward the negligence of school authorities and boards of health concerning ventilation, we look with interest to see what immediate action may be taken by the authorities to meet contagion in the schools.

REGULATION OF BODY TEMPERATURE.

Few problems in human physiology are of greater importance than that of the factors which combine to maintain body temperature at a nearly constant level irrespective of its surroundings. Few physiological problems, also, have proved more difficult of complete solution, and the sum of our accumulated knowledge leaves us incompletely satisfied. The study of thermal regulation in various classes of animals reveals all gradations, from the purely cold blooded, having a temperature essentially the same as that of their surroundings, through the hibernates to the nearly perfectly homothermal animals like man and the majority of mammals. The data derived from such studies afford interesting confirmatory evidence in support of the theory of evolution.

That there is no essential cellular difference between the several types of animals is shown by the fact that the individual cells of warm blooded animals respond to temperature changes in exactly the same way as do those of cold blood. It is, therefore, some difference in the organism as a whole which accounts for the homothermal character of the warm blooded animals. We have been able to discover the possible sources of the heat in these animals with relative ease and know them to be the combustion of nutrient materials during digestion and the functional activity of the several organs, chiefly the muscles. The loss of heat, we also know, is largely dependent upon the state of the peripheral capillaries and the activity of the sweat glands. The mechanism, however, by which these two prime factors—heat production and heat loss—are coordinated for the maintenance of a uniform body temperature remains somewhat obscure. M. S. Pembrey (*Lancet*, August 5, 1916) in discussing this subject points out that the homothermal animals cannot be distinguished from the cold blooded through the development of any special nervous structure for the regulation of temperature and says that we have no satisfactory evidence of the existence of special heat centres. He attributes the regulation of temperature to the nervous control over the muscles and glands and an increased sensitiveness to thermal change.

This view certainly offers a seemingly simple explanation of the problem and is supported by many clinical and experimental observations. Thus, muscular activity increases the temperature and the opposite condition lowers it. The effect of deep anesthesia is cited as supporting the view, but, as it reduces the animal to a state in which he responds to external temperature changes as does a cold blooded one, it seems necessary to demand some further explanation than the mere abolition or depression of glandular and muscular activity. The most logical explanation of this and other phenomena seems to be a depression of some central nervous mechanism which is normally sensitive to thermal changes or to their chemical results, and which acts as a coordinating and regulating centre presiding over the two opposed functions of heat production and heat loss. Such a view is strongly supported by the studies of Barbour and his associates (*Jour. Pharm. and Exp. Ther.*, v. 105, 1913, and vi. 1, 1914). This view, however, is not to be taken as necessarily implying the existence of any anatomically recognizable structure and, therefore, is not at all in conflict with the earlier statements we have cited.

VITAMINES AND BODY GROWTH.

The study of the vitamines is proceeding apace and our knowledge on the subject is forming into definite shape. According to Dr. Marvin D. Shie (*Medical Press and Circular,* August 23, 1916), who wrote concerning the effect of vitamines on body growth, the deficiency diseases, owing presumably to the absence or to the lack of vitamines in the diet, include osteomalacia, rickets, pellagra, beriberi, and scurvy. Probably many diseases will now be classed to a greater or less extent among the deficiency diseases. Shie points out, indeed, that recent researches have shown that scurvy is only one of a group of diseases which are induced by deficiency in the food of certain substances, minute in amount, but essential for proper nutrition. These substances are the vitamines. There are many articles of diet, such as potatoes, carrots, fresh vegetables, lime and other fruit juices, also certain animal foods, e. g., fresh milk, fresh meat, and yolk of egg, which are not only valuable for their nutritive constituents, but for their content of vitamines.

Dr. Carl Voegtlin is pursuing some valuable investigations along these lines into the causation of pellagra at Spartanburg, S. C. His researches and those of his coworkers have led to the belief that pellagra is due to a deficiency of vitamines. These investigations are still under way, however, but it may be anticipated that further work in this direction will result in considerably more light being thrown upon an extremely interesting subject and one of the greatest importance. Experiments by numerous workers in this field, and especially by Funk, have demonstrated beyond a peradventure that animals fed on certain diets, on foods deficient in vitamines, do not grow normally, but that when the vitamine element is introduced into the diet, growth becomes normal. Absence of fat in the diet causes suspension of growth in animals, but, as Shie points out, it is not the absence of fat *per se* that causes this suspension, but the absence of the vitamines in solution. Mendel and some others hold that there are several vitamines, one for the maintenance of health, one for growth, another for curative measures, and so on. Funk, however, denies this, and bases his opinions upon experimental investigations into birds. There is no more fascinating study and, at the same time, one of more practical value than that of the vitamines. By a thorough knowledge of them probably many diseases may be prevented and many others cured. It is becoming more and more evident every day that diet scientifically planned plays a great part in the attainment and preservation of health, and consequently in the prevention of disease.

A MEDICAL VIEW OF INSANITY BY A LAWYER.

We are frequently brought up abruptly against the radically different viewpoints of the physician and the lawyer in regard to mental disorder. Often, for instance, we are asked the question by one of the legal fraternity, "Is So-and-So insane?," an absolute positive or negative reply being expected, with no modification. Should the reply be in the affirmative, it is assumed that the subject must be immediately taken into custody, locked up, and henceforth have no rights or privileges which others are bound to respect. Such at least seems to be the theory under which most of the laws dealing with this subject are drafted.

It is refreshing in a recent article by a lawyer. Mr. F. A. Fenning (Protection of the Person and the Property of the Insane, *Case and Comment,* May, 1916), to find a distinctly different attitude toward the mentally ill. He speaks, for example, of the "hospital conception" of insanity, meaning that the insane person is first, last, and all the time a sick person who needs treatment. He speaks of the regulations in some jurisdictions which place the early handling of mental cases under the health authorities, in keeping with the theory that the insane person is sick, and not a criminal. This is also a recognition of the fact that the first dealings with the disordered mind are of the most profound importance, and future ministrations are inestimably helped or hopelessly retarded by the nature of the attention given the patient in the early stages of his illness. It is a matter of common experience that the public court proceedings which feature nearly all commitments of mental cases, serve no real purpose, harass and humiliate the patient's relatives, and often have a pronounced ill effect on the patient himself.

The chief points made by Fenning are that the mentally ill person should be allowed to enter the hospital voluntarily on application, that he should be spared the humiliation of appearing in open court and being tried by twelve laymen, and that, after he has been entered in a hospital his estate should be administered in a manner harmonious with his best interests. Certainly from a medical point of view we can approve these contentions, and we hope that the future will see the medical and legal professions more and more in accord on this subject.

LONGEVITY AMONG OUR PRESIDENTS.

An anonymous letter to the *Lancet* for September 2, 1916, discussing longevity among great men, recalls that the longevity of the Presidents of the United States is remarkable. Their ages were as follows: 67, 90, 83, 85, 73, 80, 78, 79, 68, 71, 53, 65, 74, 64, 77, 56, 66, 63, 70, 49, 56, 71, 67, 58 years. Those at fifty-six, forty-nine, and fifty-eight were respectively, Lincoln, Garfield, and McKinley, who were assassinated. The ages of these twenty-four men totalize 1,663 years, or an average of sixty-nine years each, showing, as is believed, that the stress and responsibility of leadership seem to have no effect on longevity. The following causes of death are those popularly accepted: Washington, pneumonia (more correct accounts state edematous affection of the windpipe or membranous croup); J. Adams, debility; Jefferson, chronic diarrhea; Madison, debility; Monroe, debility; J. Q. Adams, paralysis; Jackson, consumption and dropsy; Van Buren, asthmatic catarrh; Harrison, bilious pleurisy; Tyler, bilious attack (with bronchitis); Polk, chronic diarrhea; Taylor, cholera morbus and typhoid fever; Fillmore, debility; Pierce, dropsy and inflammation of stomach; Buchanan, rheumatic gout; Lincoln, assassination; Johnson, paralysis; Grant, cancer of the tongue and throat; Hayes, paralysis of the heart; Garfield, assassination; Arthur, Bright's disease, paralysis, and apoplexy; Cleveland, debility; B. Harrison, pneumonia; McKinley, assassination.

News Items

Changes of Address.—Dr. Cary Eggleston, to 412 West End Avenue, New York.

Medical Education of Women in Scotland.—Miss S. E. S. Mair and Mrs. A. M. Chalmers Watson, on behalf of women medical graduates, students, and their friends, have offered to pay to the Edinburgh University $20,000 for the medical education of women.

Prevalence of Poliomyelitis in the United States.—Reports received by the United States Public Health Service, in Washington, D. C., show that the undue prevalence of infantile paralysis is limited for the most part to New York city and communities in the vicinity. The disease has not spread to any great extent in epidemic form, many States even reporting fewer cases this year than during the corresponding period in 1915.

The New United States Pharmacopœia.—Although unbound copies of the ninth revision of the *United States Pharmacopœia* were sent out to the press in July, bound copies were not delivered until about September 14th. The publishers, P. Blakiston's Sons & Company, of Philadelphia, have promised early delivery on all orders which have been placed with them. Notwithstanding the fact that copies were not obtainable, the work became the legal standard on September 1st.

The National Formulary.—A new edition of the *National Formulary*, the fourth, has just been issued by the American Pharmaceutical Association and under the National Food and Drug Act has become the legal standard for the articles and drugs named in it. The propaganda committee of the New York State Pharmaceutical Association has issued a select list of abstracts from the new pharmacopœia and the new formulary which are being distributed to physicians through the members of that association.

The Fourth District Branch of the New York State Medical Society held its tenth annual meeting in Plattsburg on August 24th, under the presidency of Dr. J. B. Ransom, of Dannemora. Over seventy-five members attended and the meeting was of unusual interest. The following officers were elected: Dr. Leo H. Finch, of Amsterdam, president; Dr. T. A. Rogers, of Plattsburg, first vice-president; Dr. R. A. Hutchins, of Ogdensburg, second vice-president; Dr. F. J. Ressenguie, of Saratoga, secretary; Dr. G. H. Oliver, of Malone, treasurer.

The American Pharmaceutical Association held its sixty-fourth annual meeting at Atlantic City, N. J., September 5th to 9th. Dr. Solomon Solis Cohen, of Philadelphia, a member of the committee of revision of the United States Pharmacopœia, delivered an address on The Physician and the Pharmacopœia. The session was presided over by Dr. W. C. Alpers, of Cleveland, president, who created a sensation by criticizing severely the financial management of the association. Doctor Alpers will be succeeded by Dean Wulling, of the school of pharmacy of the University of Minneapolis. The association will meet next at Indianapolis at a time to be selected.

Personal.—Dr. Hermann M. Biggs. State Commissioner of Health of New York, is in Rochester, Minn., where it is reported that he will undergo an operation for some abdominal lesion at the Mayo Clinic.

Dr. Albert A. W. Ghoreyeb, teaching fellow in pathology, Harvard Medical School, will deliver a course of fifteen lectures on first aid before the Women's Educational and Industrial Union of Boston. The first ten lectures will cover the subjects outlined by the first aid department of the American Red Cross.

Dr. Herbert R. Brown, assistant director of the Massachusetts State Department of Health, has accepted the position of pathologist to the Rochester Homeopathic Hospital, Rochester, N. Y.

Dr. William G. MacCallum, professor of pathology at Columbia University, who has been traveling since February, will return to New York this month. During his trip he visited, among other places, Honolulu, Fiji, New Zealand, Java, Borneo, and Sumatra, devoting some time to a study of the diseases prevailing in those countries.

Dr. A. D. Bush, of the department of biology of Olivet College, Olivet, Mich., and author of a valuable series of articles on modern treatment now appearing in the NEW YORK MEDICAL JOURNAL, has been appointed head of the department of pharmacology and therapeutics of the University of Southern California.

Dr. Charles W. Pilgrim, superintendent of the Hudson River State Hospital, has been appointed president of the New York State Commission in Lunacy.

University of Pennsylvania Hospital to Receive the Jeannes Fund.—Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, Baltimore, who was selected by the trustees of the Jeannes Fund to go to Philadelphia, make a survey of its hospitals and medical work, and give them his opinion as to where the money would be of the greatest benefit, has recommended that it be given to the University of Pennsylvania Hospital. The fund, which amounts to more than $3,000,000, is the estate and its increment of Anna J. Jeannes, a noted Friend philanthropist, who died in 1908. According to the terms of her will the money is to be used for the treatment of cancer, nervous diseases, and disabling disorders.

United States Public Health Service.—Congress has recently made an appropriation for thirty-three additional assistant surgeons in the United States Public Health Service. These officers are commissioned by the President and confirmed by the Senate; the tenure of office is permanent, and successful candidates will immediately receive their commissions. After four years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon; passed assistant surgeons, after twelve years' service, are entitled to examination for promotion to the grade of surgeon. Assistant surgeons receive $2,000, passed assistant surgeons $2,400, surgeons $3,000, senior surgeons $3,500, and assistant surgeons general $4,000 a year.

Cases of Poliomyelitis According to Age Groups.—Statisticians of the Department of Health of the City of New York have completed a survey of the cases of poliomyelitis by age groups, which have been reported since the outbreak of the epidemic. Of the 7,496 cases under consideration, 751, or 10 per cent., were found among children under one year of age; 5,662, or 75.5 per cent., among children between one and 5 years; 812, or 10.8 per cent., among children from 6 to 10 years; 142, or 1.9 per cent., among children between 11 and 15 years, while 129, or 1.7 per cent., among persons of more than 16 years of age. Children between 2 and 3 were most often the victims. There were 1,714 of these. Of children from one to 2 years old, 1,541 were victims, while those from 3 to 4 years numbered 1,278. Children from 4 to 5 years of age numbered only 618.

New Tuberculosis Directory.—Announcement is made that a revised edition of the Tuberculosis Directory compiled by the National Association for the Study and Prevention of Tuberculosis is ready for distribution. The present book of 421 pages records more than twice the number of activities included in the previous volume. The 1911 edition listed 1,500 agencies, while the present edition contains record of more than 3,100 different organizations and institutions engaged to a greater or less extent in antituberculosis work.

The following table, which is included in the introduction to the directory, gives a brief summary of the present status of the campaign in the United States:

Sanatoriums, hospitals, and day camps for the treatment of tuberculosis	557
Boarding houses for consumptives in health resorts	158
Hospitals for the insane making special provisions for their tuberculous patients	90
Penal institutions making special provision for their tuberculous inmates	35
Dispensaries, clinics, and classes for the special treatment of tuberculosis	455
Open air schools and classes for children	310
Associations and committees for the study and prevention of tuberculosis	1,324
	2,929

In addition the directory lists the following number of Canadian institutions and associations: Sanatoriums, hospitals, etc., 35; dispensaries, 14; associations, 109; total, 158.

A copy of the directory will be sent post paid on receipt of the price, 60 cents. Address request to the National Association for the Study and Prevention of Tuberculosis, 105 East Twenty-second Street.

Ohio Valley Medical Association.—Plans are being made for the annual meeting of this association, which will be held in Evansville, Ind., on November 15th and 16th. Among the speakers will be Dr. J. H. Kellogg, of Battle Creek, Mich., Dr. Curran Pope, of Louisville, Dr. Martin Fischer, of Cincinnati, Dr. William Schimer, of Indianapolis, Dr. J. Rawson Pennington, of Chicago, and Dr. W. F. Bogges, of Louisville. Dr. G. M. Young, of Evansville, is president of the organization, Dr. B. L. W. Field is secretary, and Dr. J. C. McClurkin is chairman of the committee of arrangements.

Changes in the Medical Faculty of Boston University.—The following changes in the faculty of the school of medicine of Boston University have been announced: Dr. Samuel A. Clement, instructor in contagious diseases; Dr. Alberta S. Guibord, instructor in psychoanalysis and psychotherapy; Dr. Francis H. MacCarthy, clinical instructor in diseases of children; Dr. Howard Moore, lecturer in orthopedics; Dr. Elizabeth Ross, lecturer in bacteriology; Dr. Helmuth Ulrich, lecturer in hematology; Dr. Frank C. Richardson's title on the faculty has been changed from professor of neurology and electrotherapeutics to professor of nervous diseases; and Dr. Alonzo G. Howard has been made full professor and the head of the new department of orthopedic surgery, with Dr. Howard Moore as lecturer.

Medical Society of the Missouri Valley.—The twenty-ninth annual meeting of this society will be held in Omaha, under the presidency of Dr. John P. Lord, Thursday and Friday, September 21st and 22d. An interesting program, both scientific and social, has been arranged. Among the guests are Dr. Jabez N. Jackson, of Kansas City, who will deliver the address in surgery; Dr. Walter N. Bierring, of Des Moines, who will give the address in medicine; Dr. Robert H. Babcock, of Chicago, who will read a paper on Bronchial Asthma; Dr. C. W. Hopkins, chief surgeon of the C. & N. R. R., who will read a paper on First Aid to the Injured; Dr. Fred Moore, medical superintendent of public schools in Des Moines, who will read a paper on Acidosis in Children, and Dr. R. T. Vaughan, of Chicago, who will give an illustrated lecture on Cartilaginous Exostoses. The complete program contains twenty-three papers to be read and discussed. Dr. Charles Wood Fassett, of St. Joseph, is secretary of the society.

Vital Statistics for the Month of July.—Despite the epidemic of infantile paralysis, the death rate in Manhattan and the Bronx was lower during July this year than during July last year. In the other boroughs the deaths from poliomyelitis were so numerous that they not only offset the reduction in the mortality of the other diseases, but raised the death rate above that of last July. The mortality of the following diseases was lower during that month than during July, 1915: Typhoid fever, measles, scarlet fever, diphtheria, other epidemic diseases, all forms of tuberculosis, cancer, heart disease, and diarrheal diseases. Particularly noteworthy was the reduction in the mortality of the diarrheal diseases, and since the greatest reduction in the mortality of these diseases has been in the age group under one year, it cannot be fairly stated that this reduction has been caused by a transfer of diagnosis to poliomyelitis, because the deaths from the latter disease have been most numerous between one and five years of age.

Considered from the viewpoint of age grouping, there were fewer deaths in the age group under one year of age and in all the age groups over fifteen. Between the first and the fifteenth year the mortality was much heavier during the past month than during the corresponding month of last year. Altogether there were 6,209 deaths reported during the month in the greater city. Of these 2,696 occurred in Manhattan, 561 in the Bronx, 2,997 in Brooklyn, 771 in Queens, and 184 in Richmond. The rate for the city was 13.04, as compared with 12.53 for the corresponding month last year. During the month 4,244 marriages were reported, equivalent to a rate of 8.91. This was a slight increase over the number reported during July, 1915, when 4,023 were reported, equivalent to a rate of 8.67. Births to total of 11,145 were reported during the month, compared with 11,466 for the corresponding month of last year, the respective rates being 23.42 and 24.71.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
University of Southern California.

Thirty-sixth Communication.

TUBERCULOSIS.

Certain essentials are demanded by the body for its constructive work. The first of these is a supply of the food principles of such proportion and content as may be necessary to maintain adequate reparative processes and to keep the energy requirements of the body above normal kinetic demands. A second essential is such a supply of atmospheric oxygen as will be sufficient for all combustion requirements. A third essential is free clearance for all worn-out, unutilized, and waste products, whether exogenous or endogenous. There being no drug of demonstrated utility in the treatment of tuberculosis, and the serum treatment not yet having passed beyond the unsatisfactory experimental stage, the chief line of attack against the great white plague is to place the natural defenses of the body in the most advantageous condition possible. Therefore there should be continuous life in the open air in an environment of as little atmospheric contamination as the resources of the patient will permit. For anabolic ends the nutrition supply of easily digested food is pushed to the gastronomic limit, the object here being so to saturate the tissues with available energy as to make possible a supranormal elevation of cellular resistance; when this object is attained the reparative and curative processes are definitely established, resulting in a permanent cure after a considerable time.

Care must be constantly exercised that purin metabolism does not result in undue retention of anabolic products. The nitrogen balance may be readily studied through frequent examinations of the urine, and any adverse showings can be promptly corrected by suitable adjustments of the diet.

Exercise is usually strictly limited at first, so that the major portion of the available energy may be utilized for defensive purposes. As evidences of the curative processes develop, graduated exercises prove beneficial in promoting the capacity of the body for metabolic interchange, and to this end may well be judiciously encouraged.

In attacks of tuberculosis the infective organism slowly progresses on its insidious way until the defenses of the host are inadequate for resistance. This is possible simply because the patient's powers of resistance have been lowered by other deteriorating influences, or because the reaction-sensitiveness is relatively dull to this particular germ process. In either case the great necessity is to adjust the metabolic processes of the patient so as to permit the highest possible development of the somatic forces normal to the maintenance of robust health. In other words, the bodily conditions, both intrinsic and environmental, must be so developed that anabolism exceeds catabolism, with a wide margin of safety; over and above the normal metabolic equivalences, there must be developed a fighting reserve wherewith the body may successfully overcome the invading bacilli and neutralize the debilitating toxemia. Then, too, the environment must be such as to admit of the least possible impingement of adverse influences.

Any agent that serves to combat disease has a pharmacological significance; therefore, in a series of papers like the present, we are justified in discussing matters of hygiene whenever the application of these hygienic principles involves therapeutic ends. At this point it is safe to reiterate that the sole purpose of administering a therapeutic agent is to render more or less timely assistance to harassed nature. Nature in any event effects whatever cure may be attained; the drug or measure used simply serves to render more efficient nature's offensive and defensive operations.

(*To be continued.*)

Post Mortem Cæsarean Section.—J. A. Harrar (*American Journal of Obstetrics*, June, 1916) discusses the management of pregnant women suddenly dying undelivered. Many infant lives have been sacrificed through the confusion attending the catastrophe or the embarrassment or inability of the attendant or his inability to obtain consent for operative maneuvres upon the dead mother. Yet the legality of post mortem Cæsarean section even without the husband's consent has been demonstrated, and where such consent is not obtainable, while the fetal heart is still beating, it is not only permissible but imperative that the physician should immediately do everything in his power to save the child. Attempts at extraction made by version or forceps generally fail, unless death happens to take place during the second stage of labor. Among fifty women dying undelivered in the New York Lying In Hospital, post mortem delivery was undertaken in nineteen instances. Version was done seven times, but uniformly resulted in stillbirth. Two children whose mothers were already in the final phase of labor were extracted living through the normal passages. On the remaining ten women Cæsarean section was performed; only three of these were in labor at the time of death. Four died of heart failure, two of eclampsia, and one each of cerebral hemorrhage, tuberculous meningitis, ruptured uterus, and hemorrhage of placenta prævia. Of the babies, three were stillborn and had probably died before their mothers. Four were born with hearts feebly beating, but could not be resuscitated. Two were resuscitated, but died later. Finally, two were discharged living and well—one having been extracted by Cæsarean section immediately after death in the apoplectic case, and the other seven minutes after death from broken compensation in mitral stenosis, the woman having been in labor nine hours. Obviously the success of the operation depends much upon the promptness with which it is done. That the operation should not be performed if the fetal heart sounds are inaudible is a wrong conclusion, as not infrequently babies are born normally whose heart it has been impossible to auscultate. Several valuable minutes may be lost in attempting to detect the heart sounds. Thus Cæsarean section should follow maternal death immediately, unless one already has positive proof that the baby is dead. Asepsis may be ignored, the abdomen and uterus being simply incised quickly and freely and the child extracted. Stress is laid on persistence in efforts at artificial respiration as long as any intermittent contraction of the infant's heart can be felt by pressing the fingers up under the left costal margin.

Clinical Comparison of Wound Dressings.—Dermer, at a meeting of the Société de chirurgie (*Presse médicale*, July 20, 1916), reported comparative studies of the effects of various antiseptics in 943 wounds of industrial—not military—origin; 101 injuries were treated with hydrogen dioxide, 175 with potassium permanganate, seventy-five with ether, 135 with Dakin's solution, and 457 with magnesium chloride solution. The preliminary treatment was the same in all cases. All the antiseptics, except Dakin's solution, were used as washes and wet dressings, while Dakin's solution, as in the Carrel method, was applied by continuous, drop by drop irrigation. Two facts were clearly shown: First, that Dakin's solution, in general, gives better results than the other antiseptics, and second, that the length of stay in the hosptial in cases treated with magnesium chloride was only about one half that in cases treated with Dakin's solution. Evidently magnesium chloride, used in fresh wounds as an accelerator of phagocytosis, is capable of yielding notably good results.

Definite Treatment of Pneumonia.—Solomon Solis Cohen (*Canadian Medical Association Journal*, August) divides treatment into general and special. Under the former he includes: An abundant supply of fresh air, preferably in the open, with due care to preserve the warmth of the body by adequate covering, and if necessary, external heat. 2. All the essentials of good nursing, including rest, proper diet, and the free use of water internally and externally. Copious diuresis is sought. 3. Keeping the thorax warm by poultices during the day and a lamb's wool jacket at night. This may be preceded in early cases by a mild mustard and flour poultice. 4. A due supply of chlorides either by saline infusion, alkaline-saline beverage, or by administration in capsules followed by copious drafts of water. 5. Such additional measures of elimination and alkalinization as may be necessary. 6. Cleansing and relative disinfection of the upper air passages by local applications to the throat and nose of phenoliodineglycerin, or silver preparations, or by continuous inhalation of volatile antiseptics, such as ethyl iodide, creosote, chloroform, or terebinthinates. This general treatment represents a groundwork upon which the definite medication is superimposed. Under special treatment comes first an antitoxic agent. Quinine is given promptly in massive and repeated doses with progressive lessening of the quantity and increase of the interval according to effect; the drug being intermitted when the mouth temperature tends to remain below 102.5° F., and resumed when it tends to rise above 103°. This medication may be kept up for one, two, or three days. There may be only one dose, or as many as fifteen. The rule is effect, not quantity—enough and no more. Quinine and urea hydrochloride, twenty-five to fifty per cent. solution by intramuscular injection through the iodized skin, is on the whole the most effective preparation and method, but other quinine salts are used. Next are pressor agents. Cocaine hydrochloride, caffeine sodiosalicylate, adrenaline, and posterior pituitary principle, are used singly or in alternation or rotation when necessary to maintain the line of systolic blood pressure at or above the level of pulse frequency. The pituitary principle has the additional advantage of tending to prevent tympanites and dilatation of the stomach. Usually a precautionary injection of cocaine, or of posterior pituitary solution, is made with the first injection of quinine, since the latter tends to lower blood pressure slightly. It is repeated every third hour, or as needed. In some cases as many as sixty doses have been given, in others from three to ten, in some none at all. Next come the cardiants, camphor or digitalis in full doses, to regulate the diastolic blood pressure and respiration. Sometimes both of these agents are employed, but in the majority of cases neither is needed. Digitalis effects can be obtained more readily when the patient is under the influence of quinine than in other cases. Care must be taken with both pressor agents and cardiants not to exhaust by overstimulation. One must be neither too bold nor too timid. Oxygen sometimes is helpful. Auxiliary and symptomatic measures include wet cupping, dry cupping, venesection, and the continuous or occasional use of oxygen, alcohol, strychnine, atropine, opium, musk, creosotal (ammonium carbonate), and other drugs reserved for special indications which may or may not be present in any given case. Cases calling for early bleeding are not often seen, but late bloodletting to relieve the right heart is called for occasionally, and may prevent death from pulmonary edema if done in time. Tincture of ferric chloride is given when the quinine is withdrawn, and is continued during convalescence. In prolonged cases with extensive lesions, in certain cases of tardy defervescence, and in all cases of delayed resolution after defervescence, an autogenous vaccine is used in progressively increased amounts at appropriate intervals under the guidance of temperature and leucocyte reactions. The early employment of bacterins does not seem to be advisable or beneficial. In all features of the treatment there must be a careful adjustment of means and measures to the special needs of the particular patient at the moment. We must not only know when and how to use medicines, we must also know when to withhold them. All of the measures are not to be used in every case, in most but one or two will be needed, but in some several will be indicated. Routine is inferior to discretion. Too much is worse than too little, but too little is not good, the aim being to be just right.

Tuberculous Laryngitis.—J. William Wright (*Indianapolis Medical Journal,* August) recommends that, aside from the general treatment of the pulmonary tuberculosis, every patient at intervals not greater than one month should have a careful examination of the larynx, and at the first sign of a laryngitis should receive the proper treatment. Fewer laryngeal complications would ensue if this were done. All nasal deformities should be corrected. Overuse of the voice, faulty phonation, and needless hacking and scraping of the throat invite the inflammation. He has found that a solution of five per cent. menthol and five per cent. guaiacol in olive oil injected endolaryngeally will alleviate the desire to clear the throat and will give a rest to these parts. If there is much thickening between the arytenoids, he touches the tissue with crystals of trichloracetic acid, and after the slough has come away the voice usually is much improved.

Tuberculosis of the Tongue.—James R. Scott (*American Journal of the Medical Sciences,* September) states that tuberculosis of the tongue is of more common occurrence than is supposed; it occurs more frequently in males than in females; it is met during all age periods of life, but is most common between the fortieth and the fiftieth years; and it occurs in two forms, primary and secondary. The greater number of cases are secondary in character. Clinically it may assume different types, such as the ulcerated, fissured, granulomatous, and papillomatous. The differential diagnosis involves consideration of simple ulcers, the local manifestations of syphilis, carcinoma, and epithelioma. The treatment may be either medical or surgical. Medical treatment offers little hope of ultimate cure, and should be used only in advanced cases, or when the lingual process is accompanied by a generalized tuberculosis. The rational treatment is surgical in nature, complete excision of the involved tissues and the surrounding healthy tissue for some distance.

X Ray Treatment of Uterine Hemorrhage.—Robert T. Frank (*Surgery, Gynecology, and Obstetrics,* September, 1916) sums up as follows: 1. The Röntgen ray produces amenorrhea by destroying the ovarian follicular apparatus, or oligorrhea, by partial destruction of follicles. The resulting menopause symptoms correspond in character and degree to those of the postoperative menopause. 2. The choice lies between two methods of application; a, the fractional-weak, requiring prolonged use, but readily controllable; b, the intensive-massive, more readily producing amenorrhea. 3. Obstinate cases of hemorrhage in adolescents can be cured. Only cases such as have resisted all other forms of therapy should be selected. 4. Functional hemorrhages during sexual maturity, if conditions are unmistakable, and curettage shows absence of carcinoma, may be relieved by producing oligorrhea (with the possibility of subsequent pregnancy) or be definitely cured by inducing the artificial menopause. 5. Preclimacteric functional hemorrhages are readily cured by the production of the menopause. At this age, malignancy must be even more carefully guarded against. 6. Uterine fibroids may be slowly reduced by x ray treatment. All complicated cases should be excluded, as otherwise serious or fatal mistakes may occur. In properly selected cases (five to ten per cent.) the choice between operation and Röntgen therapy may be left to the patient. In patients with serious heart lesions, nephritis, or pulmonary trouble, or in the hyperneurotic, preference should be given to the x rays.

Autoserotherapy in Gonococcal Orchitis.—Wagon (*Bulletin de l'Académie de médecine,* July 25, 1916) reports four cases of gonococcal orchitis with serous effusion in the tunica vaginalis in which reinjections of this fluid yielded gratifying results. The fluid was obtained by stretching the skin over the tunica vaginalis, puncturing it with a sterile hypodermic needle—avoiding veins—and allowing the fluid to run out through it into a sterile syringe. After the tunica vaginalis had been evacuated, the needle was withdrawn and one c. c. of the fluid injected under the skin of the thigh, with usual aseptic precautions. These injections proved painless and were not followed by any reaction. In each case immediate benefit was noted, the pain being relieved and motion of the parts rendered less uncomfortable. In two instances fluid failed to reappear in the tunica vaginalis. A cure uniformly followed the treatment in six to eight days, the patients being then able to resume their occupations without any precaution other than wearing a suspensory bandage. On the whole, the procedure seemed to constitute an ideal specific treatment for gonococcal orchitis, safe as well as simple, and available under all circumstances.

Treatment of Infected Wounds.—Rutherford Morison (*Lancet,* August 12, 1916) states that as the outcome of experience with infected, suppurating war wounds, the following simple plan of treatment has been developed. With the patient under an anesthetic the wound is covered with gauze soaked with one in twenty phenol and wrung out. The skin about it is then cleansed with the same solution and the wound opened freely, care being taken to avoid damaging the larger vessels and the muscular branches of nerves. The cavity is then cleansed with a Volkmann spoon and dry, sterile gauze. Next the wound cavity and surrounding skin is mopped with alcohol and the whole wound is filled with a paste of the following composition:

℞ Bismuthi subnitratis, ...30.0;
Iodoformi, ...60.0;
Petrolati liquidi, ...q. s.
M. et fiat pasta.

When completely filled with the paste, the wound is covered with a dry, sterile gauze dressing and an absorbent pad. Usually the dressing can be left unchanged for days or weeks, unless there is pain or constitutional disturbance. If a discharge comes through the dressing the spot must be soaked with alcohol and a gauze dressing, wrung out of alcohol, applied over it. The treatment avoids frequent change of dressings, and has given entirely satisfactory results, even in severe compound fractures in which it seems to stimulate osteogenesis. No iodoform poisoning has resulted from the use of the paste in large quantities.

Pharmacology of Emetine.—Emil J. Pellini and George B. Wallace (*American Journal of the Medical Sciences*, September, 1916) present the findings of a series of experiments from which they conclude that emetine depresses and may eventually paralyze the heart; that it is a powerful gastrointestinal irritant, whether given by mouth or by subcutaneous injection; that it causes a definite derangement of metabolism characterized by an increase in nitrogen loss and an acidosis; and that, while in normal persons who receive moderate doses these effects may not be of importance, in pathological states of the circulation, intestinal tract, or metabolism, they may be a definite source of danger.

Radical Treatment of Duodenal and Gastric Ulcer.—John B. Deaver (*Annals of Surgery*, September, 1916) concludes that all ulcers of the duodenum or stomach are best treated by excision. In the presence of a strong clinical probability ot gastric ulcer supported by positive x ray evidence or by doubtful findings under palpation and inspection, he does not hesitate to perform gastrotomy in order to settle the matter by inspection of the mucosa. In the individual case, the advisability of excision depends upon the local condition. No ulcer should be excised when subsequent closure and anastomosis present too great operative hazards. It is in such cases that operations which depend upon drainage and alteration of gastric chemistry have their field.

Treatment of Chancroid.—Goubeau (*Presse médicale*, July 24, 1916) at a meeting of the medical staff of one of the French army corps recommended the following treatment: The surface of each chancroid is first carefully freed from pus with pledgets of cotton dipped in ether. It is then painted, either by means of a camel's hair brush or a small rod around which a little cotton has been tightly wrapped, with the following preparation:

℞ Sodii arsenatis, ...1 gram;
Alcoholis, ...50 grams.
Misce.

The arsenate being relatively insoluble, the preparation is a suspension rather than a solution. The next step consists in causing the alcohol to evaporate rapidly by blowing air over it with a cautery bulb, bellows, or through a piece of straw. A thin film of sodium arsenate becomes deposited and penetrates into the recesses of the chancroid. Immediately after, the suspension is painted on again and again evaporated. Finally, a dressing of sterile gauze is applied. The treatment is repeated daily. Repetition for more than three or four days is rarely required. At the end of this time the chancroid is transformed into a healthy red wound which tends rapidly to heal. On each subsequent day the lesions are washed with ether and covered with powdered iodoform. This treatment yields more rapid results than any other, a cure generally resulting in eight or ten days. Where bubo occurs as a complication, Goubeau obtains quick results by injecting directly into it, one c. c. of a one per cent. aqueous solution of sodium arsenate. This is repeated, if required, on alternate days. Where an abscess has formed, it is evacuated by puncture with a small trocar and the arsenate injected immediately after.

Radium Treatment of Uterine Cancer.—Joseph Rausohoff and J. Louis Rausohoff (*Annals of Surgery*, September, 1916) summarize this form of treatment as follows: 1. Radium is the method of choice in the treatment of inoperable and borderline uterine cancer. 2. In three operable cases treated with radium a clinical cure has been effected in all. 3. Cases clinically curable by radium should not be subjected to hysterectomy, as the operation is difficult and dangerous.

Exophthalmic Goitre.—W. B. H. Aikins (*Canadian Prac. and Review*, August, 1916) states that proper medical care will give as large a proportion of good results as will surgical, and is preferable by far in most cases. All the symptoms seldom disappear, no matter what treatment is employed. The first essential in medical treatment is the enforcement of prolonged, absolute physical and mental rest, preferably in the country. With this there should be a course of full feeding, excluding from the dietary all foods which are rich in extractives. Of the many drugs recommended, few are of value, but among these the most serviceable seems to be quinine hydrobromide. This may be combined advantageously in the following prescription:

℞ Quininæ hydrobromidi, ...0.3;
Ergotini, ...0.06.
M. et fac tales cachetas vel capsulas. S. One three times daily.

Organotherapy, including the use of rodagen, thyroidectin, and antithyroidin gives favorable results only in a small proportion of cases. The use of x rays applied over the thyroid has proved decidedly beneficial, but better results are secured by the local application of radium. The latter is preferable to x rays on account of the possibility of greater accuracy in regulating the dose.

Goitre.—J. J. Link (*Medical Standard*, August, 1916) recommends, in addition to the constant ingestion of thyroid gland preparations, rest, avoidance of all excitement, good hygienic and pleasant surroundings, change of mind from all former worry and anxiety, for it has been shown plainly that anxiety, worry, anger, and fear have increased hyperthyroidism. For the tremor and mental excitement, phytolacca, strontium bromide, and the tincture of salix nigra have given the author satisfaction. These drugs often suffice to control the tachycardia, but sparteine and strophanthus are sometimes indicated. Serums obtained from the glands of thyroidectomized animals have been given with somewhat varied results by hypodermic injection, as well as by the mouth, but when good results were obtained they lasted only so long as the serum was employed. Pulverized milk of thyroidectomized animals has been employed. In some cases the results from cytotoxic serum have been gratifying, but the serum is not uniformly successful. Iodine injected into the thyroid gland has had some effect, but not a lasting one, and any permanent effect that may have been produced is due to its cauterizing or shrinking effect upon the gland, thereby reducing its hypersecretion, but not altering or counteracting the fluid. He states that the surgical treatment for Graves's disease undoubtedly gives the most satisfactory results under proper presurgical care with skillful operators.

Treatment of Pellagra.—E. M. Perdue (*Texas Medical Journal,* August, 1916) states that pellagra can be prevented by the drinking of water containing a sufficient quantity of the bicarbonates of calcium and magnesium. It is cured by the simple means of administering a simple and suitable alkaline carbonate or an organic alkali convertible into a carbonate.

Treatment of Herpes zoster.—Lewis H. Adler, Jr. (*Pennsylvania Medical Journal,* August, 1916) gives liquor potassii arsenitis, six minims, four times, daily. Locally the parts are cleaned with a two per cent. creolin solution and freely dusted with borated talcum powder. Over this a wad of absorbent cotton is applied and kept in place by a suitable bandage.

Digitalis in Aortic Incompetence.—Seymour Taylor (*Lancet,* July 15, 1916) believes that digitalis is contraindicated in aortic insufficiency when uncomplicated by other valvular lesion. Not only is it of little or no benefit to the patient, but it seems to increase materially the tendency to sudden death typical of this disease. There is one condition only in which digitalis is helpful and not dangerous—namely, when the aortic incompetency is complicated with mitral incompetency.

Wound Treatment.—C. W. Duggan (*Brit. Med. Jour.,* July 15, 1916) has found that the use of eusol or other forms of wet dressings in the treatment of open wounds will produce a clean healthy granulating surface, but the further healing of the wound does not progress well. Much better results can be secured by the substitution of ichthyol or glycerin, which may be used from the outset if desired. Under these agents the wound will be made clean and granulation is stimulated so that healing is rapid.

Intestinal Catarrh, Typhoid, Dysentery, and Mixed Infections.—Arneth (*Berlin. klin. Woch.,* February 28, 1916) discusses his wide experience of these analogous conditions as seen among the troops and gives the following as his treatment in cases of intestinal catarrh. An initial dose of castor oil is followed by 200 grams of bolus alba mixed with sufficient boiled water. The diet should be restricted to weak tea and thick gruels, and water should be forbidden. After the first day red wine is given and two doses daily of a half gram each of tannalbin. Benefit is also derived from the application of an abdominal binder for warmth. In cases without fever three doses of one mil each of tincture of opium should be given daily with the treatment just outlined. In typhoid and dysentery, the initial dose of castor oil should be omitted, but the rest of the treatment is the same. In bacillary dysentery small doses of a mixed Flexner and Shiga antiserum should be given as early as possible. Tannigen is twice as strong as tannalbin, and is decidedly preferable to the latter in dysentery, and either is to be preferred to bolus alba for controlling the movements. Additions to the diet should be made slowly in cases of dysentery, for rapid increase is often followed by relapses. No addition should be made to the diet until the stools become more or less formed. When using the antiserum an initial dose of twenty mils is given, and this, or even double the quantity, is repeated every day or two.

Lumbar Puncture for Eclamptic Convulsions.—W. T. Wilson (*Jour. A. M. A.,* Sept. 2, 1916) reports two cases of persistent, oft repeated convulsions occurring in eclamptic women, to show the striking, immediate, and permanent control of the convulsions which were brought about by a single lumbar puncture in each. Not only were the convulsions checked, but other symptoms, such as coma and suppression of the urine were relieved. The spinal fluid seemed to be under pressure in both cases.

Treatment of Miliaria.—P. G. Unna (*Berlin. klin. Woch.,* February 21, 1916) remarks that this condition is similar to miliaria tropica and cheiropompholyx, and is characterized by small vesicles filled with serous fluid having an alkaline reaction and containing leucocytes and mast cells. Its chief symptom is itching, though where the skin is moist it may be complicated with eczema. It is apparently of infectious origin. Its treatment is simple and satisfactory, consisting in the application of a drying, antiparasitic powder such as is provided by either of the two following prescriptions:

℞ Sulphuris, ... }
Zinci oxidi, ... } ....āā 2.5;
Magnesii carbonatis, }
Talci, ... } ....āā, ad. 50.0.
M. et S. Apply freely.

℞ Pulveris ichthargani, }
Magnesii carbonatis, } ....āā 25.0.
M. et S. Apply freely.

Treatment of Local Tuberculous Processes.—Defontaine, at a meeting of the Société de chirurgie (*Presse médicale,* July 20, 1916), reported excellent results in the treatment of tuberculous abscesses and tuberculous involvements of the joints, lymph nodes, and skin by means of injections of a solution of guaiacol and iodine in ether:

℞ Guaiacolis, ...gtt. v;
Tincturæ iodi (Codex), ...gtt. xij;
Ætheris, ...10 c. c.
Fiat solutio.

The solution is prepared immediately before use. A quantity of it, varying from a few drops to one half c. c., is injected daily or on alternate days at one or two points of the tuberculous lesion under treatment. While a large injection may cause considerable though evanescent pain, injections of small amounts cause little or no pain, and may be repeated frequently. Any notable local reaction indicates that smaller amounts should be used. The needle to be inserted into the disease focus should be as fine as possible; ordinary hypodermic needles suffice, but must be available in different lengths, in order that the deeper foci may be reached. Large calibre needles predispose to sinus formation. By this form of treatment Defontaine succeeded in arresting and curing previously active white swellings of the shoulder, knee, and wrist which would otherwise have required resection. Many glandular swellings commonly opened by the bistoury, were likewise caused to retrogress. In tuberculosis of the skin the procedure gave results rivalling those afforded by x rays, and presented, furthermore, the advantage of being available to all practitioners.

Miscellany from Home and Foreign Journals

The Intravenous Administration of Iodides.—D. K. Averbuch (*Roussky Vratch*, May 14, 1916) reports in a preliminary contribution his results in obtaining a combination of iodine which could be introduced into the circulation in large doses. He found the combination of benzol, amines and iodine—dioxybenzolaminoiodide—to be perfectly safe when administered intravenously. The preparation is an amorphous, brownish yellow powder, with a faint odor of iodine and iodoform, slightly alkaline reaction, freely soluble in water. When administered intravenously to dogs and rabbits, no reaction follows unless the preparation is not pure. The preparation was administered to fifteen persons, in doses containing 1.5 gram of pure iodine, without any untoward results. Further investigations are promised.

Gastrointestinal Findings in Acne vulgaris.—Lloyd W. Ketron and John H. King (*Jour. A. M. A.*, August 26, 1916) state that the acne bacillus is generally recognized as the direct cause of acne vulgaris, but a number of associated conditions probably act as predisposing factors, among which gastrointestinal abnormalities seem of special importance. Clinical observations recorded in the literature point to the frequency of such disturbances in acne subjects, but no scientific studies have been made. The authors investigated the problem by x ray examination and gastric analyses in a series of patients with acne vulgaris, and found gastrointestinal abnormalities present in every case. In sixty per cent. of the cases these were of sufficient severity to have caused gastric and intestinal stasis and toxic absorption. Ninety-three per cent. showed gastric abnormalities, seventy per cent., intestinal. The commonest conditions found were hypacidity, atony, gastric retention, and ptosis. In the intestine the commonest were cecal stasis, colonic ptosis, and adhesions in the ileocecal region.

Medical Diathermy.—E. P. Cumberbatch (*Archives of Radiology and Electrotherapy*, August, 1916) states that metal electrodes can be made of sheet lead and should be of a thickness of one mm. Useful stock sizes are: Circular 4, 6, and 9 cm.; rectangular 4 by 6.5, 4.5 by 10, 5 by 12, 10 by 20 cm.; square, 15 by 15 and 20 by 20 cm. They can be placed either in direct contact with the skin or with an absorbent pad thoroughly soaked in salt solution interposed. Uniform contact with the skin should be obtained at all points. The pads should be of one quarter inch thickness and may be made of felt or layers of lint. They must be soaked in strong solution. Tap water will not do because it offers too high a resistance to the current. Two tablespoonfuls of salt to a pint of water makes a solution of sufficient strength. For large sections of the body large electrodes have to be used. In order to avoid burns the current should be increased gradually until the patient feels the sensation of warmth. To elevate the temperature of the entire body the diathermy condenser couch may be used.

Gastric Function in Pulmonary Tuberculosis.—Henry K. Mohler and Elmer H. Funk (*American Journal of the Medical Sciences*, September, 1916) conclude from a study of early and advanced cases that pulmonary tuberculosis causes a definite downward progression in both the secretory function and the motility of the stomach from the very beginning of the disease. They believe that the so called "pretuberculous dyspepsias" of some writers are misnamed, and that they are in reality manifestations associated with definite tuberculous infection. They consider that hyperacidity with symptoms occurring in the early stages, described by previous writers as common, is rare; that this is true also of hyperacidity without symptoms. They do not believe that there is an irritative stage of hyperacidity in early tuberculosis, but that the gastric disorder is the result of disease of the gastric mucosa, and that there is a distinct tendency toward the formation of a definite clinical syndrome known as delayed digestion, which is indicated by more symptoms as the disease progresses. They agree with Einhorn that the swallowing of tuberculous sputum plays a highly important part in the continuation and aggravation of disordered function, and that visceroptosis and gastrectasis are no less important.

Incidence of Contagious Diseases in Military Practice.—Maurice Boigey (*Bulletin de l'Académie de médecine*, July 18, 1916), comparing the yearly incidence of various contagious diseases in an army corps of 50,000 men on a peace footing with that during the year 1915, i. e., during active (first line) service, found the number of cases of measles to be 730 during peace against 176 in 1915; scarlet fever, 295 against 122; mumps, 1050 against 422; diphtheria, seventy-six against 105, and cerebrospinal meningitis, sixteen against twenty-eight; total, 2167 against 853. The age of the soldiers ranged from eighteen to thirty-five years. Thus, in 1915, in spite of fatigue, dense massing of men, and exposure to cold, rain, and fog, the number of contagious cases was reduced almost to one third that recorded in time of peace. The extremely transmissible measles and scarlatina failed to spread as usual among the troops quartered in close promiscuity under improvised shelters. This relative immunity may be ascribed to open air life and hyperoxygenation. The longer the war continues, however, the more manifest is an inexorable natural selection in the incidence of the contagious diseases. Those with robust constitutions fail to acquire them. Repeated contact with the virus is clearly of less significance as regards transmission than is usually recognized. But one epidemic, a brief epidemic of mumps, was observed. All the facts noted forcibly demonstrated that predisposition played an important role in the incidence of contagious diseases. At the front, infectious diseases seem usually to arise, not through immediate contagion, but through sudden development of pathogenic activity in individual subjects of a ubiquitous, perhaps attenuated virus owing to predisposing conditions in these subjects.

Experimental Hematogenous Appendicitis.—N. F. Mordvinkin (*Roussky Vratch*, May 21, 1916) introduced into the circulation of rabbits staphylococci and several varieties of streptococci after subjecting the animals to the following operations: The appendix was tied at the base, leaving the arterial circulation free. The appendix was cut between two ligatures. The appendix was cut at the base, the proximal end ligated and the distal end sewn up into the peritoneum. The appendix was ligated near the base, the free end sewn up in the abdominal wound, projecting on the outside for one cm. After the wound healed the distal end was opened and the secretions from the appendix were collected. In another series the same operation was performed, except that the opening was closed as soon as the staphylococci injected into the veins were excreted in the appendix. These experiments established the fact that the appendix possesses the property to abstract from the circulation microorganisms, and discharge them into the lumen of the intestines, thus purifying the blood. As long as the lumen of the appendix remains patent, infection does not occur, but as soon as occlusion occurs and free drainage is interfered with, the staphylococci which are injected into the circulation produce suppurative appendicitis.

Vagotonus and Sympathicotonus in Scarlet Fever in Children.—W. I. Moltchanow and D. D. Lebedeff (*Roussky Vratch*, May 14, 1916) discuss the latest teachings regarding the two divisions of the nervous system—the somatic and the vegetative, the latter comprising the sympathetic and the so called autonomous nerves. Each organ supplied by the vegetative nerves receives sympathetic as well as autonomous fibres. Functionally, these groups of nerve impulses are characterized by their antagonism. Thus, if one group carries impulses which excite activity, the other transmits inhibitory impulses. For instance, in the eye the autonomous oculomotor nerve contracts the pupil while the sympathetic dilates it. In the heart the autonomous vagus slows the heart's action, while the sympathetic nerve increases it. In the stomach and intestines the vagus increases peristalsis, while the sympathetic inhibits it. The different behavior of these nerves can be demonstrated by the action of certain drugs. Thus adrenaline excites the sympathetic nerves, having no action on the autonomous. Pilocarpine, on the other hand, has no effect on the sympathetic system, but excites the autonomous nerves. Atropine paralyses the same fibres of the autonomous system as are excited by pilocarpine. As these nerves have to do with internal secretions and metabolism, their study in acute infections is of considerable interest. This can be accomplished by the pharmacological tests devised by Eppinger and Hess. The author applied the tests to ten children, varying in age from six to twelve years, during the second and third weeks of scarlet fever. The following method was employed: Twenty-four hours before the test, the patient was given fifty to 100 grams of glucose on an empty stomach, in the morning, and each portion of urine voided during the twenty-four hours was tested for the presence of sugar. If no sugar appeared an equal amount of glucose was given on the following morning, and one to one and a half hour later from 0.7 to one c. c. of adrenaline, one to 1000, administered subcutaneously in fifteen to twenty c. c. of normal salt solution. In one to three days later the pilocarpine test was applied by administering subcutaneously from 0.004 to 0.01 gram of pilocarpine. A few days later atropine was injected in doses of 0.0004 to 0.001 gram, according to age. The blood pressure and pulse were determined before and after each experiment. The effect of adrenaline was determined by the appearance of glycosuria, redness of the skin, and the state of the pupils. The pilocarpine and atropine reactions, by the salivation, perspiration, and lacrymation. In some cases Aschner's sign was looked for, namely, decrease of pulse rate on pressure on eyeball. Analysis of the results obtained by the authors shows that only one of the eight patients who received adrenaline showed a slight glycosuria. Three did not react at all, while the others showed either a rise in blood pressure or increased pulse rate, or both. All ten reacted to pilocarpine in varying degrees. All reacted to atropine, although not to the same extent. These results show that if there is an increased tonus in one division of the vegetative system there is a lowered tonus in the other. In eight of the patients a vagotonus was observed, and in one a balance of both systems. Applying these results to conditions found in scarlet fever, the authors conclude that the cardiovascular disturbances and eosinophilia are due to a vagotonus. The white dermographism which they observed in all cases they attribute to local changes in the vessel walls and the inflammatory process in the skin.

Infectious Nasopharyngeal Inflammation.—Walther Blumenthal (*Berlin. klin. Woch.*, Feb. 28. 1916) states that a common form of infection of the nasopharyngeal tissues is prevalent, but is usually unrecognized as such. It is commonly diagnosed as influenza or some other vague infection. The clinical picture of this infection comprises a sudden attack of fever in a previously normal man with great exhaustion, annoying headache in the occipital region, and no symptoms pointing to any particular organ except in some cases of dryness or itching at the back of the nose. Examination reveals nothing outside of the nasopharynx except somewhat swollen and tender glands behind the upper portion of the sternomastoid muscle. Postnasal inspection reveals a congested, inflamed mucosa which is covered with tenacious, yellowish green mucus, and an enlargement of the pharyngeal tonsil with filled lacunæ. At times, also, the posterior ends of the turbinates are seen to be swollen, but examination of the anterior portion of the nose reveals nothing. The condition is decidedly infectious, and may lead to such complications as otitis media and a temporary albuminuria or hematuria. The condition is due to a streptococcal infection, but its course is usually short—seldom over three days—and the termination is favorable. Local treatment with saline sprays and menthol inhalations, combined with the administration of salipyrin or antipyrin, is all that is required. The condition should be recognized by every practitioner.

Injuries to the Peripheral Nerves Produced by Modern Warfare.—C. Burns Craig (*American Journal of the Medical Sciences*, September, 1916) says with regard to injuries to the peripheral nerves produced by shot and shell that laceration and contusion usually may be differentiated by careful neurological examination. In some cases exposure of the nerve at the site of the injury is the only means by which exact knowledge of the nature of the injury to the nerve is obtained. Neither test of function nor electrical reaction will differentiate contusion from laceration. Patients with simple contusion recover slowly, and as a rule completely. Gunshot and shell wounds causing lacerations of nerves do not lend themselves readily to plastic operations. Because of the infection weeks and months elapse before plastic work can be undertaken. During ten months no recovery in such cases was observed.

Edematous Conditions and Infectious Disease.—Jürgens (*Berlin. klin. Woch.*, Feb. 28, 1916) has observed a number of cases of marked edema in the course of the war under a variety of conditions, and he attributes the condition to some form of infectious disease. Aside from the edema, which is often extensive, the symptoms have been those of slowly progressive weakness, with slight yellowness of the skin and pallor. Occasionally pains in the legs were observed, as well as scorbutic symptoms and severe intestinal disorders. From a close analysis of a large number of such cases, which were encountered almost exclusively in poorly nourished persons driven to hard work, he concludes that the condition is due to a dietetic deficiency and is similar to beriberi. This, he believes, is confirmed by the fact that a more liberal diet, in the sense of greater abundance of substances known to contain vitamines, has usually speedily cured the patients.

Radiography of the Bronchial Lymph Nodes.—Walker Overend and Clive Riviere (*Archives of Radiology and Electrotherapy*, August, 1916) divide the bronchial lymph nodes, anatomically, into four groups: 1. Tracheobronchial; 2, bifurcation; 3, hilum, and 4, pulmonary, and give the location of the different groups. Clinically, cases are grouped into four divisions: 1. Normal, with no physical signs; 2, with right paravertebral dullness; 3, with double paravertebral dullness; 4, showing parasternal dullness on one or both sides. In the series of cases examined radiologically every case was examined in three positions: dorsoventrally, ventrodorsally and right semilaterally The method of diagnosing the different forms of nodes is given. As the result of the examination of numerous individuals the following deductions were made. 1. That thoracic tubercle is widely distributed in children of school age in thickly populated urban districts; 2, there are notable powers of resistance which can control these processes even after extensive dissemination throughout the lung; 3. That serious chances of recrudescence exist under conditions of stress which these children must combat in adolescence and adult life; and 4. there is mutual interdependence of clinical and radiological methods of examination in complete investigation of the tuberculous thorax.

The Action of Camphor, Borneol, and Menthol on the Veins and Peripheral Bloodvessels.—N. P. Lichatcheva (*Roussky Vratch*, May 21, 1916) found by experiments on the isolated ear and heart of rabbits that camphor, borneol, and menthol, in dilution of one to 2,500 to one to 5,000, act as vasodilators. Most effect was produced by borneol, next menthol, and last camphor. The latter was found also to exert a beneficial influence on the neuromuscular mechanism of the heart, increasing its blood supply and nutrition.

Pathological Causes of Sterility.—John Osborn Polak (*Surgery, Gynecology and Obstetrics*, September, 1916) says that the result of study of sterility has shown: 1. A large number of cases of sterility applying for relief have no chance whatever of becoming pregnant, as the pathological condition is such as to make conception impossible. 2. The male is largely responsible for our poor results in treatment. 3. There is a definite chemicophysiological factor in conception, at present unexplainable, which prevents conception. 4. Operative procedures on the uterus, except amputation of the hypertrophied portion, have but slight influence on the end results in the treatment of sterility. Each case must be individualized and both contracting parties carefully studied before treatment is inaugurated.

Palpation of the Ureters through the Vagina.—A. M. Judd (*American Journal of Obstetrics*, June, 1916) asserts that, in a complete vaginal examination, palpation of the ureters is as important as palpation of the Fallopian tubes. The normal ureters are, in fact, more easily palpated than the normal tubes, and can be felt in ninety per cent. of all instances. The statement is usually made that only the short portion of the ureter in contact with the anterior vaginal vault is accessible to palpation. Judd, however, instead of palpating for the ureter in the anterior vaginal fornix, begins at the lateral fornix, using the left index finger for the left and the right index for the right ureter. The ureter is palpable above the spine of the ischium, underneath the peritoneum, before it enters the broad ligament in the course of its passage into the bladder. When normal, it is felt as a slender cord, with its convexity outward and forward, and with restricted mobility. Its size appears to be about that of an ordinary goose quill, and it is best palpated by carrying the finger above the point of its location, then slightly bending the ends of the fingers, as one might in picking the strings of a guitar, and sweeping them from above downward over the ureter. Ureteral palpation opens an important diagnostic field. Thus, an acute ureteritis is diagnosticated by simple tenderness along its course. Chronic ureteritis and periureteritis show, in addition, thickening and a decrease of mobility depending upon the extent of the disease process around the ureter. Ureteral and renal tuberculosis yield a nodular feeling also. Calculi and gravel in the ureter can often be detected, especially when smooth or pocketed, where the wax tipped catheter fails to disclose them. Ureteral palpation in cases of pyelitis in pregnancy is especially valuable; pyelitis leads to a thickened, tender, pelvic ureter.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Joint Meeting of the Sections in Obstetrics and Pediatrics, Held Tuesday Evening, March 28, 1916.

Dr. George W. Kosmak in the Chair.

(Concluded from page 526.)

Syphilis in Mother and Infant *(Continued)*.—In the past year, of twenty-seven women who were delivered of macerated fetuses at the Lying-In Hospital, nine gave a positive Wassermann reaction. Syphilis had been held responsible many times for the intra partum death of the infant, but the mechanical conditions which sometimes occurred during delivery and which caused asphyxia, would have to be excluded before syphilis could be regarded as the sole etiological factor. Boardman said that two thirds of all syphilitic children were born about the eighth month, but at the Lying-In Hospital in a series of 106 mothers with positive Wassermann reactions, there were thirty-one living babies delivered at term; this might appear to be a large proportion of syphilitic children to reach term, but some of the mothers had received antiluetic treatment during the last three months of gestation.

Only about twenty-eight per cent. of children born syphilitic survived the first year. The Wassermann reaction was valuable in making a diagnosis in a doubtful case of syphilis of the infant, four plus meaning but one thing. There had been many negative reactions on infants whose syphilitic mothers had received considerable treatment. Spirochetes might be sufficient in number and virulence to produce symptoms in the infant and at the same time not produce enough antibodies in the blood serum of the mothers to give a positive Wassermann reaction. Judging from the latter, syphilis had little or no part in the etiology of fatal anomalies. In the last two years at the Lying-In Hospital the serums of 2,049 patients were examined and sixty-four, or 3.05 per cent., gave positive Wassermann reactions. This gave a fair conception of the extent of the disease among women at the child bearing age, the majority of whom lived on the lower east side of the city. The successful results in the treatment of pregnant women, estimated by the number of children which were born with or without symptoms, depended on the amount of treatment the patient received during pregnancy and during conception. It was believed that salvarsan could be given in moderate doses, at intervals of a few days, without danger to the fetus or normal labor, but large doses were dangerous. There was considerable difference of opinion whether salvarsan given intravenously to the mother was always transmitted to the fetus. Of ten patients treated during pregnancy, five received arsenic and mercury from the second month to term; three gave birth to living babies without symptoms and with a negative Wassermann reaction; one, who was in the active secondary stage throughout her entire pregnancy, was delivered of a living baby without symptoms, but with a positive Wassermann, and one was delivered of a macerated fetus at seven months. Of the five women who received treatment from the seventh month to term, five living babies were delivered and three gave positive Wassermann reactions.

Dr. Henry Koplik said that it was difficult in the presence of the enormous ground covered, to do justice to the whole subject in discussion. They could only take up points that interested them as individuals. It was astonishing how little was being done for the newborn in the modern hospitals in a great city like New York. There was much space and expensive equipment for the care of the mother, but how secondary was the consideration for the infant! He did not wish to criticize too severely, as he judged as an outsider, entering these hospitals only as a consultant. On entering a hospital of second magnitude he had seen along a wall rows of small cribs like waste baskets. There were ten infants in a room ten by fifteen feet. In another hospital there were forty infants in a single ward. In another, he found ten or twelve babies in one small room in the care of one nurse who fed and attended them without assistance. The great mortality in the newborn was in the first month of life, fully thirty per cent. of deaths in children under three months of age occurring in the first month. It was important, therefore, to give a greater place to the care of the infant in the hospital where it was born. He blushed to think how many cases of sepsis in very young infants he had been called to see. There was no excuse for much of the artificial feeding in the maternity hospitals. It was painful too how large a number of infants depended on the bottle, whereas it would seem that human milk could be obtained from other sources when the mother was unable to supply it. As to facilities for treating the newborn in the maternity hospitals of New York, they were deficient. Sepsis in the newborn, infants who had gone to a state of inanition with hemorrhage, occurred because most of these hospitals relied on primitive methods. He recalled having been summoned to see a newborn child with hemorrhage, and he had advised transfusion at once. Instead of that, subcutaneous injection of cow's serum was resorted to, and the infant did not do well. This was in a hospital of the second rank, where there were no facilities for transfusing the mother's blood to the child. He would make a plea, not only for more space for the babies so that the obstetrician might be proud of the babies' ward (which they could not be at present), and for more facilities for treatment of the newborn, particularly in emergencies, but also that pediatrists take charge solely of the children to give them the benefit of progress in modern pediatrics. He was simply calling attention to the manifest indifference to the welfare of the newborn in this great metropolitan city, where there was plenty of space and plenty of money to do what was right. In conclusion, he wished to call attention to another point in the prenatal care of the infant: Not much could be done in this direction among the poorer in

New York unless cooperation was obtained from the father who should be made to appreciate its necessity, whereupon he would aid the mother; thereby more good could be done in the prenatal care of both mother and child.

Dr. EDWIN B. CRAGIN, as an obstetrician, was glad to acknowledge obligations to the pediatrist on many occasions, but was glad also to call attention to the fact that if it were not for the skill and knowledge of the obstetrician in delivering a living baby to the pediatrist, the latter would not have any patient; therefore the pediatrist was also under obligations to the obstetrician. He had gathered an impression from the first paper that the obstetrician was apparently not considered competent to take care of the baby during the first month of its life, and it seemed to have been overlooked that the obstetrician had spent almost as much time on the study of the care of the young baby as the pediatrist. If the obstetrician watched and cared for the mother all through her pregnancy and had been studying from fifteen to eighteen hundred babies a year, he must have learned something about the care and feeding of the newborn.

He was happy that Doctor Koplik acknowledged he criticized the hospitals only as an outsider. From the inside he would have learned that the babies' care was studied and that even the waste baskets had their advantages; they provided individual beds, easily cleaned and handled, as well as air and space.

In regard to artificial feeding, many women today were unable to nurse their babies and it was often a grief to them. It was impossible at the Sloane Hospital to get enough breast milk to feed the babies on that alone. The nerve strain of modern life was shown in the lessening of the supply of breast milk; the mothers who had it believed it belonged to their own children. Breast milk could be bought, but it was expensive and it was impossible to obtain enough to feed all the newborn in the hospital whose mothers could not nurse them. At the Sloane Hospital he did not allow the nurse in the operating room to swab out the baby's mouth with gauze wrapped around the forefinger, and for some time he had not allowed the nurse to wash the baby's mouth before or after feeding. It had lately been brought to his attention that there were a few cases of mould thrush, and for the last month the mouth of the child had been gently cleansed once a day with sterile cotton and boric acid solution. They should have the mothers attend ante partum clinics and they should be surrounded with all the prenatal care possible. There should be social service workers in all the hospitals. A Wassermann should be taken in every case that applied to the hospital for obstetrical care, as it worked in the interest of the mother, the baby, and the hospital; the latter was protected against responsibility, which had been heavy in those cases where a syphilitic baby, apparently healthy at birth, had been put out to nurse and had infected the foster mother. Having followed the mother carefully through her pregnancy and the puerperium, it should then be their duty to place the mother and her baby in touch with the proper welfare society or pediatrist, so that their subsequent care might be assured.

Stated Meeting Held April 6, 1916.

The President, Dr. WALTER B. JAMES, in the Chair.

The Influence of Alcohol on Man, with Special Reference to Psychological Effects.[1]—Dr. FRANCIS G. BENEDICT, director of the Boston Nutrition Laboratory of the Carnegie Institution, said that in accordance with its widely distributed "tentative plan" the nutrition laboratory of the Carnegie Institution had organized and initiated an exhaustive experimental study of the physiological consequences of the ingestion of small doses of ethyl alcohol in man. The first year's work under the psychological part of that plan was devoted to an investigation of the effects of alcohol on a selected group of interrelated processes covering the fundamental neutral activities at various levels of the cerebrospinal system, from the simplest reflexes of the lumbar cord to the most complex cortical arcs that they could accurately measure by available laboratory technic. The selection of the particular group of neuromuscular processes for measurement was determined by the following experimental demands: 1. The systematic demand for coordinate data covering as many as possible of the fundamental psychophysiological operation. 2. The interpretative demand for the least possible inclusion of unknown and uncontrolled factors. 3. The practical demand for natural reaction forms which would be comparable in a large number of individuals without special practice, and would show relatively little practice effect as a result of the experimental repetition. 4. The technical demand for trustworthy quantitative methods of stimulation and registration. Of the simple arcs which were available for experimentation, the patellar reflex and the protective lid reflex were chosen, chiefly because of their similar latency and the accuracy of their modern technic. Their measurements of these reflexes included data concerning their latency, the extent of the muscle contraction, and the relative duration of the refractory phase. Of the more complex cortical arcs the following were selected: 1. Eye reactions to sudden peripheral stimuli, a thorough practised phase of each individual's spatial adjustment; 2, speech reactions to visual word stimuli; and, 3, free associations. The last two were characteristic phases of the individual's adjustment to his social environment. The fundamental perservation tendency was measured by the partial memorization of series of words. Sensory changes were indicated by Martin's faradic threshold measurements. Morot coordination was studied in the velocity and accuracy of eye movements, and in the reciprocal innervation of the antagonistic muscles of the middle finger. Finally, pulse records (chiefly electrocardiograms from body leads) were taken either continuously or at homologous points in the various experimental processes. The subjects consisted of two groups: A main group of college graduates, who were moderate users of alcohol, and a smaller group of out patients in the Psychopathic Hospital who had been under treatment for delirium tremens. Normal base lines in all cases included two normal experimental days for each subject and for each kind of experiment. One normal day came before and one after the experimental days on which alcohol was administered. In addition a "normal of the day" was recorded for each experimental process on the days in which alcohol was given. Two alcohol doses were used, one containing approximately thirty c. c. and the other forty-five c. c. of absolute alcohol. All the measurements showed more or less rhythmic variations. In their statistical theory they assumed that, given a sufficiently large number of measurements, the normal rhythmic and arrhythmic variations would tend to compensate each other, leaving the average experimentally conditioned change relatively unaffected. In their data these average results showed two particularly significant marks of reliability: 1. Similar processes were similarly affected and in similar degree; 2, in general the larger dose of alcohol showed the greater experimental effect. The effect of alcohol was calculated in all cases by comparing the differences between the "normals of the day" and subsequent periods on the normal and on the alcohol days. The greatest percentage effect was found in the reflexes. In the patellar reflex alcohol increased the latent time ten per cent., while it decreased the amount of quadriceps thickening forty-six per cent. In the protective lid reflex it increased the latent time seven per cent., while it decreased the extent of lid movement nineteen per cent. It increased the latent time of the eye reactions five per cent. and that of the speech reactions three per cent. Memory and the free associations were only slightly affected. Sensitivity to faradic stimulation decreased fourteen per cent. after alcohol. The number of finger movements decreased nine per cent. and the velocity of the eye movements decreased eleven per cent. as a consequence of the ingestion of alcohol. Quite in contrast to the general depression of the neuromuscular processes at all levels of the cerebrospinal system was the effect of alcohol on the pulse rate. Under all experimental conditions alcohol produced a relative acceleration of the pulse. In only a few cases with a large dose did this relative acceleration become a positive acceleration, so that the pulse rate in the periods subsequent to the ingestion of alcohol was faster than during the normal of the day; but in practically every instance alcohol prevented the regular pulse rate retardation that accompanied the successive periods of mental and physical work on normal days. This relative acceleration was approximately three per cent. While this effect was intrinsically small, its regularity, the large number of records, and its concomitant variation with the size of the dose gave the results a high degree of probability. The effort to determine which of the antagonistic heart regulating mechanisms was responsible for the relative acceleration, demanded an analysis of the pulse data. A comparison of the relative changes in the duration of systole and diastole (method of Hunt) led to a thoroughgoing consideration of the variations in the pulse cycles during the different experiments. The records showed a consistent tendency of alcohol to decrease the mean variations amounting to an average of nineteen per cent. Since the rhythmic and arrhythmic pulse changes within the limits of their twelve second records could not have been conditioned by the relatively slow acting accelerator, it seemed necessary to regard the decrease of the mean variation after alcohol as caused by a decreased responsiveness to the inhibitor. There was some evidence in the records that this paralysis of the inhibitor was not an exclusive effect, and it was probable that various natural and experimental conditions might be found which would shift the preponderance of paralysis to the accelerating mechanism. The small amount of change, its purely relative character, and the probability that both regulating mechanisms were affected, doubtless give the conditions for the confusion of the scientific traditions concerning the effect of alcohol on the pulse rate. In conjunction with the pulse acceleration, the general neuromuscular depression might be regarded as presumptive evidence of the effect of alcohol on organic efficiency. In none of their data was there any indication of a pure facilitation effect of alcohol. Contrary to the theory of Kraepelin, they not only found no facilitation of the motor processes, but the depression of the simplest forms in the finger and eye movements seemed to be one of the most characteristic effects of alcohol. Indeed it was exactly these effects that correlated most closely with the average of all the effects for the several subjects. Practically it seemed to follow that these processes might serve as a readily accessible indicator of individual susceptibility to alcohol. Theoretically it seemed to follow that the effect on the motor coordinations indicated a central tendency of alcohol.

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[1] Abstracted from January issue of *Nat. Acad. Sciences.*

Professor C. E. A. WINSLOW, of Yale University, emphasized the great difficulty in discussing this subject from a detached and scientific viewpoint. It was hard to consider the evidence on its merits, since each new fact was apt to fit into and be modified by a preconceived picture, of which the centre was either the Demon Rum or the genial god, Dionysos. Their treatment of alcohol as a habit forming drug was complicated by the fact that in this case there were not only the confirmed addicts to be considered, but also those who gave way only occasionally to excess and the steady, moderate drinkers. If there were signs of opium parlors on every street corner, or if hypodermics were passed at the close of dinner parties, their view of these drugs would be similarly complicated by a century old atmosphere of social respectability, although of course the danger of habit formation would be quantitatively greater than in the case of alcohol. They must freely grant that alcohol was technically a food, and that it might be and was oxidized in the body. They might grant that in moderate amounts it was a source of pleasurable indulgence The question was whether this food value and this indulgence were not too dearly bought.

It was unnecessary to emphasize to physicians the relation of steady drinking to diseases of the liver and kidneys and to mental diseases, and its unfavorable influence upon the prognosis of such infections as pneumonia. Alcohol in large and continuous doses produced more or less serious pathological effects, in some instances constituting a principal contributory cause of death; and the extent of the danger varied widely with individual predispositions. There were also to be considered the many secondary effects of alcohol in connection with the causes of disease and death. Alcohol played a large part in automobile accidents and accidents occurring in factories. The relation of alcoholism to venereal disease was far reaching and sinister. The taking of alcohol with meals promoted overeating and tended to overload the alimentary canal with food which would putrefy and cause autointoxication.

The net effect of alcohol upon health had been approximately measured in a number of statistical studies by English and Scottish life insurance companies and more recently in the admirable medicoactuarial investigation conducted by Arthur Hunter. This study showed a mortality eighty-six per cent. in excess of the normal among steady users of two ounces or more alcohol a day, seventy-four per cent. in excess of the normal among those who had committed alcoholic excesses within two years, thirty-two to thirty-five per cent. in excess of the normal among reformed persons of formerly intemperate habits, and eighteen per cent. in excess of the normal among moderate, steady drinkers (lower limit defined as two glasses of beer or one glass of whiskey a day). These results could not be considered extravagant when it was remembered that the same study showed an excess mortality of thirteen per cent. for persons showing albumin in the urine, twenty per cent. for those who had suffered from acute articular rheumatism within two years, and seventy-two per cent. for those who had had an attack of gout within ten years.

Passing from actual damage to the question of lowered efficiency, they must take into account the laboratory studies of Kraepelin, Vogt, Aschaffenburg, and others, and the remarkably clear and convincing investigations just reported by Doctor Benedict. There were persons who had lived long lives and done good work, yet who had consumed enormous amounts of alcohol. But if a responsible man had anything important to do, he did not take alcohol before doing it. A surgeon about to perform a delicate operation did not take alcohol before entering the operating room. No man about to undertake severe, exact mental work would take a drink of whiskey beforehand. When they wanted cool, concentrated energy, they laid drink aside.

The same thing had been most clearly indicated by the changed attitude of European nations toward alcohol during the war. As Russia, France, and England reached the point where they needed a maximum of efficiency, they faced this as one of their greatest obstacles. On March 9th last, David Lloyd George said of the alcohol problem, that it would be so much better to settle the question by general consent. If they did, the war, horrible as it was, would have paid for itself. There were many things which he hoped they could accomplish through this war. There were many changes at home, changes in the outlook in the nation, changes in its temper, changes in its attitude of mind, changes in its industries; but this would be the greatest and most beneficent change of all if they succeeded in carrying it through. If they could possibly convince the nation that success in the great task which it had undertaken depended very largely upon removing this drag on its efficiency, then he felt confident that at the end of the war, however successful they might be in a military sense, they should regard this as the greatest triumph of all.

No one method of fighting against alcohol was approved; the question of the need for restriction was a sufficiently thorny one without entering into the methods. There were grave criticisms of many of the methods that had been proposed. The best way to restrict the use of alcohol was a problem in itself, but from a standpoint of public health and efficiency that way should be found. Public health departments were not limiting themselves to the prevention of specific diseases and of death, but were developing their work along hygienic lines.

(To be concluded.)

Letters to the Editors

AUTOINOCULATION IN POLIOMYELITIS.

BROOKLYN, NEW YORK, *September 5, 1916.*

To the Editors:

I read with much interest in the *New York Times* for September 2nd, the review of Doctor Meltzer's letter which appeared in the NEW YORK MEDICAL JOURNAL of the same date. As I am entirely responsible, so far as I know, for the application of autoinoculation in the treatment of poliomyelitis, it seems in order for me to reply briefly to Doctor Meltzer's criticism.

In the *Archives of Pediatrics* for October, 1915, I published the report of the first case that I had treated in this way. Doctor Meltzer gratifies me by his admission that the method is based upon scientific principles in so far as it might stimulate the formation of antibodies and thus have a curative effect in some instances. He then cites his reasons for considering the method unsafe on the ground that there is danger of increasing the extent of the infection by the introduction of more virus. Although he asserts that he has tabulated the previous experiments which render this process dangerous, he has failed to mention the fact that the experimenters who endeavored to inoculate monkeys by intramuscular injection have reported that it is difficult and in some instances impossible to produce a general infection in this way. Doctor Meltzer also assumes that a larger number of organisms are being introduced into the system than were there previous to the treatment. As the treatment consists in drawing off from fifteen to sixty, seventy, or even a larger number of c. c. of spinal fluid and reinjecting into the muscular tissues from 0.5 to two or three c. c. of fluid, this argument appears to be baseless. It is true that this method has not been tried out on monkeys, and it is also true that experimentation of this nature on human beings is under ordinary circumstances inadmissible. The first cases tried, however, were those in which there appeared to be no hope of recovery, and in which consent was freely given by the parents after the method had been explained. In all these cases there was absolutely no local reaction and no indication that any harm had been done. These observations could be much more readily made in human beings than in monkeys, and under the circumstances I consider the trial justifiable.

In a number of instances the treatment was followed by marked improvement, reduction in temperature, and partial return to consciousness. Under the circumstances, the next step in using the treatment in a more general way also seems to be justified, and I have used it during the entire epidemic in my consultation work. As Doctor Meltzer states, the procedure is so simple that I am sure it has been adopted by a number of other physicians. I have had no unfavorable reports of its use and no occasion to think that it was in any way harmful in any of my cases. It has been used extensively in the Kingston Avenue Hospital, but by no means exclusively.

Early in July, I had a long conference with Doctor Meltzer in his office in regard to treatment, and we were very glad to adopt his suggestions at the Kingston Avenue Hospital for the use of oxygen and adrenaline. In fact, I secured at my own expense adrenaline in ampoules in order that there might be no danger of infection in this method of treatment. At the same time we made use of the small amount of convalescent serum that we were able to obtain, and at the suggestion of Doctor Sophian, normal horse serum was used to a considerable extent.

To all those persons, particularly newspaper men, who have requested a statement in regard to treatment, I have replied from the beginning that nothing would be known about the treatment of the disease for at least three months. By that time, I presume that some of us will be ready to express our views.

In a footnote to his letter, Doctor Meltzer states that he has been informed that the autoinoculation treatment is prohibited in health department hospitals. I have not received any such information. The treatment is not being used at present at Kingston Avenue because it was given a fair trial and because convalescent serum is more readily obtainable now than previously, and I consider that, at present, the treatment should be thoroughly tried out.

Many of the families in which autoinoculation has been used, and many of the physicians who have used it, are enthusiastic about the results. After seeing so many hundreds of cases with their varying outcome, good, bad, and indifferent, regardless of treatment of various kinds and no treatment at all, I am personally very skeptical of the real value of autoinoculation, convalescent serum, normal horse serum, or adrenaline. I have felt from the first that the intraspinal injection of convalescent serum was based more or less upon a false conception of the disease, and that considering the lines of infection and the possible late appearance of the virus in the spinal fluid, the convalescent serum would be of greater benefit if introduced intravenously, but this is merely a theory on my part. It would be a mistake to decide that all preparations of antibody serums would be useless; even if, as now appears to be the case, the convalescent serum has little or no value. An earnest effort should be made in the laboratories to find some method of producing a highly active serum in some of the lower animals which will contain the antibodies in sufficiently concentrated form to be of real value.

Louis C. Ager, M. D.

POLIOMYELITIS AND GRIPPE.

Carmel, N. Y., *August 28, 1916.*

To the Editors:

Permit me the courtesy of your columns to call attention to the fact that in the phase of disease known as anterior poliomyelitis we are witnessing simply a localization of that protean plague, influenza. Instead of localizing in the lungs or stomach or intestines or spleen or liver or kidneys or other parts of the human anatomy as it sees fit to do at any and all times in its peregrinations through the body, this year it is localizing in the spinal cord and its membranes.

The greatest mistake that the medical profession has ever made, in my opinion, consists in the remarkable lack of appreciation of the stupendous possibilities ever present in that most remarkable of all constitutional diseases that we speak of so lightly as grippe. In the humble opinion of the writer the study of this worldwide disease is the most important among all the studies in epidemiology. Any and all parts of the body are subjected from time to time to its visitations, these showing themselves always and ever in the form of congestions and inflammations. No matter what particular organ or organs become affected, the basic, fundamental, initiative condition is congestion followed, if not relieved, by inflammation and its sequelæ.

Disturbances in the functions of the organs involved follow as a matter of course, and these, on account of the widely divergent gyrations of the disease, set up widely divergent sets of symptoms, one set differing from another to such an extent at times as to cause the observer to think that he is dealing with an entirely different disease, whereas, in reality, he is witnessing progressions or phases of the same old plague, influenza.

That is how the present epidemic of (so called) infantile paralysis is being considered as a separate disease, distinct from all others, when, as a matter of fact, it is a localization of the influenza disturbance in the spinal cord and its membranes. The basic, fundamental condition present in this phase of the grippe is identically the same as that found in any other part of the body when such other part is attacked. This is the condition known as congestion followed by inflammation and its sequelæ. The only variation is in the symptoms, and these, naturally, arise from the disturbances brought about in the functions of the organs affected. In the particular case under discussion the functions of the spinal cord are interfered with to a greater or less extent, hence the paralytic or semiparalytic conditions witnessed.

There is no doubt that there do occur at times sporadic cases of congestive and inflammatory conditions of portions of the spinal cord and its membranes—entirely local conditions—and these are justly entitled to rank as separate, individual instances of a local disease, but when we find, as in the present instance, as well as in many previous instances, outbreaks occurring of a widespread nature with the symptoms of spinal cord disturbance interlaced with symptoms of congestion and inflammation of other organs throughout the body, then indeed must we look for the presence in the system of some constitutional disease of a very general character and having some seemingly selective action upon the spinal cord and its membranes.

Our search for such a disease begins and ends with the greatest of all constitutional diseases, influenza. The whole history of this disease points to a universal diffusion throughout the entire body; hence the spinal cord and its membranes cannot hope to escape involvement in the course of the long drawn out epidemics. One of the principal pathological conditions found in this phase of disease is a hemorrhagic myelitis. "The changes in the cord consist in hemorrhages, for the most part punctate, most marked in the anterior part of the gray matter and of a very extensive perivascular infiltration." (Robert W. Lovett, Harvard University.)

Now compare this pathological condition with that occurring in influenza. Here we find hemorrhagic conditions occurring in various parts of the body, dependent seemingly upon a certain congestive condition of the blood. These hemorrhagic conditions vary as to the organ or organs affected in different patients. They also vary both as to incidence and severity, in different epidemics. In certain epidemics uterine hemorrhages have prevailed to such an extent as to cause considerable numbers of women who were pregnant to abort. Raising of blood in patients suffering from grippe has been at times an extraordinarily common symptom. Cystic and rectal hemorrhages have also at times been prominent features of the grippe.

Putting this and that together, we find a remarkable similarity existing at the very foundation of the pathological conditions of both influenza and acute anterior poliomyelitis. The instant we leave the foundation, of course, the picture changes. The difference in functions of the parts hemorrhagically inclined takes us off in different directions, the divergences varying more or less just as the amount of hemorrhagic or congestive disturbance in the different organs varies. The foundation or essential conditions are identical.

Congestions (with their sequelæ of hemorrhages, either punctate or diffused), followed by inflammatory conditions with their sequelæ of inflammatory products) are identically the same in both influenza and infantile paralysis. Hence, as the less must perforce be contained in the greater, there is but one deduction to be made and that is that acute anterior poliomyelitis is but part and parcel of the greatest congestive disease known to science.

Influenza congestion is at the basis of a vast number of disturbances of various organs, the disturbed functions of which when grouped together form pictures so distinctive that the mistake of confounding them as separate, individual diseases is readily excusable. The congestion that occurs in the spinal cord and its membranes is not one whit different from the congestion that occurs in the conjunctivæ or in the bronchial tubes or in the lungs or in the stomach or, in fact, in any other organ of the body. The only difference, as stated before, lies in the variation of symptoms, and these depend upon the interferences exerted upon the various functions of the organs by the congestion and inflammation.

The bacteriologists, in stating infantile paralysis to be a separate disease from all others, are making the mistake of their lives.

There is a progressiveness in disease conditions that can be positively proved. The "checker board" arrangement of diseases as laid down by the bacteriologists is untenable.

Given a certain amount of virus, whether we regard this "virus" as imported from without by medium of germs, or purely and simply as "virus," we have a primary stage of disease established. Given a larger quantity or more concentrated, we have a secondary form of disease established. Given a still larger quantity, we have the tertiary stages of disease manifested. That is what we are experiencing in this present epidemic of infantile paralysis—a certain gradation of disease. The sooner the medical profession begins to realize that there are primary, secondary, tertiary, quarternary, etc., stages of these epidemic diseases, the better.
J. D. Harrigan, M. D.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Textbook of Practical Gynecology. For Practitioners and Students. By D. Tod Gilliam, M. D., Emeritus Professor of Gynecology in Ohio State University College of Medicine, etc., and Earl M. Gilliam, M. D., Professor of Diseases of Women in the Ohio State University College of Medicine, Columbus, Ohio, etc. Fifth Revised Edition. Illustrated with 352 Engravings, a Colored Frontispiece, and 13 Full Page Halftone Plates. Philadelphia: F. A. Davis Company, 1916. Pp. xvi-681. (Price, $5.00.)

In this well known textbook of gynecology, it is the avowed policy of the author to present a plain connected narrative of the subjects under discussion rather than to follow strictly scientific methods of classification and arrangement. This plan has been pursued with a considerable measure of success, and the result is a comprehensive but eminently practical presentation of the matters dealt with. Bibliographic references have been omitted and few citations from authorities are made. Moreover, the book is divided into a number of chapters of as nearly uniform length as possible to correspond to the number of lectures and recitations usually allotted to the subject during a collegiate term. That the work within a few years has gone through five editions is sufficient evidence of its intrinsic value and the best testimony to its popularity. This edition has been thoroughly revised and brought up to date and may be conscientiously recommended to practitioners and students.

A Manual of Surgical Anatomy. By Lewis Beesly, F. R. C. S. (Edin.), Assistant Surgeon, Chalmers' Hospital, Edinburgh, Lecturer on Surgery and Operative Surgery, Edinburgh School of Medicine for Women, etc., and T. B. Johnston, M. B., Ch. B., Lecturer and Demonstrator of Anatomy, University College, London, Lately Lecturer and Demonstrator of Anatomy, Edinburgh University, etc. New York: William Wood & Co., 1916. Pp. xiv-557. (Price, $3.75.)

The object of the authors in presenting a new manual of surgical anatomy is to correlate the subject more intimately with dissecting room work. The tendency of the student being to make use chiefly of works on regional anatomy which give them anatomical facts only, it has seemed desirable to the authors to put in the hands of the dissector a work dealing with the surgical application of the anatomical facts. They are peculiarly fitted for this work from their experience in teaching both regional and surgical anatomy. Surgical technic has been excluded as far as possible, the chief emphasis being laid upon the anatomy of the operations.

The book, therefore, fills a distinct place among textbooks by bringing the practical study of anatomy into closer relation with practical surgery and by reviewing anatomical facts in the study of operative surgery. The work has been well done, the descriptions being accurate and clear and all that is unessential being excluded. The surgical anatomy of joints has received special attention, and these sections will be valuable in connection with the surgery of joint infections, notably tuberculosis.

Interclinical Notes

In the department of Common Welfare of the *Survey* for August 5th—the so called new once a month edition—there was a spirited description of the disorder incident to the attempted quarantine of infantile paralysis. In nine weeks, we are reminded, there were 3,964 cases and 841 deaths.

* * *

Those of our readers who have been worrying about the abbreviation of ten commandments proposed by the Episcopal Church, may have their minds set at rest by a perusal of the *Outlook* for September 13th, wherein it is explained that the church is merely going back to the original form of the decalogue. In the short form we find that the commandments retain their punch, while being as easily summed up as the longer form in the Golden Rule.

* * *

In *Leslie's* for September 7th, an editorial paragraph on The Music of the Disc is immediately preceded by one entitled, Breaking Records. We will yield on other points, if owners of talking machines will equip them with some automatic device to prevent their playing dance music between the hours of midnight and six a. m. In music our personal preference is for compositions played by orchestras of some 110 pieces, and records of such performances seem impossible to obtain.

* * *

The Dark Tower, by Phyllis Bottome, the remarkable serial whose beginning in the August *Century* impressed us so favorably, continues in the September issue of that journal to be absorbing. The hero and heroine seem now to be involved in a hopeless tangle that only death can solve. William Dean Howells's The Leatherwood God is in its sixth installment; it is a masterly production of the mature genius of its author. The other stories are short ones. The illustrations are beautiful, as always, and include a wood engraving by Timothy Cole of a masterpiece from the Louvre.

* * *

The editor of the *Nurse* is some hustler when circumstances demand it; witness in the September issue a paper on Infantile Paralysis, by Dr. John B. Huber. Other medical contributors to this sightly and entertaining magazine are Dr. Franklin W. Barrows, who writes on the Binet Test; Dr. James Frederick Rogers, who discusses the Nurse in the Public Schools; Dr. Leonard Keene Hirshberg, who considers Bites and Stings; Dr. Anne E. Perkins, who advises the Nurse with the Mental Patient. The banana is cited before the bar of professional opinion as an article of diet and comes through the test with colors flying, although we cannot help thinking that its photographs flatter it somewhat.

* * *

Marian Bonsall Davis writes to *Leslie's* for September 7th of how supplies are distributed to the French military hospitals. She says, among other things: "The sister superior—the hospital, like so many, is run by sisters—showed us through the wards. They welcome any one from the Fund as if visitors from heaven. You feel guilty to be accepting such a wealth of gratitude vicariously. Some of the beds were pulled out into the garden. In a tiny court they have set up a game something like croquet. Games are life savers to French convalescents. The little nun who has the *pharmacie* in charge explained some of her makeshifts. And the pretty one who led us kept up a running fire of French that ran so fast it left us quite distanced. Two of the men patients were being visited by their wives, and those four were so happy that their wounds were less a bane than a blessing. The sister superior came out to the gate to speed us on our way with renewed gratitude. The crippled man who kept the gate, having become aware of the object of our visit, almost bowed himself into new dislocations as we passed out. Our last glimpse was of the surgeon hurrying the opening of the bale and the unpacking of the *pansements*—the dressings. If you could only realize the pitiable need for cotton, dressings, gauze for wounds. You have put your hands in your pockets so many times. But the desperation grows greater. And these wonderful French—how they shoulder the burden. Never a whimper. But the war goes on and on."

Meetings of Local Medical Societies

Monday, *September 18th.*—Elmira Clinical Society; Psychiatric Society of Ward's Island.

Tuesday, *September 19th.*—Tompkins County Medical Society; Tri-Professional Medical Society of New York (annual); Binghamton Academy of Medicine (annual); Syracuse Academy of Medicine; Ogdensburg Medical Association (annual); Oswego Academy of Medicine; Medical Society of the County of Westchester.

Wednesday, *September 20th.*—Medicolegal Society, New York; Buffalo Medical Club; Bronx County Medical Society.

Thursday, *September 21st.*—Auburn City Medical Society; Geneva Medical Society; Æsculapian Club of Buffalo; New York Celtic Medical Society.

Friday, *September 22nd.*—Society of New York German Physicians; Manhattan Medical Society; Italian Medical Society of New York.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 6, 1916:

Anderson, T. B. H., Assistant Surgeon. Granted ten days' leave of absence from September 7, 1916.

Ashford, F. A., Passed Assistant Surgeon. Granted one month's leave of absence from September 5, 1916.

Billings, W. C., Surgeon. Bureau letter of August 4, 1916, amended to grant one month's leave of absence from August 22, 1916.

Eskey, C. R., Assistant Surgeon. Relieved from duty at Detroit, Mich., and directed to proceed to Chicago, Ill., for duty in the Marine Hospital.

Foster, M. H., Surgeon. Directed to proceed to Philadelphia, Pa., for duty in connection with the interstate spread of poliomyelitis.

Hughes, T. E., Assistant Surgeon. Relieved from duty at New York city and directed to proceed to Philadelphia, Pa., for duty in the prevention of the interstate spread of poliomyelitis.

Hurley, J. R., Passed Assistant Surgeon. Relieved from duty at New York city and directed to proceed to Philadelphia, Pa., for duty in the prevention of the interstate spread of poliomyelitis.

Leake, J. P., Passed Assistant Surgeon. Directed to proceed to The Plains, Va., and other places in the vicinity of the District of Columbia, to investigate sporadic cases of poliomyelitis and obtain material for laboratory use.

Lombard, M. S., Assistant Surgeon. Relieved from duty at New York city and directed to proceed to Philadelphia, Pa., for duty in the prevention of the interstate spread of poliomyelitis.

Schwartz, Louis, Passed Assistant Surgeon. Relieved from duty at New York city and directed to proceed to Philadelphia, Pa., for duty in the prevention of the interstate spread of poliomyelitis.

Stoner, George W., Senior Surgeon. Granted four days' leave of absence from August 29, 1916, under paragraph 193, Service Regulations.

Sweet, E. A., Surgeon. Granted eight days' leave of absence on account of sickness from August 15, 1916.

Wells, W. F., Sanitary Chemist. Directed to proceed to such places as Surgeon H. S. Cumming may direct, for duty in investigations of coastal waters.

Wicks, H. W., Surgeon. Granted ten days' leave of absence on account of sickness, from August 10, 1916.

Young, G. B., Surgeon. Detailed to attend a meeting of the Buchanan County Medical Society at St. Joseph, Mo., August 30, 1916.

Boards Convened.

Boards of commissioned medical officers convened for the purpose of making physical examinations and conducting the mental examination of candidates for appointment as assistant surgeons, September 18, 1916, as follows: Philadelphia: Detail for the board, Senior Surgeon Fairfax Irwin, chairman; Surgeon H. McG. Robertson, recorder. San Francisco: Detail for the board, Senior Surgeon L. L. Williams, chairman; Assistant Surgeon D. S. Baughman, recorder. Ellis Island, N. Y.: Detail for the board, Senior Surgeon J. C. Perry, chairman; Passed Assistant Surgeon E. H. Mullan, recorder. Chicago: Detail for the board, Surgeon J. O. Cobb, chairman; Assistant Surgeon R. R. Spencer, recorder. Galveston, Tex.: Detail for the board, Surgeon L. P. H. Bahrenburg, chairman; Surgeon R. L. Wilson, recorder. Seattle, Wash.: Detail for the board, Surgeon John S. Boggess, chairman; Passed Assistant Surgeon E. Krulish, recorder. New Orleans, La.: Detail for the board, Passed Assistant Surgeon Friench Simpson, chairman; Assistant Surgeon S. L. Christian, recorder. Chelsea, Mass.: Detail for the board, Passed Assistant Surgeon W. M. Bryan, chairman; Assistant Surgeon M. V. Safford, recorder.

Births, Marriages, and Deaths

Married.

Fought-Donohue.—In Philadelphia, Pa., on Thursday, June 22nd, Dr. E. N. Fought and Miss Edythe C. Donohue.

Greenaway-Turner.—In Ridgetop, Tenn., on Sunday, August 13th, Dr. H. Greenaway and Miss Louise Turner.

Ward-Merchant.—In Binghamton, N. Y., on Wednesday, August 30th, Dr. Charles Austin Ward and Mrs. Hattie Westcott Merchant.

Died.

Abbott.—In Lawrence, on Friday, September 1st, Dr. Stephen W. Abbott.

Baruch.—In New York, on Tuesday, September 5th, Dr. Solomon Baruch, aged sixty-one years.

Bedard.—In Norway, Me., on Tuesday, August 29th, Dr. Prudent Bedard, aged sixty-three years.

Brown.—In Billings, Mont., on Monday, August 28th, Dr. Marcus F. Brown, aged thirty-five years.

Carlon.—In West Hartford, Conn., on Thursday, August 31st, Dr. Philip P. Carlon, aged fifty-four years.

Cathell.—In Baltimore, Md., on Tuesday, August 29th, Dr. William T. Cathell, aged fifty-one years.

Chagnon.—In Willimantic, Conn., on Tuesday, August 29th, Dr. Joseph S. Chagnon, aged fifty-seven years.

Clark.—In Colorado Springs, Col., on Tuesday, August 29th, Dr. Franklin A. Clark, aged fifty-four years.

Cook.—In Indianapolis, Ind., on Thursday, August 31st, Dr. George Jameson Cook, aged seventy-two years.

Duer.—In Odessa, Del., on Wednesday, September 6th, Dr. Edward L. Duer, aged eighty years.

Giesy.—In Aurora, Ore., on Friday, August 25th, Dr. Martin Giesy, aged eighty-two years.

Hallock.—In Pittsburgh, Pa., on Monday, September 4th, Dr. William Ewing Hallock, aged sixty-seven years.

Hart.—In Bethel, Conn., on Tuesday, August 29th, Dr. Charles R. Hart, aged seventy-nine years.

Lewinski.—In New York, on Friday, September 1st, Dr. Michael Lewinski, aged fifty-four years.

Merrow.—In Utica, N. Y., on Monday, August 28th, Dr. John G. Merrow.

Pariseau.—In Springfield, Mass., on Friday, September 1st, Dr. William P. Pariseau, of Ware, Mass., aged thirty-seven years.

Pearce.—In Claussen, S. C., on Tuesday, August 29th, Dr. James F. Pearce, aged eighty-one years.

Peck.—In Philadelphia, Pa., on Tuesday, September 5th, Dr. Earl C. Peck, aged twenty-four years.

Reynolds.—In New York, on Thursday, September 7th, Dr. Samuel Moore Reynolds, aged seventy-four years.

Schmitz.—In Wauwatosa, Wisconsin, on Wednesday, August 30th, Edward A. Schmitz, aged fifty-five years.

True.—In Kansas City, Mo., on Thursday, August 31st, Dr. George P. True, aged sixty-six years.

Von Ezdorf.—In Lincolnton, N. C., on Friday, September 8th, Dr. Rudolph H. Von Ezdorf, of the United States Public Health Service, aged forty-three years.

Whitehead.—In Lovingston, Va., on Wednesday, September 6th, Dr. John B. Whitehead, aged seventy-three years.

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Original Communications

THE PSYCHOLOGY OF DISEASES OF THE RESPIRATORY TRACT.*

By G. Hudson-Makuen, M. D.,

Philadelphia.

The chief function of the physician, whether he is a general practitioner or specialist, is to conserve and prolong human life, and yet, notwithstanding our recent much vaunted progress in what we are pleased to call scientific medicine, it appears that the average duration of human life is scarcely greater today than it was in the days of our forebears.

This does not indicate that our progress in medicine, when put to the supreme test, has been altogether fanciful, but it does suggest that something may be wrong and that some of the cogs in our progressive medical machinery may be slipping and in need of adjustment, and if further evidence of a loss of power should be desired, we have but to look to the persistency and even increase in medical quackery. Never was there a time, perhaps, in the history of the world when 'pathies and cults in medical practice were so numerous as they are today, and the fault, it seems to me, is not in our stars but in ourselves, not that we are underlings, but that we are unmindful of certain important facts in connection with our preparation for medical work and our prosecution of it.

Without appearing to be too dogmatic and personalistic, I shall try to point out to you on this occasion wherein we, as specialists in the practice of medicine, are, in a measure, failing to live up to our highest opportunities and possibilities, and to suggest ways and means by which we may increase our usefulness. I desire to emphasize two points: First, the importance of a full recognition of the interdependence of specialties in medicine: and, second, the broad general principles which should underly all specialism in medicine. While these two propositions are to some extent interrelated, I speak of them separately, in order to give each the emphasis which it deserves.

When the practice of medicine began to divide itself into so called specialties, the question first to arise in the minds of all was, "To what extent must general medicine be practised before the physician should enter upon his chosen specialty?" In other words, the necessity for a more or less thorough knowledge of general medicine was recognized from the beginning, but that some knowledge of the various specialties themselves is desirable is a conclusion that has been of slower development.

The throat specialist must be a nose specialist and and an ear specialist and to some extent at least an eye specialist, if he would be a throat specialist in the highest sense of the term, and that he can be a better throat specialist if he is to some extent a pediatrist and even gynecologist and if he has had some experience in general surgery is becoming more and more apparent, but the specialties upon which laryngology chiefly depends for its future progress and development are those of psychology and its related branch of medicine, neurology.

I have, therefore, chosen for my subject on this occasion the psychology of diseases of the respiratory tract. First of all, let it be understood that respiratory diseases have a psychology which is peculiarly their own, as witness, for example, the psychic differences between pulmonary tuberculosis and gastrointestinal diseases, the former being characterized by marked optimism and hopefulness, and the latter by extreme pessimism or mental depression.

The peripheral mechanisms of respiration and vocalization are so closely related to their corresponding central mechanisms, that it is often quite impossible to tell during their united action where the one begins and the other ends, and it is now generally conceded that the greatest improvement in artistic and effective respiration, vocalization, and even articulation is accomplished only when their corresponding central mechanisms, coupled with the higher intellectual centres of the brain, have full rein and are in complete command.

In other words, these psychophysical processes, so vital to health as well as to artistic voice and speech production, are rather more mental than physical, and this predominance of the mental activities over the physical or bodily activities is not confined alone to the development of respiratory and laryngeal functions, but exists also to a marked degree in the various disorders of these functions.

There is no such thing as a purely physical respiratory disease, and I may add that there is no such thing as a purely psychical respiratory disease, but respiratory diseases are both physical and psychical, and their treatment should be both physical and psychical.

It has been pointed out that disease always exists

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*President's Address read before the American Laryngological Association, Washington, D. C., May 9, 1916.

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and progresses in a kind of vicious circle, and in this vicious circle are involved psychical as well as physical activities. Just as health has been called a self maintaining circle, so disease may be defined as a self corroding circle, and we may carry the analogy still further by stating that just as departures from health result from a breaking into the self maintaining circle at some point, so disease must be cured by breaking into the self corroding circle at some point, and as some one has said, if the gateway by which the vicious circle of disease may be entered is in the psychic area of the circle, the disease may be regarded as functional, but if it is in the physical area, it is organic.

This, by the way, gives us a new and more practical definition of the terms, organic and functional, in their relation to disease, and it opens the way also for more rational and scientific therapeutical measures. According to this distinction, the treatment of the so called functional diseases of the respiratory tract, or indeed of any other tract, should be largely psychical in character.

It is true that psychotherapy has been practised after a fashion since the very beginning of the history of medicine, but that this form of therapy has not kept pace with other forms must be apparent to all, and there are good reasons why this should be so, the chief being the fact that the successful practice of psychotherapy requires on the part of the practitioner the profoundest knowledge of both medicine and man, and especially of man. The fact is that few of us are mentally and temperamentally capable of practising psychotherapy in the way that it should be practised, and even the improved curricula of the schools are not offering the rising generation of specialists the kind of assistance they should have.

We all practise psychotherapy incidentally and in a half hearted way, but this is not enough. The modern physician should be able to differentiate clearly between diseases which have a purely physical basis and those which are due to psychical conditions. He should know whether the disease is organic or functional according to the definitions which have been given, and when he has decided to which class it belongs, he should know how to explain the situation. If the patient's difficulties chance not to have an organic basis, the physician should be able to persuade him that no operative interference can possibly give him relief.

If, for example, a man's cough is a nervous or habit cough due to fear of some permanent disability or serious pulmonary disease, this fact must be fully revealed to him in the clearest possible language and his reason must be appealed to in an educative way in order to enlist his psychic cooperation in his cure.

To remove a man's tonsils for the cure of an irritation in the pharynx having its basis merely in a psychoneurotic habit, can only bring discredit upon the surgeon and further disaster to the patient, and to operate merely for the psychical effect of the operation is also exceedingly questionable surgery. Many a tonsil has been sacrificed as well as many a turbinate bone for no other reason than that the patient is suffering from some purely psychical disability, and the sooner this fact is fully realized by the laryngologist and the rhinologist, the better it will be for all concerned.

Moreover, when the diagnosis of a functional disability having a psychical basis is established it is not enough to point out to our patients the true nature of their affection, and to tell them what they must do to be saved, nor is it enough to show them how to do the things that are necessary as well for the body as the soul, but we must actually make them do these things or gradually teach them to do them by a systematic course of reasoning and instruction.

The successful practice of psychotherapy requires the whole man, and the whole man at this best. Of all the successful psychotherapists whom I have met, the late Dr. Weir Mitchell was the most successful. Although he rarely used the term psychotherapy, yet he practised it in a most pronounced and effective manner. It should be said, however, that his was not the purest type of psychotherapy, but that his practice combined in a most skillful manner both physicotherapy and psychotherapy.

Psychotherapy reduced to its final essence depends for success upon the subtle influence which one personality is able to bring to bear upon another and weaker personality. This influence can be exerted by the physician to its fullest extent only when he is thoroughly familiar with all of the constituent elements of the particular personality which he desires to change or rehabilitate. There must be no secrets between the patient and his physician. The patient must be made to feel reasonably sure that the physician knows all, and knowing all can do all that is necessary to bring about a cure in his particular case. In other words, the physician must have made what has been called a psychognosis as well as a diagnosis, before he can hope to influence the personality of his patient.

The method of psychanalysis as suggested by Freud and his followers has been practised with varying results. It is based upon the theory that psychical or functional diseases are due to unconscious or rather subconscious conditions of mind which must be brought up out of their hidden depths into the domain of consciousness before a cure can be accomplished.

The methods adopted for this psychical analysis are through certain complicated association tests and a study of dreams. It is a very ingenious theory and one perhaps more ingenious than practical, but in certain complicated cases and in skilled hands its use may prove to be of great value. In but few instances, however, is it necessary or superior to psychotherapy practised by the methods known as persuasion, education, and reeducation.

The successful practitioner of medicine or of any phase or specialty of medicine must be a psychologist and a teacher. He must be able to differentiate between functional and organic diseases; he must know whether the self maintaining circle of health has been broken into by the psychical or physical gateway, in order that he may know just what particular therapy is indicated. He must understand that although organic lesions are found, the disease originally may have been wholly psychical, and in such instances it is not enough to cure the organic disease, but he must remove its original cause, else a permanent cure will be quite impossible.

All this has a special bearing upon the treatment of diseases of the respiratory tract, for many of them are purely functional, and of psychical origin. It is important, therefore, for us so to understand the psychology of these diseases and the psychology of human nature as to be able to distinguish between those of our patients who are psychopaths and neuropaths and those who are suffering from actual organic diseases which may be relieved and cured by medical and surgical treatment.

It is probably not going too far to say that quite as many of the habitués of our offices and clinics are there because of psychical as of physical disorders, and we must recognize the fact that to treat the purely psychical cases by physical measures is not only useless but in many instances absolutely harmful.

It is well known that to fix the psychism on a particular organ, like the nose or throat, is sufficient in itself to cause to develop the various neuroses of these organs, such as difficult nasal breathing, sensations of intranasal pressure, and even catarrhal states of the nasopharyngeal mucous membrane.

Voice and speech difficulties also arise and are continued as a result of this psychical condition. Laryngeal coughs and the so called sore throats of clergymen and actors are frequently the results of emotional disturbances arising from fear of the disability to which these conditions may give rise.

To fix the attention strongly upon anything always interferes with normal respiratory interchange in that it tends to diminish the frequency and rhythm of the respiratory movements, and to fix the attention upon disturbances of respiration, such as we find in certain forms of asthma and in so called dyspnea, apnea, and polypnea, is doubly injurious because it tends both to aggravate the affection and to establish it as a more or less permanent psychophysical habit.

Whether or not the diseased condition was originally functional and of psychical origin, it must always have in it a psychical element, although it may have become chronic in character and even though it may appear to have an organic basis. For example, faulty respiratory interchange, whatever may be its cause, may result in enlarged or even hypertrophied turbinate bodies, especially when the breathing is in large part oral rather than nasal, on the principle that the disuse of an organ tends to render it organically as well as functionally less efficient in its action; and obviously the removal of such turbinate bodies by operative measures will not result in normal breathing unless at the same time we correct the faulty habits of breathing which were in great measure at least the original cause of the apparent organic lesions. It is not enough, therefore, either in acute or chronic cases, to do operations for the correction of disturbed functions without at the same time or immediately thereafter doing something in an educational way to correct the faulty habits which accompany, either as cause or result, the conditions that we are seeking to modify or cure.

Another good example of the psychophysical habits that arise owing to functional disturbances due to organic lesions is found in the cleft palate speech. The individual with a cleft palate acquires a characteristic speech, and this speech is the result of faulty psychical as well as faulty physical conditions. When the cleft palate speech has once developed, no amount of adequacy and efficiency of the palate brought about by operative measures can in itself appreciably change or improve the speech. This is true because the psychism of the individual has come to accept the cleft palate speech as being normal speech, and this psychical condition must be changed before anything like correct speech can be given to him.

The principle obtains in all our operations upon the respiratory tract, the object of which is to correct faulty function. We have not done our whole duty, therefore, in the removal of tonsils and adenoids until we have by medicoeducational methods taught our patient to overcome the faulty psychophysical habits to which the hypertrophied or diseased glands have given rise, nor have we done our whole duty in a submucous septum operation until we have by medicoeducational measures taught our patient properly to use the free nasal channels for respiratory purposes.

Full recognition has been given to the fact that respiratory difficulties, such as certain forms of asthma, have been due to reflex nervous action following intranasal obstruction and pressure, and some uncomplicated cases have undoubtedly been relieved by the correction of the intranasal deformities, but the percentage of cures resulting from intranasal operations for the relief of asthma and other respiratory affections would be far greater if the operative procedures were accompanied and followed by the correction of the faulty respiratory habits engendered by the original abnormal conditions within the nostrils.

Examples of this kind could easily be multiplied, but enough has been said to show that psychotherapy in the form of education and reeducation should always be used in addition to the necessary medical and surgical measures for the relief of disturbed respiratory, phonatory, and articulatory functions.

The value of this principle is apparent in the particular so called specialty within a specialty to which I have given much of my time and energy, namely, the disorders of speech, and I may say that the treatment of these disorders differs not from that of other disorders of function found in the respiratory tract.

An historical review of stammering reveals the fact that surgery of the phonatory and articulatory organs was formerly looked upon as the great panacea for the cure of this affection. Distinguished surgeons operated not only upon diseased conditions and abnormal structures, but also upon perfectly normal structures, not hesitating, for example, to remove cross sections of the tongue and portions of the epiglottis in the hope of curing stammering. To us of the present day this practice would appear to be absurd, and that any sane practitioner of medicine could even think of such a thing is inconceivable, and yet it was done by some of the best surgeons of the nineteenth century.

We now know that stammering, in the great majority of instances, is of psychical and not of physical origin, and that to cure stammering psychotherapy is quite as important, and in some instances more important than physicotherapy. We know, in other words, that stammering, at least in its chronic forms, is essentially a psychoneurosis, whatever may have been the original cause, and that stammering speech, like the cleft palate speech, can be cured only by a happy combination of psychotherapeutical measures with the necessary medical and surgical procedures.

What is true of stammering is equally true, not only of other forms of defects of speech, such as pseudolalia or faulty articulation, but of many of the other more or less serious functional disorders of the respiratory tract, and as we of the medical profession have been slow in recognizing that stammering and other defects of speech are largely of psychopathical origin and require for their cure psychotherapeutical measures, so have we been slow in recognizing that many forms of asthma, sore throat, and difficult nasal breathing are of similar origin and require similar treatment.

In no specialty of medicine is the importance of these matters so apparent as in our own, for in no specialty is the psychical element so great a factor in the causation, not only of functional, but of organic disorders as well. It must not be overlooked that faulty methods of breathing, vocalization, and articulation, although at first of psychical origin, frequently result in organic diseases which cannot be differentiated from diseases having purely physical bases.

In our discussion of this subject, however, we should try not to differentiate too closely between the psychical and physical, and we should keep in mind that these phenomena are closely related and equally demonstrable as objective entities. A study of the psychobiological phenomena as they appear in a given individual is merely a study of his reactions to his environment, or, in other words, a study of what has been called his mentation, behavior, and personality.

The new psychology, therefore, teaches us not merely how to treat diseases of special organs, such as the larynx, the nose, or the ear, but also how to treat the patient himself or the reactions of the patient to these particular diseases. Moreover, a knowledge of this psychology will greatly broaden the scope of our work, and it will also tend, as Dr. Adolph Meyer has said, to make a medical education absolutely necessary to those desiring to practise the various forms of the healing art.

The suggestion of the desirability of treating the patient rather than the disease is not a new one, but the principle involved has met with only scant favor, and as long as medical practitioners persist in ignoring it, so long shall we have nonmedical practitioners, such as Christian scientists, osteopaths, hydropaths, and all the others of their kind, actually invading our own fields of operation, and so long also shall we fail to live up to our high calling in the practice of medicine.

1627 WALNUT STREET.

THE HOSPITAL TREATMENT OF SIMPLE CHOREA.

By PEARCE BAILEY, M. D.,
New York,
Physician to the Neurological Institute.

Experience with simple chorea has led us to believe that rest in bed and isolation are the essential conditions in its treatment and that they are effective. With few exceptions, this simple method as carried out in hospital wards may be counted on to relieve the symptoms promptly and with a small percentage of relapses. This statement is based largely on the clinical behavior of patients treated in the third division of the Neurological Institute during the past six years. Of patients coming to the dispensary, about one in four are admitted to the hospital. These admissions represent the severer types of the disease, many of the children being unable to articulate in a way to be understood, unable to feed themselves, or to walk. Forty-eight cases have been treated in the third division, ranging regarding sex, age, and stay in hospital as follows:

Sex.		Ages.	
Males	18	Eight to 14 years	30
Females	30	Over 14 years	12
		Under 8 years	6

Stay in hospital.	
Up to 10 days	12
From 10 to 20 days	15
From 20 to 30 days	17
Over 30 days	4

Age. Simple chorea seems to be extremely rare after sixteen years of age. Coming on after that time, it indicates either a pronounced rheumatic tendency or else previous attacks of chorea improperly cured. It may also be an indication after this age of abdominal conditions. In one of our cases, in a woman of twenty-four years, chorea was associated with an ectopic kidney. On operation, the chorea immediately ceased. In another case which complicated pregnancy, a miscarriage occurred in the hospital and the chorea immediately ceased.

Characteristics. The patients have been admitted usually from the dispensary, but many have been sent directly by their physicians. The disease in patients who enter the hospital has usually been in existence for several weeks or months, and various kinds of treatment have failed.

Chorea seems to be a disease which school teachers do not recognize until it fairly leaps to their eyes. We have had many cases in which the children were in and out of school with what must have been a pronounced chorea, but which was not taken in hand nor even noticed by the teachers. The severest cases are those in which the rheumatic history is unmistakable, and are usually associated with cardiac conditions, the most common of which are rapid pulse, murmurs of various kinds, and enlargement. A small proportion of the patients are mentally defective. Chorea occurs in two ways in mental defectives. In the first it consists of choreiform twitchings of the muscles. In this type the twitchings do not follow the ordinary clinical type of chorea, but come and go without disturbing the patient particularly. Other defectives have regular attacks of chorea like other children. This latter variety has a bad effect on the children, especially on those badly brought up. Under these conditions the children become extremely restless, rebellious, have outbursts of temper, and are hard to manage.

Treatment. The treatment consists principally of rest and isolation. This means rest in bed, with curtains drawn, and no communications allowed with other patients in the ward and no visitors. In certain cases, cold packs are given, and in the presence of rheumatic history, and even without it, rheumatic remedies, especially aspirin, are prescribed. In a few violent cases we have used lumbar puncture, which, when the cerebrospinal fluid is under increased pressure, seems to diminish the movements very promptly. In view, however, of the long time the disease has existed before it comes to us and the violence of the motor restlessness, it seems probable that several weeks' complete rest is necessary to overcome the irritability of the nervous system which must have been engendered, so that even if after a lumbar puncture all the symptoms disappear, it seems to us wiser to insist whenever possible on a three or four weeks' treatment for the purpose of reestablishing the tone of the nervous system. We have rarely found it necessary to give salvarsan.

Stay in hospital. Most of the patients who stay less than ten days leave for some reason other than that directly connected with the disease. In a few patients in whom choreic manifestations disappear in two or three days, the parents have taken the children home. We do not feel, however, that ten days is sufficient time for the treatment of even mild chorea. The period between ten and thirty days is the one in which most of the cases fall. At the end of this period in the majority of cases no twitchings have been noticeable for some time, and the patient, so far as we can see, is well, except for cardiac murmurs or lesions which may still persist. A few patients who have stayed longer than thirty days have either had cases of very long standing, or else are those in whom the chorea seemed merely another manifestation of a deeply imbedded long standing rheumatic tendency. Sleep after the first few days is generally very good, although some restlessness and talking may persist for a longer period.

We have been unable to draw inferences from the condition of nutrition. Some patients who do not do particularly well, gain in weight; others in whom the twitchings disappear rapidly, lose weight, but in the majority there is no material change in weight during the stay in the hospital.

Relapses. Relapses occur, but they are comparatively infrequent after hospital treatment. Only three patients have been treated in the hospital on repeated admissions. We are further inclined to believe that relapses are rare, from the fact that only thirteen of the forty-eight patients discharged from the hospital have reported subsequently to the dispensary. Those who have thus reported, with two or three exceptions, have not come more than once or twice and then only for some simple remedy. One patient came back after many months' interval to be treated, not for chorea, but for another manifestation of rheumatic tendency, viz., erythema multiforme. Another came back, after several years of intermittent choreic symptoms, for treatment of a heart lesion; in this patient all twitchings had disappeared.

We consider this result quite encouraging, because so many patients have come to us with histories of previous attacks; several patients have had three or four.

Our general conclusions from cases of chorea treated in the hospital are that by rest and seclusion, when the treatment is extended over a reasonable period, chorea can be permanently cured without much danger of a relapse, and in view of the general relapsing tendency of the disease, we feel that the treatment of chorea is one of the most important functions of a neurological hospital.

52 West Fifty-third Street.

INFECTIVE PULMONARY ENDARTERITIS OCCURRING WITH PATENT DUCTUS ARTERIOSUS.*

With Some Observations on Pregnancy and Heart Disease.

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Case. Mrs. R. B., thirty-two years old, housewife, entered Mt. Sinai Hospital, October 21, 1915. Previous history was negative, except for severe grippe fifteen years ago. No tonsillitis or rheumatism. She always considered herself well until eleven years ago, when, at the time of her marriage, she applied for life insurance and to her surprise was rejected because of heart disease. She had had no cardiac symptoms then or as a child. She had borne two children, now five and three years old; there were no cardiac symptoms during pregnancy or labor.

Present history: For the past three months she had had fever and chilliness; there were also vague joint pains, cardiac palpitation, and increasing weakness. Examination showed a slight cyanosis. The heart was moderately enlarged to the right and to the left, the right border being just beyond the right sternal border; the left border, four and three quarter inches to the left of the midline. Apex normal. There was a Gerhardt dullness in the first and second left spaces, reaching half an inch from the left sternal border. At the apex there was a soft systolic blowing murmur; in the second left space and transmitted into the vessels of the neck, there was a loud rumbling systolic murmur, which ran into the diastole. The second pulmonary sound was sharply accentuated. The lower border of the liver was one finger's breadth below the costal border; the spleen extended to two inches below the costal border. Around both legs there was a crop of small petechiæ.

The blood examination showed 5,500,000 red blood cells; 9,000 white blood cells, eighty-seven per cent. polynuclear, sixty per cent. hemoglobin. Wassermann and Widal were both negative. Blood culture showed a nonhemolytic streptococcus (Streptococcus viridans). Blood pressure: Systolic 105, diastolic 60. Urine: Trace of albumin, no casts, and no red blood cells.

Fluoroscopy (Doctor Wessler) showed a heart normal in size and position. The pulmonary artery was considerably enlarged and pulsated vigorously. Aorta normal. The diagnosis was enlarged pulmonary artery which was characteristic of patent ductus arteriosus. The electrocardiagram showed no abnormality. There was no evidence of congenital lesion such as extraordinarily tall R waves or predominant hypertrophy of right ventricle (Dr. B. S. Oppenheimer).

During the first two weeks of her stay in the hospital she had an irregular temperature of 99° to 102° F. Then on November 2nd and 3rd it ranged between 103° and 104°; it was somewhat lower for the next four days; then it rose to 105°; from November 10th to her discharge it ranged from 99° to 102°. Later blood counts showed from 7,800 white blood cells with fifty-three polynuclears, to 15,000 with seventy-nine per cent. polynuclears; the average counts were from 8.000 to 9,000. The murmur became louder and more rumbling and gradually occupied all phases of the cardiac cycle. The second and only other crop of petechiæ developed two months after the first group and was not very abundant. Two additional blood cultures were taken, the first negative, but the second again positive.

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*Read before the American Climatological and Clinical Association, at Washington, D. C., May 10, 1916.

At no time did she seem to be very ill, except at the short period of high temperature, and when she had a large infarct of the left lung, on December 25th. After a three months' stay she left the hospital somewhat improved.

The present condition of this woman is unknown, as all efforts to find her have been unsuccessful. Her case is of interest, not only because of the rarity of infective pulmonary endarteritis, but also on account of a number of points of practical importance. First, the occurrence of patent ductus arteriosus and infective endarteritis, which is very rare. Hamilton and Abbott (1), who have collected the literature up to 1914, have been able to gather ten cases and have reported a case of their own. Doctor Libman has informed me that he has observed two cases (both without autopsy) which he will publish elsewhere. The present case brings the total number up to fourteen.

Although there is no post mortem evidence to sustain it, the history and physical signs warrant the diagnosis of infective pulmonary endarteritis. There was no evidence of infective endocarditis unless we assume that the soft systolic apical murmur indicates involvement of the mitral valve. The murmur was not constant and its character and the other physical signs do not warrant the diagnosis of endocarditis. No case of infective endocarditis which I have observed has presented such a variable murmur. The large pulmonary infarct would have been a very unusual occurrence in an uncomplicated mitral endocarditis, because such an embolus would have lodged in the greater circulation. We are therefore justified in assuming that the pathological findings in this patient are identical with those which are so well described and illustrated in Hamilton and Abbott's article.

That infective pulmonary endarteritis should occur in congenital cardiac lesions is by no means astonishing, as the conditions which favor bacterial infection are identical with those which exist in the hearts and vessels in acquired endocarditis and endarteritis. That the number of cases of bacterial infection in congenital cardiac diseases should be largest in patent ductus arteriosus is readily explained by the fact that, of all the congenital lesions, patent ductus arteriosus is the one which is most conducive to longevity, as will be referred to later on.

The clinical features agree in nearly all ways with the case reported by Hamilton and Abbott. The special points of diagnosis are well summed up by Hamilton and Abbott, in whose paper the literature of the subject will be found, together with an analysis of the cases reported.

The mild course of the disease in this case was a striking feature; during the long period of observation she did not seem to be very ill and often she was kept in bed with difficulty. It was only when she had the rise of temperature to 104-5° F. and also when she had a pulmonary infarct that she was willing to consider herself sick. Hence, unless we are on the watch for such possibilities, the diagnosis may readily be missed. The only showers of petechiæ which she had were two in number and these were scanty and on the legs only. This will also explain the absence of red blood cells in her urine. In doubtful cases, where the blood culture is negative, the presence of red cells in the urine may be of considerable corroborative value.

I would also direct attention to the course of the fever and the low blood counts. For the greater part of the time the fever was low, below 102° F. A low grade of fever without chills does not exclude the existence of Streptococcus viridans in the blood. Hence the rule which has been followed in Mt. Sinai Hospital to take blood cultures in all cardiac patients who have even low temperatures. A number of cases of infective endocarditis have thus been discovered where the clinical course would not have led us to suspect its existence.

The blood count ranged from 7,800 to 10,400 and only once did it rise to 15,000. The polynuclear count was also low, ranging from about fifty-three per cent. to eighty per cent.

I believe these cases are much more common in adults than is usually suspected, though Abbott (2) asserts that as an isolated lesion, patent ductus arteriosus is among the more infrequent of cardiac anomalies. To too many physicians the diagnosis of congenital cardiac disease is improbable unless there are more or less cyanosis, dyspnea, and clubbed fingers, as well as a history which goes back to early childhood. Nothing is further away from the real condition than such a view. If such symptoms were present to any degree in childhood, adult age would never have been reached; for these children usually succumb to some intercurrent disease. The present case shows how erroneous this view is, and my experience in a number of other cases of congenital cardiac disease which I have observed in adults, corroborates this statement. I will cite only four cases.

The first case was that of a married woman, thirty-five years old, who was admitted for a diffuse adenocarcinosis of the stomach with peritoneal and intestinal metastases and ascites. The physical examination revealed a patent ductus arteriosus, but she had never had cardiac symptoms of any kind, and, although she had to be tapped many times for the marked ascites due to cancer, her symptoms were in no way aggravated by the cardiac lesion.

The second case was a woman, thirty years old, with patent ductus arteriosus and Basedow's disease. Until the onset of the Basedow's disease, five years before her admission to the hospital, she had never had palpitation of the heart or cardiac symptoms.

The third case was a woman, fifty years of age, with patent ductus arteriosus. She entered the hospital for an attack of sciatica. She had never had symptoms until two years ago. These were not marked, however, and the only complaint that she made during her stay in the hospital was of a slight dyspnea and a moderate edema of the feet.

Another of the congenital lesions in adults is coarctation of the aorta, a very marked example of which I would refer to in a man, fifty-eight years of age, who died from a new growth of the lung. He never had symptoms directly referable to the circulatory system, and yet, at the autopsy a very marked coarctation of the aorta was found.

When the congenital lesions exist singly without other complicating congenital defect, very few circulatory symptoms are present, the only evidence of them being the physical signs.

The diagnosis of patent ductus arteriosus may readily be made by the following Hochsinger's (3) rules:

1. Palpable and much accentuated second pulmonic sound.
2. Gerhardt's sign.
3. Thrill felt in the jugulum.
4. Enlarged pulmonary artery in the x ray picture.
5. Murmur in second left intercostal space, which in infancy is always systolic in uncomplicated cases, but as dilatation from the pulmonary artery develops may extend into the diastole.

This patient also brings up another point of the greatest practical importance. I refer to the fact that this woman with a marked congenital cardiac lesion bore two children and went through both labors without trouble. This is also true of two of the cases of patent ductus arteriosus which have already been referred to. One, the case of the woman with the adenocarcinoma who bore two children, and the other, which is most striking of all, the woman, fifty years of age, who in spite of a patent ductus arteriosus had borne eight children and had also had three miscarriages, all without manifestations from her heart!

What is true of these women with congenital cardiac disease is also true of acquired cardiac disease, viz., the ease with which children are borne by these patients. I make this statement as the result of having paid particular attention to this question during a long hospital experience. I have always inquired of the women who were admitted to my service with cardiac lesions and who had borne children, whether there had been any unusual trouble during the pregnancy or the labor. Usually the answer came in the negative; indeed, they seemed to be astonished that such a question should be put to them. Further corroboration of this statement is to be found in the fact that most of these women had borne two or more children. I know of one case of a woman with valvular disease who had borne eleven children without discomfort from her heart.

There is only one lesion which gives trouble, namely, mitral stenosis, and this is true only in the uncomplicated type. When there is an associated mitral regurgitation, no great difference is reported in the pregnancy or the labor. That the addition of the mitral regurgitation to the mitral stenosis should ease the cardiac condition is self evident.

I cannot bring statistical data to prove these statements, as I have never tabulated these cases. A fact definitely stated as being based upon twenty-three years' experience in an active medical service is more convincing than any array of figures. This experience is so opposed to the general teaching, that it would be a matter of interest to have this point discussed today.

A striking illustration of the prevailing views as to the dangers attending labors in congenital cardiac lesions is provided by Rosenthal (4), who reported a woman with patent ductus arteriosus upon whom a Cæsarean section was performed, so great were the fears that she would not go through her labor. Up to the time of labor she presented no untoward symptoms; but, as soon as labor set in, the Cæsarean section was performed. This operation she bore as a normal individual would have done, and made an uneventful recovery.

I wish to add that these views in regard to cardiac women refer to hospital patients. In private practice my experience has not been the same. I have not seen so many pregnant cardiac women, as prevailing views in the profession do not encourage such women to marry or to have children. If, perchance, they do become pregnant, abortion is too often advised. The poor patients, whose lives have not been made miserable by the chance of finding a murmur and whose compensated hearts have not been so needlessly and harmfully disturbed and coddled by over solicitous physicians, usually fare better than their rich sisters.

I would not be misunderstood as being too sweeping in my remarks. What I urge is that compensated hearts (uncomplicated mitral stenosis excepted) should be regarded in a much more favorable light as regards marriage and pregnancy than is now the rule.

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72 EAST SEVENTY-NINTH STREET.

ACUTE ANTERIOR POLIOMYELITIS.

Some Considerations Regarding Recognition of Its Clinical Types, As Revealed in the Present Experience in the States of Pennsylvania and New Jersey.

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The present remarks have reference exclusively to the diagnostic elements of infantile paralysis. Not infrequently the diagnosis has been either overlooked or else was incorrect from the beginning. The latter occurred chiefly by reason of associated unusual symptoms. The erroneous diagnosis led to neglect of isolation, hence to contamination of healthy members of the same families and of friends. The object of the present contribution is to lay special emphasis on the common manifestations which are apt to obscure the main underlying pathological condition.

At the time of writing these notes the writer's experience concerns forty-five cases seen chiefly in consultation. Among them eleven cases presented extremely slight symptoms. In all the onset was similar, namely, slight malaise with gastrointestinal disturbances (generally diarrhea). A sudden weakness in one or both lower limbs followed. The patellar tendon reflexes were somewhat diminished, but at no time abolished. The lessening of the knee jerks was equal in both legs in the entire series of eleven cases. As an interesting feature may be mentioned the greater decrease of the tendo Achillis reflex than of the knee jerks in six cases, also the disappearance of the same reflex in two cases, finally total preservation of the Achilles reflex in three cases. This group of cases was instructive from the standpoint of diagnosis. The abolition of the Achilles reflex together with the typical onset of the disease was sufficient to make a correct diagnosis. The pronounced diminution of the Achilles reflex together with a certain amount of weakness of the lower limbs, also the sudden onset, enabled me to recognize anterior poliomyelitis. The amount of weakness was so slight in some cases that the disease was overlooked by the attending physicians and various other diagnoses were made, such as nervous exhaustion, indigestion, heat exhaustion, and others. The condition of the reflexes is a very important diagnostic element in this affection. A number of times this symptom was intentionally ignored, as no importance whatever was attached to it, while in reality it was the deciding factor in the recognition of poliomyelitis.

The chief elements in very mild and abortive cases are: The onset and the state of reflexes. Among the latter, not only the patellar, but also the Achilles tendon reflex should be investigated. Diminution of both, abolition of one in spite of preservation of the other, are all symptoms of the affection of great diagnostic value.

Among the thirty-three remaining cases there were: Fifteen of the usual type, eight of the meningeal, three of the bulbar, and three of the cerebrospinal varieties. The remaining four presented certain misleading symptoms which will be discussed later. The fifteen typical cases presented nothing unusual. There were flaccidity, paralysis, total loss of reflexes, also the characteristic onset. The lower extremities alone were involved in eight cases; one arm and the homolateral leg in two cases, one arm and heterolateral leg in one case and one arm and both legs in one case. The diagnosis in all fifteen cases was made correctly.

The eight meningeal cases were not diagnosed correctly. The patients suffered pain along the spinal muscles, rigidity of the latter and of the neck, and some pain in the legs. The onset in these cases was without gastrointestinal disorder, but there was a slight elevation of temperature. The impression of the attending physicians was that of frank cases of meningitis, either tuberculous (five cases), or serous (one case) or of the meningococcus type (two cases). The state of the reflexes was totally ignored, hence the errors. In fact, soon and in some instances very rapidly, the rigidity of the neck and spinal muscles subsided considerably; pain, however, remained in the lower extremities. In spite of a diminution of muscular rigidity, of absence of Kernig's sign, and of general amelioration, the diagnosis was maintained to be meningitis. The examination for reflexes revealed a total absence of patellar and Achilles tendon reactions; the paralysis was flaccid. The diagnosis of poliomyelitis could not be doubted. Lumbar punctures failed to reveal by direct and cultural methods the presence of either tuberculosis or meningococcus microorganisms. In two of these cases the erroneous diagnosis led to disastrous results. As no isolation was practised and no preventive measures were taken, other children of these two families fell victims of the disease.

Another source of diagnostic error was found in the bulbar cases (three). One child after a temperature of 99.5° and sudden loss of appetite, began to have difficulty in swallowing and at the same time acquired a left facial palsy of the peripheral type. Also the child had some stiffness of the neck, the diagnosis of meningitis was made, and other children and friends were permitted to be in contact with the patient. The child's condition grew worse, deglutition became more and more embarrassed and liquids regurgitated through the nose. Upon examination I found that in addition to these manifestations there was a distinct paresis of the lower extremities with diminished patellar tendon reflexes and total absence of the tendo Achillis reaction on both sides. Evidently I was in presence of a poliomyelitis of the medulla and spinal cord, but the conspicuous symptoms of the medulla prevented the attending physician from makig a complete examination of the patient at the beginning.

A sister of the patient was permitted to occupy the same bed, with the result that she also acquired the affection, but in her case the lower extremities only were involved. Another patient, a little girl of nine years, presented an almost identical picture with the first, but without the facial palsy. Both patients died within six and eight days respectively. The third bulbar case of poliomyelitis manifested suddenly some difficulty of breathing and swallowing, which gradually became more and more pronounced; the temperature was 100° F. At the time of my examination I found also some weakness in the left arm with decreased biceps and triceps reflexes. This patient died on the fifth day A little cousin was visiting the patient and during the illness was permitted to play with her. A week later she showed a flaccid paralysis of the lower extremities with a diminution of the knee jerks, a typical spinal type of poliomyelitis.

There were three cases of cerebrospinal type of poliomyelitis. Here we had a semicomatose state with rigidity of the neck and a paretic condition of three extremities with marked diminution of all tendon reflexes in the affected limbs. As the stuporous condition lasted three days and was very conspicuous, the diagnosis was made either of cerebral hemorrhage (two cases) or of leptomeningitis (one case). After several lumbar punctures in each case, the cerebral symptoms disappeared, but the spinal symptoms remained. A sister of one of these patients, eleven years old, acquired in ten days infantile paralysis.

The following four cases presented symptoms of an unusual character. Three boys, ten, ten, and eleven years old, and a girl of eleven manifested the typical picture of anterior poliomyelitis, affecting the lower extremities in three cases and one upper and both lower in the fourth case. Upon examination for reflexes the following anomalies were found, which caused the physician in attendance to reject the diagnosis of poliomyelitis, and therefore to expose relatives and friends to infection. In three cases, on stroking the soles of the feet, Babinski's sign was elicited, also in the same cases Oppenheim's and the paradoxical reflexes were distinct. Repeated attempts proved the presence of these reflexes to be correct. Moreover, in one case where Babinski was present in the less affected limb, the paradoxical sign was present on the same side, but it was heterolateral, viz., on testing for it on the opposite side the extension of the great toe was evident on the side where the Babinski was present. The Oppenheim sign was absent in this case. I had the opportunity to examine the child and treat her for headache one month prior to the onset of poliomyelitis. Jesting with the patient while she was in bed, I happened on several occasions to stroke the soles of her feet and there was always a downward flexion of all the toes. There can be no doubt that the toe phenomenon had here a physiological relation to the poliomyelitis. Reasoning from the standpoint of anatomophysiological information regarding the presence of the toe phenomenon, the physicians in charge concluded that these cases had for proof involvement of the lateral motor tract, hence they were not cases of poliomyelitis. They overlooked, however, the total absence of tendon reflexes. The rejection of the diagnosis of poliomyelitis led them to permit promiscuous crowding of the patient's house, with the result that no preventive measures were taken and within one week one friend acquired the disease. The onset of the disease in these four cases was characteristic; the sudden paralysis of the extremities and its flaccid character, also the total abolition of tendon reflexes, are all manifestations which are too typical of poliomyelitis to require special emphasis. The presence of the toe phenomenon only implies that the lateral motor tract is in a state of irritation through the extension of the pathological process. A simple encroachment on the tract is sufficient to produce the toe phenomenon. The latter occurrence, although unusual in acute poliomyelitis, should not prevent us from recognizing the affection if all other typical symptoms of the latter are present, particularly flaccidity of the musculature and impairment or loss of the tendon reflexes.

Acute anterior poliomyelitis is a disease whose chief underlying condition is an inflammation of the gray matter of the cord, otherwise an inflammation of the central portion of the reflex arc. Paralysis and loss of reflexes are the inevitable consequence of such a condition. According to the degree and intensity of the inflammatory process in the ganglionic cells of the anterior cornua, the degree and intensity of paralysis of the muscles depending on these cells will be manifested. It is consequently urgent in every suspicious case to investigate very carefully the power of the limbs, the locomotion, and the state of reflexes. A mere diminution of these elements is sufficient to give rise to suspicion of poliomyelitis. The latter will especially be correct if the condition is sudden or rapid, if it occurs after an acute onset with malaise, fever, and a gastrointestinal disorder in the midst of apparent good health. We must not be misled by the presence of unusual symptoms, cerebral, meningeal, bulbar, or those referable to other portions of the cord rather than to the cells of the gray matter. As to the bulbar cases, they are identical with the pure spinal cases, with this difference, that while in the latter the cells of the anterior cornua, in the former the cells of the bulbar nuclei are involved. There is a complete analogy among these groups of cells save that they are situated in different places.

Examination of suspicious cases, especially during epidemic periods, must be most thorough. Bearing always in mind the pathology of acute anterior poliomyelitis and the physiology of the ganglionic cells of the anterior cornua of the cord, we must expect at first a motor and reflex disorder in the limbs innervated by corresponding segments of the cord. In the entire clinical picture of the disease these two disturbances are the most essential and therefore the most conspicuous. We have seen above to what disastrous results erroneous diagnoses led. While in some cases the chief symptoms were overlooked, in others they were intentionally ignored. The result was omission of prompt preventive measures for unaffected individuals and extension of infection. The practical importance of prompt recognition of acute poliomyelitis is too evident for me to dilate further on the subject. The unfortunate occurrences mentioned warrant us in laying special emphasis on avoidable diagnostic errors.

1812 Spruce Street.

ANTERIOR POLIOMYELITIS: THE AFTERMATH.

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When the present alarming epidemic of anterior poliomyelitis is over and the acute cases have so far gone on to recovery that they are dismissed from the hospitals and returned to their homes, a new and difficult problem will present itself; preparation for the prolonged chronic state that will follow. We, who have had the benefit of treating and observing the cases left by the earlier epidemics and the constant sporadic cases, know that the hardest part of this dreadful scourge of childhood comes later. The child, dismissed from the hospital when the acute symptoms have subsided, is returned to its home, where it meets conditions more or less kindly, sanitary, hygienic, and intelligent—usually less—and the long and tedious struggle against crippledom begins.

The department of health has issued and sent the following notice to the parents and guardians of each child discharged as recovered, with lists of the hospitals and dispensaries where orthopedic treatment may be obtained:

> Your child is about to be discharged from the immediate care of the Department of Health, there being no longer any danger of his or her spreading the disease. While in the hospital much has been done to lessen the deformities. There remain, however, weaknesses of .... With proper care this deformity will be greatly lessened. With neglect it will tend to increase. You are strongly advised to consult your family physician, if he is skilled in the care of deformities, or visit the nearest one of the orthopedic dispensaries in the city given on the enclosed list. In any case, place your child under proper supervision for at least a year, as this tends to lessen permanent disability; neglect may increase deformity.

This is all very good as far as it goes. At first the child is brought with fair regularity two, three, perhaps four times weekly to the clinic. But soon the mother tires of the journey with a heavy helpless child; other duties intervene; household cares and the other children demand attention. With the slow response to treatment and the lack of visible improvement, the apparent hopelessness of the situation dawns upon her. The visits to the dispensary become irregular, soon cease altogether, and the child is brought to the clinic only when a brace is broken or a deformity becomes so exaggerated and the child so helpless that hope of an operation for relief is entertained. Complete recovery is so rare as to be truly negligible; the prognosis depends on many unknown factors. Early spontaneous recovery of function, however, the recovery of reflexes, and loss of reaction of degeneration are good indications of the reconstruction and regeneration of the nervous system.

A voluntary motion is a complicated process, and even if a large number of centres of the anterior horn have been destroyed by the inflammatory process, under proper stimulation the nerve impulses will sooner or later find a way by which they can pass around the break in the circuit and again innervate the damaged muscles. It is not possible to limit the time for such spontaneous recovery. The experience of the writer is that the greater part, if not all, takes place in from six months to one year. With proper treatment much further recovery can be secured. An early loss of the reaction of degeneration means an early improvement of muscle paresis or weakness, which is much more common than complete loss of power. The persistence of the reaction of degeneration does not necessarily exclude recovery.

The loss of muscle tone, the overstretching of muscles and tendons, and the presence of bone or joint deformity are important factors in prognosis. This overstretching of muscles and tendons is as serious as the actual paralysis, and often ganglion cell recovery is completely masked by the loss of muscle tone. It is therefore of the greatest importance that the limb be placed *at once* in a position of muscle balance or even overcorrection and thus kept in a position less liable to lead to subsequent deformity; to maintain the tone and life of muscle fibre, and to guard against strain, which increases the degeneration of fibres.

A wrist drop, for example, can be kept up by an overstretching of the extensors in a Jones's splint; or a flail shoulder hyperabducted and kept at rest in a suitable splint or position. If paralysis affects trunk and abdominal muscles, so often overlooked, the cloth corset or plaster jacket is imperative. If the legs are affected, the child must not walk or stand, as only the ligaments then maintain the body weight, and they are insufficient if not supported by the muscles. Faulty postures must be guarded against. It is astonishing how much power will return after years of treatment if the muscles have been protected and maintained in their proper position.

Complete rest of the muscles, then, in the physiological position of the joint, is the indicated procedure. There will be difference of opinion as to the length of time of this absolute rest. Experience would lead me to say that each case must be a law unto itself; for the leg cases there is much to lose and nothing to gain by the too early resumption of walking. The moment the child is returned to its home and put on its feet, it resumes the activities of daily life. Restored to general health, it is even more ambitious to exercise than before. Long walks, running, jumping, climbing, etc., are attempted, and all stimulate the unparalyzed muscles. What wonder then if the child soon has a deformity brought on by the contracture of the antagonists? I have seen children in the heaviest braces do the most astonishing "stunts" if left to themselves and unmolested. Needless to say that all this is intensely injurious and retards, impedes, or prevents recovery.

The ideal immediate aftertreatment then, and of vital importance, consists of prolonged rest in bed for a suitable time—each case according to its needs.

After all fever, pain, and tenderness have disappeared, applications of radiant light and heat are in order, not only to the affected muscles, but also along the spine; short, gentle mechanical stimulation by vibration; careful and graded massage; at first only by gentle stroking, then moderate kneading, combined with stroking and bone massage or tapotage.

The massage must go hand in hand with electricity, interrupted galvanism (never more than five ma.), and hot baths of the affected limbs. All of these measures combine to induce a better blood supply, hasten the lymph along its channels, promote warmth, bring nourishment to the part, and thus prevent muscle deterioration. Muscle training and graded exercise are to be begun as soon as warranted by the general condition and may be given to all children over three years of age; even infants may have the muscles gently exercised for a few minutes at a time.

All of the foregoing procedures are to be started very cautiously, no treatment over five minutes, and gradually and methodically increased as strength and function return. Fatigue and overstimulation are extremely detrimental. These treatments should never be given by untrained attendants. Needless to say that diet, correct habits, proper time for sleeping, eating, etc., play their important parts. Under these conditions and with these methods the chances for recovery are immeasurably increased; although it must constantly be borne in mind that restoration of lost muscular power and function is a process which extends over a long, indefinite period of time.

Scores of children in a few weeks will be returned to their homes. Where are they going to receive this ideal treatment? The bringing of these little unfortunates to the crowded dispensary from distant homes, transferred from car to car, sitting around for hours on crowded benches and waiting their turn, then dragged back to the poor unsanitary home and thrust in a corner, while the poor overburdened mother takes up her neglected household duties (usually an entire afternoon is taken up by a visit to the clinic): What wonder then if she is too tired and busy to give the child the warm bath and proper food as she has faithfully promised. All the benefit derived from the treatment is undone, the fatigue and excitement of the journey have counteracted and annihilated all the good that had been attempted. The little victim of circumstance and environment sinks deeper and deeper into his helplessness and crippledom and into his dreary and unhappy future.

I am afraid we are sadly unprepared for the aftermath of this serious epidemic. It is the intention of the directors of the Day Home and School for Crippled Children, if they can secure sufficient funds for that purpose, to keep open, the year round, their beautiful home on City Island in Pelham Bay Park, now used only for a summer home; take as many children as their means will permit, and work out scientifically and carefully the problems of prevention and cure; later to correct the unavoidable deformity by the best orthopedic skill, so that every child that comes under their care, afflicted with this cruel disease and handicapped at the very threshold of life, may be passed safely over the bridge which connects this crucial period of helplessness and dependence with an independent normal and useful future.

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OCCUPATIONAL SPECIALIZATION IN THE DEFECTIVE.

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So much of the medical work—because of the very infancy of the science—is yet necessarily diagnostic, analytic—really destructive; so much of it is often only a combing of the human pile for the best, for the fittest, and the separation of the remaining into working groups, into studying groups; so little of it is really synthetic, attempting to work up this separated material into something better, making each one fit into his corresponding niche—that the movement for occupational adaptability in early life, for the normal at least, is a step forward. To be complete the movement must include in its deliberations individual variations and defects, both mental and physical, and must try to determine in what special spheres of life these considerations will not act to militate against the individual or against progress. For, with the tendency to specialization in everything, it should not be difficult to find a special sphere for every individual completely outside of the operation of a particular variation or defect.

Even if the question of occupational guidance is too general to be of especial interest to the physician, the question of occupational adaptability for the subnormal and for the defective—for our patients—and their guidance thereto, is peculiarly within the province of the physician as a therapeutist. After doing his utmost for a patient, the physician still has a duty to perform—to advise him what occupations he can enter with respect to the capacities of the nondefective faculties, and which he cannot enter because they necessitate the use of the defective faculties to their greater injury, or, economically, to the inefficiency of the individual.

If a "good result" in medicine or surgery means anything, it means not merely the aimless motion of a member, but the actual practical use to which it can be put. More broadly, the result concerns itself with the occupation to which he can be put in spite of his defect. A good result must be considered in the concrete, perhaps in respect to some particular vocation. Medicine aims not alone at the alleviation of human ills, but at the conversion of the potential in every one, to usefulness, whether normal or defective.

To this end the physician must acquaint himself with the physical, mental, and even temperamental qualities of his patient. He may call to his aid those who know the personal requirements of the various vocations, and then make appropriate comparisons. Indeed, physical conditions in relation to occupation might well receive special treatment, either as a specialty for the physician or in conjunction with lay vocational counsellors.

Thus far the question has concerned itself mainly with the special defective, such as the blind and the mute. Yet there are more of the subnormal, than the definitely abnormal, who deserve first consideration, if only from the force of numbers. Wherever one deals with the defective, whether in the home, in the hospital, or in the clinic, there should be facilities for physical and psychological measurements to seek out the patent faculties, determine their scope, and to what extent they are capable of being trained. Training should then be started early and intensively. No wasteful attempts must be made to train wholly incompetent faculties. Rather they should be abandoned and sacrificed in the interest of the more potent ones. Any peculiar capacity, bent, special inclination, or native ability must be particularly tested out and studied for unusual vocational possibilities. Individual inclination can, however, only be the deciding element when it is found, after training to the highest laboratory capacity, that there is a choice of occupations where the very faculties or senses found to be the best are needed.

In order to obtain a finer division for the defective, this inquiry must not stop after finding a special aptitude for a certain vocation, but must continue until a particular part of it is found where he can do best—in which he can specialize. A defect can often become a blessing in disguise because it brings into relief some special fitness which otherwise would unfortunately not have been brought out. Specialization in the higher vocations and professions is now the rule. There seems to be no reason why specialization, even in the lower ones, cannot be developed, on a higher basis, however, than on the basis of mere machine automatons.

While it may not be quite feasible to run over the whole list of vocations and vocation parts, and to determine for each of them exactly what faculties, and in what degrees, are required and which are not required, it is quite possible to take every defective as he presents himself and to look into his vocational possibilities very thoroughly, at length—even in a very leisurely way, until a suitable occupation from all angles is found for the patient (1). It is upon this determination that the happiness and the welfare of the individual as well as the easing of the burden from society from misfits and incompetents revolves. Whenever we survey the defective of one kind or another who is constantly presenting himself before the physician in his professional capacity, we cannot help conscientiously asking ourselves what he will do for a living after his discharge as beyond further improvement.

Into whatever endeavor we look, we find that physical efficiency is the important element in success. Acceptance into civil, public, or military positions is usually preceded by a physical examination in an endeavor to select the best and the most fit. Often it is a weeding out process. If none of the applicants attain the set physical standard, none are selected. But when an individual has been rejected for this position, for that position, for every position, because of a gross physical or sensory defect, there yet looms up the question, What is this individual good for in spite of his defect? Is he permanently to be cast aside? It takes no degree of expertness to find defects, to consider every gross defect a drawback to earning one's living in every capacity. Real discrimination in an examiner involves determination not merely as to general unfitness for occupation, but determination as to special fitness for a definite or for a special occupation. Whether a defect affects one's ability to earn a living depends upon the special training the individual has had, perhaps because of the defect, and wherein the latter needs to play no part.

The medical examiner must be familiar with the physical, mental, and psychological requirements of the occupation for which the examination is held. If the applicant's defect is a bar, the examiner can do real constructive work by being able to recommend an occupation where this defect would not be a bar. The examiner must be quick to discern special fitness of other faculties for other occupations. There seems to be a natural tendency to compensate one part of the body for defects in another. Whether this compensation along other paths is real, or only the result of specialization and intensification on nondefective faculties and their consequent greater development, is of no moment (2). It does serve to illustrate that what is credited to Nature can be carried out for the defective by intelligent investigation and effort—and thus a place be found in this life for every one. It is along these lines that the medical examiner's training must run. His must be a specialty. He must not be merely a detective of gross defects. He must take a prominent part among those who do constructive work. He must be able to pass upon psychological defects as well as upon the mental and the physical. Often an individual may have all the physical and mental qualities, yet not the psychological. He is not adapted for that work. His efficiency would have a tendency to be lowered much more than if he had less of the physical and mental but more of the psychological.

On the other hand, it is almost too late for an examiner, unless he finds special aptitudes, to recommend likely occupations to rejected applicants, especially when trained only along unsuitable lines. This recommendation should have been made in early life in the form of appropriate vocational training and guidance. In anticipation of the requirements of vocational life, it becomes the special sphere of the educational systems to have cognizance of the capacities and the limitations of the school child, and to make their training scientific and as much individual as is necessary to take up the slack of its limitations. Where defects are not remediable they must be shunted out of harm's way. In civil life a man may be made to create a place for himself because he has something special to give, perhaps which no one else has to give in like quantity or in such concentration. His defects, no matter how profound, then become immaterial. In every instance special guidance and training would conserve a great deal of good material. The apparently natural genius of some marked mental or physical cripples can be imitated in greater quantities than are now present in the few shining examples. The blanket rejection of defectives must deprive the public of many potential geniuses. Indeed, in certain occupations requiring intensive application, the defective may have an advantage because he is compelled to devote all his attention to the few patent paths. He is not distracted by the activities and the demands of other paths and other senses. The development of this sort of genius must be encouraged by urging all examiners to take notice of the possibilities of the special adaptability of defectives.

Instead of engaging in tiresome and always exhausting mechanical work, children should be encouraged to pursue healthy apprenticeship in previously determined suitable occupations. There would be a larger economical gain in the long run. Material would be created for enlarging many infant industries. Besides, this apprenticeship would fill the place of concrete muscular and psychological exercise, which children would otherwise have little opportunity to get. Ultimately there would be a proper alignment of all work and of all workers. Potentially good workers would not be seeking places now filled by the unsuitable and the incompetent. Too often do we find muscular men doing work requiring little muscle. Much of their energy is going to waste unused. They should engage in occupations where they have an opportunity to use up all their available working energy. There would be less tendency for overplus in one occupation and scarcity in another. There would result a veritable social conservation of energy.

Of course, the question of vocational guidance has no application in unskilled lines of labor. We attempt to lift the people out of this. Yet the lower the scale of the labor, the more serious are physical defects and the less serious the mental—and vice versa. In so much as the mentally and economically defective are forced to choose the lower occupations, just so much does their physical condition affect their ability to earn a living. When they are poor, it is imperative to train them for special vocations. But those who receive preliminary special education purposed to bring them out of the realm of the unskilled, unless they are properly guided in the matter of their education and in the choice of vocation, are fitted for naught else but unskilled labor. They will not do this work because they feel that their education has lifted them out of the social class of the unskilled. These form the unfortunate examples of the lack of proper guidance. They have appetites for better occupations, but no means to satisfy them.

Careful survey of the mental, moral, physical, and hereditary tendencies of the child during school life really begins the preparation for vocational life; there should be a close and accurate understanding of the assets and the liabilities. When the time for actual choice arrived, further investigations would be final and corroborative and not primary. Even with the later acquired defective who becomes the special charge of the physician, the question would be much simplified by consulting the survey records. No survey is complete unless it includes the consideration of individual peculiar gifts, bents, abilities, powers, and shortcomings. Often a careful analysis of the play bent is a useful guide (3). In addition, the psychological laboratory can do practical work with apparatus paralleling the movements, individual and coordinated, of machinery, tools, or individual motions used in various occupations. The individual's ability to keep pace with these movements could be tried out, and he could then be trained in the movements in which he is most proficient. The tests must take special account of the fatigue indexes for the various movements (4) ; but laboratory determinations are not to be final until after repeated experimentation, perhaps in conjunction with occasional seminar work in the workshops, and after repeated agreement of the psychological findings.

It is obvious that the most extensive psychological tests cannot parallel all the vocational necessities. The supreme test would occur in actual contact with the work—but except for occasional seminar work this is not feasible. Those who accidentally drift into occupations to which they are unsuited, often find out when too late that they have not the qualifications for success because of some mental, physical, or temperamental defect. The laboratory would at least reduce the number of the unadaptable.

Many of these vocational failures, finding themselves barred from success in vocations unwisely entered into, resort to paths of least resistance among the delinquent classes. It is vocational treatment while under restraint that is redeeming so many of them. Vocational ability is an ability to overcome the resistance of the materials worked with—and then of other elements. Those who have not had this training can overcome nothing except that which lies in the path of least resistance—crime. Furthermore, the greater part of this class are mentally and physically defective, and unable, therefore, to assimilate the general training given indiscriminately to the normal as well as the abnormal. They need special individual training and guidance suitable to their defective constitutions. These observations about the criminal can be extended to the vagrant, the pauper, and the ne'er do well classes, who frequent the lodging and the poor houses. They all need to have their patent faculties dug up, trained, developed, exercised, and then harnessed to the proper occupations to work out their own salvation instead of being parasites on the public.

There is so much sensory deficiency which restricts the range of usefulness, of which so much is due to nondevelopment, that the development of the senses must take precedence over nearly every other consideration. While the senses have their maximum capacity, they do not have their maximum acuity until after training. Unless all the senses are trained, some very capable ones will be overlooked, and their effect on the development of the brain will be lost. We can never tell what even a defective organ will do until after we have tried it. We never know its utmost possibilities until we have trained it. A defective but trained faculty is better than an acute but untrained one. Even the training of muscles to better coordination has a marked effect on brain development. It is for this reason that writing is such a factor in mental development. From this source of mental development the illiterate are deprived. To this extent, at least, they are defective. If they are on the border line, literacy will often help to lift them out, while illiteracy will serve to keep them among the defective.

Whatever form of training is used to develop the senses, the effort is justified, even if along lines considered by many as not material—music, painting, etc. Sensory training is the most efficient mental training. Where sensory training in the special arts cannot be carried out, psychological apparatus should be improvised. The psychological exercise would be of benefit. The sensory discipline and the muscular coordination thus obtained would be invaluable in vocational life. Many of the fine arts now have a distinct place in the commercial arts. Those who are physically weak, especially if they have some sensory aptitude, even if not positive genius, could find places for themselves.

For patients having general constitutional diseases or other gross conditions, and yet who must be self supporting, it is quite necessary to advise and to supply proper occupation. This is particularly the case with those predisposed to tuberculosis, for those predisposed to rheumatic conditions, for those with heart lesions, with tendencies to skin disease, with catarrhal conditions and the like, which are so likely to be activated by unsuitable occupations. Those with flat chests and weak musculature must not work at indoor occupations, but must be trained for out of doors. The cardiac subject must not engage in an occupation requiring muscular exertion; the rheumatic in exposed occupations; the catarrhal in dusty or superheated occupations; those with spinal curvature, where heavy lifting is required; those with flat feet in ambulant occupations, etc. Individuals with repulsive facial conditions cannot engage in occupations which require personal contact with the public, even though they are physically and mentally competent. The bar is even greater than if they were afflicted with gross physical deformity or mental defect. They would be the very persons to do the intensive research work so necessary in many callings.

It is important to ascertain whether a man is motor, visual, or auditory minded. There are vocations which require one or other of these types. Work requiring the presence of a type not obtaining in a particular individual must be avoided. Failure is very likely in occupations not chosen with this end in view. It is a waste of time and energy to continue an academic education in a person who is motor minded, no matter what his station in life. It is common experience to find that children who cannot learn in class are extremely good in shop work. It seems that they are so glad to be relieved of the trying academic studies, that shop work is more than a mere relaxation and pleasure to them, and they apply themselves assiduously to it.

Certain occupations require certain special qualifications regardless of the general composition of the individual. Some occupations require expansive but superficial apperceptions, others require diminutive but deep or detailed ones; some occupations, like telegraphy, stenography, and telephoning, require good auditory memories, others visual—and so on for all occupations. Certain occupations require good muscular coordination, usually obtained in the motor minded. Those with paralyses and muscular asthenic conditions, or with ataxic conditions, are not suited for occupations where quick muscular action is required, either in the carrying out of the work or in quickly avoiding sources of personal danger. Certain occupations require a mathematical turn of mind, like engineering or architecture. Some occupations demand certain temperaments or mental or moral traits, like medicine, law, and theology. Good eyesight is absolutely essential in the transportation occupations.

On the other hand, as we look over the list of occupations, we find that there are certain of them where many defects will not be hindrances, where they may even be of advantage. Because of the power of magnification possessed by myopes they are better fitted for such near work as is required in the engraving or lithographic trades, than the normal or hyperopes, the latter of whom especially, have severe eye strain on doing near work (5). Boiler makers and gunners are probably better after becoming deaf. Blind piano tuners are considered better than others. The highly developed tactile sensibility of the blind makes them desirable in basket weaving and broom making. The remarkable memory of some imbeciles and morons is significant.

As the most important of the senses the visual requirements of vocations deserve first consideration. The range of vision does not vary a great deal if it is considered that in near vision the distance between maximum and minimum is only a matter of inches; and for distant vision often only a matter of feet. For real distance negotiation artificial optical aids are necessary. Real visual acuity has to do with the patency of the retina, the nervous paths, and centres, and not so much with the shape of the eye ball or of the lens. Except where the trouble is retinal or central, defects can usually be corrected to a working basis, at least for some occupations. Almost everywhere individuals are seen getting along with fractional parts of vision. As a general rule, however, it may be said that the lower the plane of the occupation, the less the vision needed to earn a livelihood. But in the transportation occupations, the safety of the public demands the highest degree of visual efficiency, and unless present no amount of inclination or native ability should influence a decision not to engage in them. It is the nature of the occupation, primarily, that must determine the barring effect of visual deficiencies.

It is not often that the loss of one eye, where the other is normal affects one adversely in a vocation. Binocular vision gives greater expanse of vision, monocular gives a smaller field, but greater detail. It is common practice to obscure the vision of one eye where greater concentration of vision is wanted in a small field.

In order to obtain the most from the sense of vision, it is necessary to train it to better observation, and to learn to call to its aid all the sources of orientation. Vision should be educated to perceive more objects in its field, more detail, and more of the circumstances modifying them. How many people "have eyes and see not, ears and hear not!"—because they are not trained in sensory discipline or observation. The power of observation depends upon the discipline and harmony of all the senses. Sensory discipline is as necessary to bodily efficiency as general discipline to universal efficiency (6). Wherever there is not discipline, there is disorganization and dissolution whether in an individual's body, in an organization, or in the whole body of the people.

The possibility of teaching new occupations to those with serious acquired defects, who have as a result been shut out from their occupations, and who must choose new occupations from within restricted ranges, has been demonstrated in Europe as a result of the conflict. The final results must soon begin to appear and be guides for similar work elsewhere, as after injuries in civil life. To what extent new work can be taken up, and to what extent it will affect the ability to earn a livelihood, depends in the adult upon his age, and consequently his retentive ability and mental fixity, as well as on his social standing. The latter often restricts the range of occupations a person is willing to enter. The question must be studied individually. In two people with the same condition, the occupational possibilities may be far from alike. There must be no peremptory disposal of any one as useless material. Even insurance companies do not reject the abnormal absolutely. They make the proper allowances in compiling their risk, but they usually find some insurance for every one. This very principle of finding insurance for every one should be carried out in respect to vocation among the defective—namely, finding occupation for every one.

It is not to be expected, however, that all defectives can be placed in special occupations where they will not be prejudiced in efficiency by their condition. Their very best faculty or sense may be the one destroyed or defective. They must expect to accept a discount, very often in proportion to the degree of their deficiency. Proper vocational methods, however, render self supporting and often positive assets to the community, persons who would otherwise be total losses economically both to themselves and to the community. When there are added to these occupational aids the newer methods of *psychological strategy*, that is, the method of ascertaining under what conditions, during what part of the day, and with what variety of tools, and the like, fatigue is greatest, and under what circumstances the best work is done, then the defective conditions may be almost entirely neutralized (7).

The training of all persons, but particularly of defectives, for suitable occupations, has a great direct influence in reducing the incidence of occupational diseases and accidents. It has been shown in England that the defective is subject to a higher degree of morbidity than the nondefective. Medical examination of applicants before employment reduces this incidence (8). Indeed, the medical examination of prospective workers is the basis for all further determinations regarding them. Attempts must be made to correct defects thus brought to light so as to obviate at least this added risk because of primary infirmity. Besides, the correction of defects will allow many to take up occupations that they are peculiarly fitted for. Occupational inadaptability is the source of much of the vocational morbidity. Hereditary predisposition to disease may in a manner be controlled by avoiding improper occupations, in respect to health heredity and even race. Those with hereditary predisposition to drug or drink had better avoid these industries.

Thus far this question embraces only civil lines of endeavor. In countries where there is universal service in the military organizations, the defective is still uniformly rejected. While he may find a place in civil life, he can find no place in the military. Yet from the standpoint of purely improving a large part of a people needing improvement, military training offers a most useful ground. It can be the best method of converting a defective into an effective citizen. On the other hand, much good material is lost to the military efficiency by maintaining fixed physical standards below which no one is admitted. But while the physical standards are high, the mental are almost entirely neglected, although it is easy to see that there are parts of a military organization where mental development of a high order would be more desirable than physical. Those having the physical requirements are most likely to withstand the hardships incident to military life, have the most staying power, and in general are the best material obtainable. Truly, it can be said of military training that wherever carried out it produces a better type, longer lived—surviving as the fittest—better able to withstand hardship, and able to engage in a more varied range of occupations. The addition of suitable vocational training would take up much of the overproduced energy and better fit the individual for civil life. In an investigation of an industry employing almost exclusively labor from foreign countries where there is compulsory military training, it was found that those having had such training maintained good physical conditions in an atmosphere where almost every one else was more or less defective (9).

At present military training draws too close the selection of the beneficiaries of this training; they form a physical aristocracy as opposed to a plebeian class who are of no value in a military sense. A physical democracy could be produced only by finding a place in the military organization for every one. There are as many varied needs in military life as there are in the civil. There should be few defectives for whom some special place in the unit cannot be found. To be of universal benefit, whether in the betterment of the race, or for immediate or ultimate military purposes, military training must account for every one, but especially for those who are weak and defective and along lines that will give them a usefulness in the unit. They can be trained to fill places that would otherwise have to be filled wastefully by more able bodied individuals. In essence this would be a training of an army of the rejected into an army of specialists. Besides, in drawing for military training or for military use there would always be in reserve a representative average. Later on, lines would be less likely to have a greater percentage of rejects, but would again be representative averages. All the material would be utilized and the defectives knowingly provided for. Placing defectives where they did the best work would serve for a collective efficiency against an individual efficiency (10).

In the end military training is but a form of physical training, and the introduction of selective physical training into the school curriculum would be a preparation for the applied or military training. The step from the universally trained physically to the universally trained militarily, is not a very long one. School and military training usually selects the best for the extreme in training and overlooks those who would benefit most by it (11). Yet in any combat where training of a high degree is necessary, the first line or flower, say, of a military unit succumbs to the first shock. Second or later lines combine poorer physical condition with less, more hurried, and poorer training. Defectives are not compensated assets because they are not chosen and trained for special places. In long continued combats it is with the rejected that they are finally fought out.

Military training would help many otherwise helpless people to find themselves, first physically and then industrially. So many instances of physical weakness are due to faulty posture, sedentary habits, and lack of exercise that to them military training would be a boon—if the examiner realized the cause of their deficiency, and that military training is just what is needed to redeem them (12). The really highly concentrated military body would not then be diluted by the great mass of the untrained. Besides, the discipline enforced in training must be of benefit to the individual and to the community, when properly harnessed, and, if not carried too far, has no effect on individual thought or will.

In the selection of material, height, and even weight, is no longer so important a factor. A tall but slender person is not nearly so desirable as a short but muscular one. The European war has created the place for the bantam. Likewise there is no reason why, say, a hunchback cannot be a sharp shooter, a deaf man a gunner, a flat footed one a driver, etc. In the operation of large ordnance pieces, requiring a great deal of mechanical ability, the range is found by individuals not connected directly with the operation. Likewise, one who has had training in the field is of more value than one with more acute vision but with less ability for interpretation of the visual perceptions. The apparent greater vision of the aborigines was due to their ability to interpret rather than to see better (6).

In conclusion, it is urged that in realizing the vast number of defectives in every community, something more must be done for them than mere diagnosis and separation, or mild remedial measures, or custodial care and the like. These solve the problem for neither the defective nor the community. Defects must be ascertained, measured, vocational possibilities inquired into, senses and faculties trained especially in reference to life vocations. Finally, the tendency to relegate the physically defective to the shades of "innocuous desuetude" can best be overcome by selected physical training, democratic military training, in order to develop the physical condition of the people generally, and of the defective population specially.

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CONGENITAL SYPHILIS.*

Pathogenesis and Symptoms,

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With the unaccountable tendency so frequently observed in operations of the human mind to complicate simple things, the subject of congenital syphilis has been made unnecessarily involved. Thus, it is only within recent years that our knowledge of this phase of syphilis has undergone a certain degree of simplification. It is necessary only to point to the historic laws of Colle and Profeta; the disputes as to the source of infection, whether maternal, paternal, or both; to the old name, hereditary syphilis, itself, in order to illustrate the ancient confusion.

On the other hand, to illustrate how this confusion is gradually becoming clarified, the following facts will suffice. The laws of Colle and Profeta have fallen. Abundant evidence exists proving that the apparent immunity of the mother without clinical syphilis to a syphilitic child, or that of a child without clinical syphilis to a syphilitic mother, is not immunity, but actually latent syphilis. The mothers and infants without clinical evidence of the disease nearly all give positive Wassermann reactions, paralleling conditions in the latent stages of the acquired form. The source of congenital syphilis is invariably maternal, and the infection takes place through the placenta. This fact eliminates entirely discussion of congenital lues of paternal origin. The mother may have been infected by the father, or otherwise, but so far as the offspring is concerned, the source of the mother's infection is incidental. The term, hereditary syphilis, is unscientific and has been abandoned. It is not within the province of this paper to define the word, hereditary, but a fundamental distinction exists between this expression and congenital, as the works of Darwin, Romanes, Hertwig, Haeckel, or any other good biologist or embryologist will show. If syphilis were actually an inherited disease, the theory of embryonic transmission of acquired characteristics would need no further support. Syphilis passed on from mother to offspring *in utero,* however, has nothing to do with chromosomes. It is bequeathed far more simply and directly by the actual involvement, through contact, of the placenta, and the invasion of the latter by the mother's spirochetes. Thereupon the placenta, a small participant in the mother's systemic infection, becomes the starting point of the disease in the fetus.

No difference exists between syphilis acquired before birth and that acquired after birth. The disease is always the same, subject to variations in the virulence of the strains of spirochetes and the resistance of the host. Syphilis is syphilis. Any distinctive features the congenital form may possess, not found in the acquired form, are due to biological differences between the unborn and born human being.

Roughly speaking, the infected placenta is the primary lesion in fetal syphilis. Thence the spirochetes are conveyed by means of the placental circulation direct into the fetal blood stream. This serves to disseminate the microorganisms rapidly and effectively, sparing no organ or tissue. The liver is the first fetal organ to receive the placental blood, because the branches of the umbilical vein go direct to this organ, and because of the intimate association of placental and portal circulations. Thus the liver can never escape infection. In postnatal syphilis the entrance of the pathogenic agents into the blood stream is accomplished differently. From the primary lesion the spread of the spirochetes takes place first through the lymphatics. The entrance into the cardiovascular circulatory system is probably effected by transit of the spirochetes from the perivascular lymphatics through the vessel walls into the blood stream. At the moment that this is consummated, such slight differences as there are between prenatal and postnatal syphilis, cease to exist.

The month in which infection of the fetus takes place varies; if very early the fetus will die, become macerated, and be discharged before or at term; if somewhat later, the fetus may survive and be born prematurely, or at the normal time, with the usual evidences of the disease, or as a defective, or as a monstrosity. If the infection occurs very late, for instance in the last month of intrauterine life, the infant is born at term, alive or dead, and with or without objective evidence of syphilis. Much depends upon the type and stage of the mother's syphilis. Should she be the victim of a virulent strain of spirochetes, and in the secondary period, or the secondary latent period, the degree and severity of the fetal disease will probably be greater. Should the mother have become infected in the fifth month of pregnancy, the fetus could not have become involved in less than from two to three months, or in its seventh or eighth month. The later during parturition that the maternal infection occurs, the greater the chance of the fetus to escape the disease entirely, or to be born with earlier or milder congenital syphilis, as the case may be.

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*Read before the Bronx County Medical Society, March 15, 1916.

It is not uncommon to obtain the following account from a woman married about ten years. The first child is nine years old and well. Shortly after the birth of this child there came three miscarriages in the fifth, sixth, and seventh months, respectively, followed by a full term baby with snuffles and an eruption. This baby lived ten days. A year later, a normal infant was born which seemed well and is now five years old. Since its arrival there have been two stillbirths, each child having appeared normal, however, and now there is another baby about nine months old. It appears well, but catches cold easily, and has had a rash about the anus and lips. The mother herself asserts that she has always been healthy, but remembers that after the birth of the first child she had a sore on the vulva and a discharge, but paid no attention to them and consulted no physician. The significance of such a history is deep. The first child just escaped syphilis. Fortunately, he was not nursed. From her second to her fifth pregnancies, the mother was in the secondary and secondary latent stages. During her sixth pregnancy the disease was in abeyance. An exacerbation occurred contemporaneously with the seventh and eighth pregnancies, resulting in stillbirths, and during her ninth pregnancy she was again in a latent period. The Wassermann reaction in this family would be positive in the mother, negative in the first living child, either positive or negative in the second living child, and positive in the third.

Thus, to recapitulate, an interplay of two factors determines the form that congenital syphilis assumes; first, the month of fetal life in which infection occurs, and, secondly, the stage of maternal syphilis during which the transmission is made. In addition to this, a third influencing factor must now be included; namely, therapy. Satisfactory treatment of the mother may prevent fetal infection. Inadequate treatment may have no effect on the offspring, or may diminish the maternal infection and increase the possibilities of the fetus to escape the disease, by prolonging or intensifying the periods of the mother's latency. The older the mother's infection, the less the likelihood of transmission to the child. Thus, in the tertiary period fewer syphilitics are born than in the secondary.

Subject, too, to these factors, the symptoms and pathology of congenital syphilis will vary. Its morbid anatomy corresponds to that of the acquired form. In brief, no tissue or organ is sacred to the spirochete, and thus the symptoms of congenital syphilis include a wide range of possibilities and form numerous pictures, many of which are well known, others rare or uncommon. In this paper only such features of the disease will be dealt with as are found in congenital syphilitics born alive. The symptoms are in the main referable to the skin, eye, ear, liver, spleen, bones, and joints, but other organs are frequently involved, and commonly enough central nervous and mental disturbances, and diseases of the kidney, suprarenal and other ductless glands are observed, and the Wassermann test (1) is positive in ninety-eight per cent. of the cases.

For the sake of simplicity and convenience congenital syphilitics will be divided into the following groups:

1. Patients born with cutaneous and marked systemic evidences.
2. Patients born with cutaneous and slight systemic evidences.
3. Patients born with cutaneous lesions alone, subsequently manifesting systemic evidences.
4. Patients born apparently healthy, acquiring evidences of syphilis within a year.
5. Patients born apparently healthy, acquiring evidences of syphilis between the second and seventh years.
6. Patients born apparently healthy, acquiring evidences of syphilis after the age of seven years. This includes Fournier's group of delayed congenital syphilis.

1. *Patients born with cutaneous and marked systemic evidences.* This form denotes an infection of the fetus in about its fifth month of development. When infected so early, the fetus rarely reaches term alive, but if it should it presents a picture of general maldevelopment; the face is drawn and gives an impression of senility. A papular or bullous dermatosis, the latter the so called pemphigus neonatorum, covers the palms and soles. Mucous patches are present on the lips, in the pharynx, and on the perineum. The liver, spleen, and lymph nodes are found enlarged. The child nurses and cries feebly, and lies quietly as if palsied. This is the so called pseudoparalysis of syphilis due to specific epiphysitis and osteoperiostitis. The bones and joints hurt when the child moves, and are sensitive upon manipulation, the latter eliciting a sharp cry. Usually death occurs shortly after birth, the cause, as a rule, being general weakness, but sometimes pneumonia. This form of pulmonary disease is an interstitial inflammation caused by the activity of the spirochete, and known as white pneumonia. The Wassermann reaction is positive, and spirochetes are demonstrable in the lesions on the mucous membrane and in the eroded papules near the body orifices.

2. *Patients born with cutaneous and slight systemic evidences.* A macular or maculopapular eruption, with pemphigus neonatorum, slight or no snuffles, a certain degree of unwillingness to suckle, some swelling and tenderness of the bones, and even pseudoparalysis characterize this form. If the liver and spleen are not palpable at birth, they soon become so. The Wassermann reaction is positive. Unless treatment is begun promptly, severer symptoms set in, such as iritis and iridochoroiditis, and if therapy is still neglected all the general features of the disease appear, including permanent blindness or deafness, bony deformity, or even death from marasmus.

3. *Patients born with cutaneous lesions alone, subsequently manifesting systemic evidences.* In this form syphilis has been acquired in the seventh or eighth month of fetal development. Thus the symptoms at birth represent those of the early secondary stage. Only suspicious skin lesions may be present, or a frank maculopapular rash, mucous patches, flat condylomata at the anus, or mucous patches in the mouth or on the genitalia. When so fully developed these symptoms indicate the florescent secondary stage. At times, however, only mucous

patches are seen, or groups of papules, or circinate papuloulcerous lesions on the perineum or elsewhere, or tuberoserpiginous gummatous lesions. These symptoms are associated with snuffles. The Wassermann reaction is positive, and spirochetes may be found in the secretion from the mucous lesions. This form indicates fairly good resistance on the part of the baby, and that the disease is in its late secondary, or perhaps even early tertiary stage Should it progress because of neglect of treatment, all the manifestations already mentioned in the first two groups may arise.

4. *Patients born apparently healthy, acquiring evidences of syphilis within a year.* At birth these infants are sound, nurse well, cry lustily, and thrive. Sooner or later, in seventy per cent. of the cases between the third and eighth week, and in ten per cent. of the cases between the third and twelfth month, mild symptoms followed by severer arise. At first the infant's desire to nurse lessens, it ceases to gain, begins to lose in weight, cries, gets hoarse, and has snuffles. Next an eruption appears similar to that noted in the previous group. Adenopathies develop, the digestion begins to suffer, and loss in weight goes on more rapidly. The crying increases and hoarseness grows more pronounced. Bony swelling and tenderness, keratitis, and neuritis of the auditory branch of the eighth nerve may develop. The liver and spleen enlarge. Subject to the age of the infant and the intensity of the digestive disturbance, these symptoms abate or lead to death, unless treatment is timely. The Wassermann reaction is present. According to Knoepfelmacher and Lehndorf, however, this is not the case before the appearance of the rash. This form of the disease is practically always tertiary, or at least very late secondary.

From this point on, congenital syphilis is invariably tertiary in type. The systemic evidences are not generalized, but tend to be selective, picking out organs in widely separated regions. The disease now acts precisely as does late syphilis in the acquired form. It develops a peculiar affinity for the bones, skin, cerebrospinal axis, liver, spleen, and glands.

5. *Patients born apparently healthy, acquiring evidences of syphilis between the second and seventh years.* For the first year of its life the child develops normally or constantly remains somewhat behind the average in physical and even mental progress, but is not actually ill. In the second year, it becomes indolent, makes a rhachitic impression, but lacks the rosary, or it may have actual rickets in conjunction with syphilis. The fontanelles close slowly, or the cranial bones are thinned to a papery consistence in some areas, or thickened into bosses through periosteal infiltration in others. The first of these conditions is called craniotabes; the second, Parrot's nodes. Instead of developing as in normal children, the bridge of the nose remains flat, the tip growing. Thus, this organ acquires the shape of a saddle, through failure to develop, or through the destruction of the small bones composing its structure, chiefly the nasal spine of the frontal bone, the vertical plate of the ethmoid, and the crest of the nasal bones. As a sign of congenital syphilis the saddle nose possesses no value before well on in the second year, as all infants are more or less wanting in the nasal bridge, a fact that Knoepfelmacher used to emphasize to his students. But from the second year on, the sign is of great corroborative value. Other changes in the bones and joints are also significant. The long bones are peculiarly vulnerable, both periosteum and epiphyses being affected. Involvement of the former leads to thickening and deformity of the shaft, of the latter to thickening and deformity of the ends, causing the outlines of the joints to appear abnormal. The tibia is often bent forward so that its convexity is increased and the anterior margin is sharp but roughened. This gives it the general appearance of a sâbre, and on palpation the irregularities of the anterior margin and surfaces may be detected. Röntgenographs reveal all these changes. In the early stages of involvement these alterations cause pain, again giving the symptoms of pseudoparalysis, named after Parrot. Tension of the muscles on the weakened scapula causes abnormalities in its shape, exaggerating its convexity and producing the well known scaphoid scapula. Gummas of the sternoclavicular junction, sternum, and osteoperiosteal cutaneous gummas elsewhere are frequently seen.

The skin and mucous membranes are the site of mucous patches, gummas, circinate, tuberocircinate, or tuberoulcerous lesions and fissures at the mucocutaneous junctions, beside other changes already described.

In the central nervous system and organs of special sense the commonest symptoms are produced by meningitis, pachymeningitis, and hydrocephaly, but tabes, spastic paraplegia (Little's disease) and hemiplegia, and juvenile general paralysis are known. Some cases of epilepsy, mental deficiency, imbecility, and early insanity are due to congenital syphilis. By far the most frequent changes in the organs of special sense are found in the eye and ear. Keratitis, both interstitial and parenchymatous, iridochoroiditis, and auditory nerve neuritis are the commonest; but optic nerve neuritis, retinal pigmentation, and deafness due to gumma in the auditory centre, are met.

The liver practically invariably, and the spleen somewhat less frequently, are enlarged, usually because of chronic interstitial inflammation. At times, however, gummas may develop in the liver, and rarely parenchymatous hepatitis. The last mentioned condition, however, rare as it is, is almost unknown after the first weeks of the congenital syphilitic's existence, when it causes jaundice and other symptoms referable to the liver. The lymphatic glands act as they do in late acquired syphilis. Isolated enlargements are found, with a relative but not constant predilection for the epitrochlears.

6. *Patients born apparently healthy, acquiring evidences of syphilis after the age of seven years.* It is from this point on, or after the time of the second dentition, that Hutchinson's triad, two elements of which have already been considered, comes into prominence. The triad consists of keratitis, or scars resulting therefrom, deafness, or other definite but less hopeless evidence of eighth nerve disease, and the presence of Hutchinsonian teeth. The first two of these have been sufficiently discussed. By the term, Hutchinsonian teeth, is understood an altera-

tion in the shape and position of the two upper incisors of the second set. They converge, their distal margin is shorter than their base, and their edges are notched from corner to corner by a semilunar concavity. The corners themselves are somewhat blunt, and the anterior surfaces of the teeth are often ridged vertically. Although highly suggestive of congenital syphilis, this sign is by no means pathognomonic. Other conditions, notably rickets, may produce similar alterations, while syphilis itself may produce other varieties of dental dystrophy. In addition to the triad, in the retarded variety of congenital lues, all the other conditions enumerated in the previous group may be present, and this period is coincident with life. The very first symptoms of the disease have been known to occur as late as the end of the second, or early in the third decade, and all changes which are characteristic of tertiary acquired syphilis may be found in syphilis congenita tarda. The Wassermann reaction varies according to the laws governing this phenomenon in acquired lues, but all in all it is far more likely to be positive than negative.

Having described, as far as possible, congenital syphilis according to its picture at given ages of the patients, and in given periods of the disease, it will perhaps be not amiss to refer categorically to its common individual manifestations, and to some of the rarer ones. The skin lesions are in the main identical with those seen in the acquired form. Two points, however, merit emphasis: First, bullous syphiloderms are not uncommon, and are usually seen at or soon after birth, chiefly on the palms and soles, in the form of the so called pemphigus of the newborn. Secondly, eroded papules are frequently found on the nates, which are of peculiar significance, since a nonspecific dermatosis closely simulates them. The latter is the erythema gluteale of Leiner, first described by Parrot, in 1877. It is characterized by the presence of erythematous macules, vesicles, or papules, and somewhat resembles pemphigus neonatorum. The lesions rapidly become eroded. Jacquet, Hallopean, and Sevestre pointed out their nonluetic nature, Jacquet calling the vesicular variety *erythème vesiculeux érosif,* and the eroded form *syphiloïde post-érosif.* No spirochetes are found in the lesions and the Wassermann reaction is absent. Leopold has recently reviewed this disease, calling it the napkin eruption, and he was able to prove conclusively that it was caused by alkalies remaining in the napkins after washing with cheap soap and inadequate rinsing. Gummas, wrinkling of the skin, onychia, paronychia, and alopecia are often present. In all these congenital syphiloderms the Wassermann reaction is present.

The lymphatic glands present changes in no wise different from those common to acquired syphilis. Abnormalities in the testes, thymus, thyroid, and pancreas are rare, but in the suprarenal glands somewhat more frequent, causing symptoms referable to these particular organs. The spleen is enlarged in about sixty-two per cent. of all cases at all ages, and the liver is increased in size almost without exception. Often, too, there is jaundice, and at least one form of icterus of the newborn is syphilitic. Usually the cause of this is interstitial hepatitis, but in five per cent. of the cases gummata are found at autopsy.

Although the changes in the bones and joints have already been discussed, the following statistics may be of interest: Still (2) found epiphysitis in twenty per cent. of the cases during the first three months of life; dactylitis in two per cent.; tibial periostitis and craniotabes in forty-seven per cent.; and synovitis and arthritis in seven per cent. Marfan includes congenital syphilis in the causes of rickets. Gaucher and Lévy Bing (3), in an analysis of 347 children with Pott's disease, cold abscess, and coccyditis, found that of fifty-eight in whom there was reason to suspect congenital syphilis, actual evidences of the disease were present in sixty-five per cent.

Among unusual central nervous manifestations precocious tabes must be mentioned, encephalitis, gummas of the brain and cord, juvenile general paralysis of the insane, and Little's disease, while Mott (4) mentions two cases of endarteritis of the circle of Willis, associated with pachymeningitis. He also states that seven per cent. of all cases of epilepsy may be ascribed to congenital syphilis, and that hydrocephalus is also frequently due to this cause. The cerebrospinal fluid in these cases obviously has some characteristics found in central nervous disease caused by acquired syphilis. All types of mental disturbances are possible, the commonest being backwardness. The eye, as already mentioned, shows changes in the cornea, iris, and retina. The iritis is often bilateral, and somewhat more frequent in girls than in boys. Atrophy of the optic nerve and cataract are rare. The most common affection is interstitial keratitis. With the exception of auditory neuritis and otitis media, there are very few diseases of the ear.

Cardiovascular and blood diseases are on the whole uncommon. Among these are arteriosclerosis, aortitis, myocarditis, and endocarditis. Secondary anemia is not infrequent and one form of hemorrhagic disease, syphilis hæmorrhagica neonatorum, characterized by icterus and bleeding from the mucous surfaces and umbilicus, is occasionally encountered. This appears to be due to parenchymatous hepatitis and is always fatal. The respiratory phases of the disease are Virchow's white pneumonia, necrosis of the nasal septum and hard palate, frequently with perforation, laryngitis in fourteen per cent., and snuffles in seventy per cent. of the cases.

The Wassermann reaction is almost invariably positive. According to Noguchi's work already cited, it is present in ninety-six per cent. of all cases, and this author's compilation of the work of other investigators raises the figures to ninety-eight per cent. In a very careful study published by Mark Reuben (5) ninety-nine per cent. were found positive in the early stages of the disease, and fifty per cent. in the later, about paralleling the figures respectively in secondary and tertiary acquired syphilis. During active congenital syphilis the reaction is never absent. It is only during periods of latency and at the onset or waning of activity, that negative results are found.

So concentrated an outline as this perforce had to be, could barely accomplish more than to sketch in the essential features of congenital syphilis. It is hoped, however, that several points have been sufficiently emphasized to sever from this disease its unnecessary traditional complexities. Congenital syphilis is syphilis acquired during intrauterine life through the placenta, which, after having become infected, plays the part of the primary lesion. From this point the umbilical vein conveys the spirochetes to the fetus, the liver being the first organ involved. Thence the spirochetes are rapidly disseminated throughout the fetus. Here all differences between congenital and acquired syphilis cease to exist. Subject to the month of fetal infection, the infant presents cutaneous and systemic evidences of the disease in its secondary latent or tertiary stages, and the tertiary stage may be protracted for years, or tertiary changes late in adolescent or early in adult life may be the first signs of the congenital infection. Remarkable as such facts may appear, they need cause no astonishment, for in acquired syphilis we see frequently enough examples of freedom from secondary manifestations, the first reappearance of activity occurring twenty years or more after the primary lesion, in the form of tertiary changes. These facts serve only to prove the identity of congenital and acquired syphilis.

In conclusion, one more circumstance must be recorded, and this depends not upon the disease, but upon the age at which the disease is acquired. Congenital syphilis is transmitted to its victim during the most important period of development, namely, before birth, and the struggle to overcome this burden takes place partly before and partly soon after birth. Thus, aside from its actual pathological alterations, the disease may cause all sorts of anomalies of development, physical deformities and dystrophies and mental backwardness, if not actual imbecility, or even insanity. Aside from these considerations, prenatal syphilis and postnatal syphilis are identical.

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THE PROBLEMS OF ADOLESCENCE IN RELATION TO SOCIAL HYGIENE.*

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This paper offers no newly made solution for the problems of sex and adolescence, but only some old truths reemphasized. The problem of sex varies in intensity with different adolescents; for some it is never a conscious problem, but for most of them it is a serious difficulty.

The pathological aspect of the adolescent period, in its relation to sex hygiene, is not dwelt upon in the following pages because of the conviction that if the factors which make for mental health are realized, there will be but little need of concern with disease *per se*.

As to the necessity of any instruction whatever upon this subject there can no longer be any question. Parents, teachers, physicians, and the victims of ignorance have seen and felt too much of the misery which results from a faulty attitude of mind toward not only sex but all the problems of adolescence to be resigned any longer to a *laissez faire* policy. Such a policy might have sufficed for an age almost prehistoric, but it will not avail amid the complex conditions of modern life. Indeed, even among "uncivilized" tribes of people and among the ancient Hebrews, instruction in sex hygiene was a vital part of their religion and their daily lives; and it is somewhat disconcerting to learn that in spite of polygamy the customs of savages in respect to the conduct of their young people before and after marriage show that they possessed ideals of self control and reverence for the functions of sex that put to shame the average man or woman to today.

> To the well born child all the virtues are natural and not painfully acquired; speak to his heart and the man becomes suddenly virtuous.—Emerson.

> Heaven lies about us in our infancy,
> Shades of the prison house too soon begin to close
> Upon the growing boy.
> —Wordsworth.

The words just quoted not only remind us of the innocence and idealism of youth, but make us ask ourselves why this should ever be spoiled or lost.

Many causes are behind the difficulties of the boy and girl at this period of life. For these causes parents and the adult world, with all its sins of omission and commission, are directly or indirectly responsible. We are not going to consider the abnormal child, the child of defective inheritance or development, abnormally precocious in the more gross sexual instincts or otherwise unbalanced, for he is a problem for individual treatment and does not concern primarily the management of the adolescent period. But while the period of adolescence is especially difficult for the neurotic child, it is also a time of strain for every child. This is the time of life when every organ and tissue is more rapidly growing and changing. Because of the maturing of sex characteristics, it is also the time when emotions of spiritual and religious significance with a half unconscious yearning to love and to be loved and a keen curiosity about the world in its relation to self receive a wonderful impetus; it is the climax in the history of man's slow and painful evolution into a being with a conscience repeated in the life of the individual. This is the time of awakened ideals which, if shattered, can never be resumed with the same zest; it is the age when the criminal is made and the foundation of failure or success is laid.

All of this we know in a general way, but do we know the child as an individual well enough to know what his or her special difficulties are? Do we know him so well that we are prepared to be a satisfactory consultant and to answer his questions so as to make him want to come to us for further knowledge? How many parents establish between themselves and their children a sympathy and understanding so strong that they are the first persons the child always wishes to consult when he is troubled by impulses to do what is contrary to the voice of his better nature? When these tender ideals and aspirations, these "sentimental" tendencies and strong friendships spring up, are they received and entered into with sympathy and encouraging direction along safe channels, rather than indifferently and hence allowed to be shattered by contrary influences in the world outside? How often at this most critical period of life the boy or girl is away at boarding school where even under the best conditions there are unhealthy influences at hand and no one to whom he or she can or will turn? Or if at home during this time how often the child and his friends are strangers to the parents when it comes to the inner workings of mind and soul!

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*Read before the conference of the Pacific Coast Social Hygiene Society, Berkeley, Cal., August 3, 1915.

Let us ask ourselves, why it is that we are so reluctant to speak of sexual matters and difficulties and to answer fully the many questions that a child will have answered in some way? It is not only because we are unprepared from lack of forethought, although that is in a measure responsible; but we are also shamefaced and mysterious toward these questions. Is it because we have an impure and faulty attitude of mind toward sex, because we have never fully realized the healthiness and holiness of the sexual instincts? Is there a hidden shame in our own hearts which we are unwilling to face frankly and readjust?

If all adults had for one generation realized the sacredness of sex relations and put this realization into practice, there could no longer exist the impurely suggestive drama, book, or newspaper item, or many of the other vulgarities for which we are now responsible because of our patronage, our morbid interest, or our tolerance; the subtle influences of the "red light" district and of "regulated" prostitution could not exist to excite the imagination of the young whose only playground is the street in many instances, nor would the idea that the young man must at all hazards sow his wild oats continue to undermine the ideals of us all.

We know very well that in the beginning the sexual instincts and the affections of children are pure and void of shame. If the subject of sex has become for them something to speak of in whispers or to be laughed at among themselves or otherwise degraded and distorted, whence comes such a state of affairs? It can only come by the suggestions of those older than they. Generally the first suggestion is in the form of ridicule of the child's friendship and attachment for some child of the opposite sex, or in the false modesty which is instilled into them by elders to whom any thought of sex is for some reason repellent. If we would purify or keep pure the minds of the young, our own mental attitude must first be sane and pure. We shall then have no difficulty in being frank and honest when discussing matters of sex hygiene with children. As we look back upon our own childhood and adolescence, we can recall that first thrill of joy akin to a highly spiritualized emotion which we felt when we first became particularly fond of one playmate in particular. There was nothing to be ashamed of or secretive about in this attachment, because the feeling aroused was one of boundless chivalry on the part of the boy and of unselfish fellowship on the part of the girl. But it was soon discovered that the grown folk were inclined to poke fun at such sentiment or else be distrustful of it, and this placed the first barrier in the way of future confidence between parents and child unless other barriers had long since been placed there by the indifference of elders toward the child's curiosity about the mysteries of life or by lack of real affection and mutual understanding. And so the child drew more and more into himself, and all the other ideals and aspirations and the energizing forces which were accompanying the awakening of the sexual instincts, were also kept to himself and found no expression in healthy ways. Such an experience may lay the foundation for introspectiveness, self abuse, or precocious sex experiences, because aroused energy will find some sort of an outlet.

THE CONSERVATION OF ADOLESCENT ENERGIES.

If this energy and the spiritual impulses which are part of its expression find no outlet away from self, the boy or girl becomes pitifully *blasé* in respect to feelings toward the best things in life. Few are the children who outgrow the impressions made upon them in early childhood, nor do they easily outgrow the effects of the suppression of the free development of mind and soul caused by misapplied punishment and unwise repression of activities.

How shall we prevent the too early stimulation of the physical part of the sex impulse, and how shall we best conserve and direct but not repress the mental, spiritual, and physical impulses which are aroused at this period? Finally, how shall we appeal to the child when he or she is already on the wrong path?

PREVENTION OF PREMATURE SEXUAL EXCITEMENT.

Here again we are confronted with the fact that in our modern world things which excite the physical senses, and especially the sexual instincts on their lowest plane, are thrust in the faces of our boys and girls. We allow this, and indeed we cannot easily prevent it. Our illustrated papers are read or seen in nearly every home, and often they contain stories or news items or so called jokes and pictures which, if not actually suggestive of immorality, at least tend to lower in the suggestible mind of the boy his respect for womankind, and in the mind of the girl the respect due to herself and to human nature. The same may be said of many of the theatrical performances that children are allowed to witness. Much the same sort of sexual stimulation may be found in the dress of adults and their social behavior; all this the adult world is responsible for, and in order to do away with these influences we must take our stand for the purification of the stage, popular literature, and social ideals, and so long as these are not in every way healthy things for the minds of adolescents to come in contact with, we must guard them against these things during the critical periods of their development.

But we must also supply entertainment of the right sort, for this they instinctively crave, and they welcome the beautiful and the good at this period, providing that they have not been led astray or unhealthily stimulated, or are not defective in moral sense and self control.

Recreation must be of the sort which allows the child to express his natural self. It must satisfy the natural and innocent desire for friendship and companionship between the sexes, which becomes more keen at the adolescent period. This desire must be preserved on its originally high plane instead of being ridiculed by elders until the boy or girl becomes infected with a false modesty in relation to the opposite sex. Free, wholesome, and joyful companionship in work and play is a constant and absolute necessity. We have means of providing this in many children's organizations such as the Boy Scouts, the Camp Fire Girls, etc. All of these can serve to satisfy the idealism of youth as well as the need for physical activity, while the self indulgence and self absorption which are at the root of nervous disorders of the functional type will also be prevented.

DEFINITE TEACHING IN SEX HYGIENE.

We teach children many things: what do we teach them about the most important thing of all—life? What do we tell them about their own share in reproducing it and their own relation to the welfare of future human beings? What do we tell them about the sacredness and divinity of human bodies and minds? What about the unity and interdependence of all life? The romance and the sordidness of love and marriage are brought to the attention of boys and girls in many ways before they are out of their teens, but the beauty, joy, sacredness, and responsibilities of human relationships are seldom mentioned to them.

Instead of beginning when too late to teach the natural biology of sex in plant and animal life in schools, we need to teach the parent and guardian about these subjects, because it is to them that the child comes first with questions. If the child has had this foundation of knowledge given him by his parents before the period of adolescence, he will approach the more personal application of sex which he feels at puberty with a healthy viewpoint, and it will not be difficult then for parents to discuss such matters with him, for by earlier instruction and interest they will have acquired a natural and sane attitude themselves.

But this knowledge of biology and physiology and the respect for the wonderful nature of sex which such knowledge gives, is not all that will be necessary. Mere knowledge without a practical appeal to the moral faculty inherent in the child and so vigorous in the adolescent, will not avail in times of special temptation. The adolescent age is the time of sudden awakening of moral consciousness to its full measure, but primitive instincts are also carried over into this age, and between the two there is to be a constant struggle throughout life. We must therefore, at this time particularly, implant certain moral principles in the mind of the adolescent to whch he may confidently resort in times of special danger. What appeals can we make which will either prevent or correct faulty sex hygiene?

First of all we can appeal to the respect due to one's own nature. We can tell boys and girls the truth about their physical nature—that it is something they hold in trust from their Creator, that they are made in his image, that their bodies are the temples of a holy spirit whose plan is a perfected universe in which there shall be no disease or abnormality, that they are the most wonderful mechanisms that have ever been conceived, and that for this reason alone they and the bodies and personalities of every other human being are sacred. We can tell them that their bodies and minds should be kept pure, because they are the agents for creating others like themselves to carry on the work and the ideals of the world. We can thus make the child want to be healthy in every way, not only from self respect, but in fair play to future generations. Those parents and teachers who are of the Christian faith can make more direct application of the doctrine of the incarnation of God in man.

We can tell children of this age that now is the time when their preparation for the function of parenthood is going on and that the boy is not being fair to the girl he may some day marry if he does anything to weaken his physique; and we can tell the girl that she is being unfair to the future mate and her future offspring as well as to her own nature. To both we can appeal on the ground of pride in bringing an untainted, wholehearted personality to the other. If young people of both sexes had a strong conviction of the sacredness of each other, could they in any way show disrespect for themselves or others? If, for example, the Christian lad had the same feeling for every girl and woman that he is taught to have for the Madonna, would not this feeling help him to distinguish between selfish lust and true love? And if the Christian girl could feel that she is a counterpart of the holy Mother, could she allow herself to sin against herself or to be sinned against? If all children had the same sort of respect for all humanity that they are apt to have for a wise and good father and mother, and were brought up really to reverence those who create life, would it not help their ethical relations later on? Can we make children reverence human life to this extent? We can if we have such a degree of reverence ourselves, and make practical application of our beliefs to the problems of social hygiene.

Nothing will appeal in times of temptation quite as much as the appeal to the instinct of hero worship, the appeal of loyalty to a personality, an ideal embodied in flesh and blood. This has been for ages the strongest incentive to right living. If the ideals of purity, health, and nobility of character are exemplified in those near at hand, those in one's own home or among one's comrades, so much the better; some have had to seek this example elsewhere, and for them, as indeed for all of us, the great personalities of human history, those both distant and at hand, continue to be available and to be a vital force in the world; for they bring Divinity very near to us. Can we not make a more practical study of these God-like and Christ-like personalities available for the adolescent in such a way as to make him eager to play his part well in hastening the spiritual progress of mankind?

PHYSICIANS' BUILDING.

Industrial Accidents.—Dr. Francis B. Patterson, director of the State Industrial Safety Bureau of Pennsylvania, notes that industrial accidents during 1915 in the United States killed 35,000 persons, injured 300,000, and cost $250,000.

BOTHRIOCEPHALUS LATUS INFESTATION.

Report of a Multiple Case,

By A. I. Rubenstone, M. D.,
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(*From the Dermatological Department, Mount Sinai Hospital.*)

While few cases of infestation in human beings with Bothriocephalus latus have been recorded in this country, it seems that this condition is growing more prevalent every year. This can be attributed to the fact that the vast influx of Europeans in the last two decades have brought enough of this parasite into the country to compel us to reckon with it, especially in investigating conditions among the foreign elements of our population. Cases have been reported by Walker (1), Leidy (2), Packard (3), Hagelstam (4), Reisman and Stengel (5), and McFarland (6). A brilliant report is that of Wilson (7). Edsal (8) remarks on the sparsity of reported cases.

It is a common affection among the peoples of nearly all the seacoast countries of Europe, especially along the shores of the Baltic Sea, in Germany, Russia, Norway, and Sweden. It is the tapeworm most frequently found in Japan and Ireland. The parasite is recognized with ease, its morphology being quite characteristic. The length of the full grown parasite varies greatly, from one foot to sixty feet. The head is the simplest in form of all the tapeworms, being oval in shape and very small, usually not exceeding 2.5 mm. in length and one mm. in breadth. Two longitudinal grooves provide the only means by which the head obtains suction. Following the head the tiny segments begin to appear, with very little intermediate substance to serve as a neck. Although the segments are very small at first and slightly longer than broad, they gradually increase in size, the breadth of the segment outstripping the length proportionately until the full grown segments are reached that are characteristic of the parasite. The segment is two to three mm. in length and ten to fifteen mm. in breadth. Occasionally imperfectly formed segments are encountered. The uterus is found coiled up in the centre of the segments, and when well distended with ova presents a rosette appearance. The color of the uterus varies from a light gray to a dark brown or black, depending upon the number of ova contained. The genital opening is discerned as a slightly elevated papilla arising from the centre of the uterus. The ova are elliptical in shape and quite large, many measuring over sixty microns in the long diameter. They are composed of a thin hyaline shell and a small lid at one end, through which the coarsely granular brownish contents may be easily expressed. The cysticercus stage occurs in fish, especially the pike. According to reported cases the parasite may give rise to no symptoms in the human host, or it may produce varying grades of gastroenteritis terminating in constitutional affections, chief among which is a form of severe anemia resembling pernicious anemia, which may prove fatal even after expulsion of the parasites. Constitutional nervous affections due to this worm, some of a very severe type, are recorded.

The following case is not only important from an etiological standpoint, but serves as an excellent illustration of the futility of attempting to diagnose vague clinical manifestations without the aid of detailed laboratory study, which so frequently is an excellent help in avoiding such meaningless statements as cryptogenetic, idiopathic, or neurasthenic in origin.

Case. The patient who first came under my care at the dermatological clinic of the Mount Sinai Hospital, October 2, 1915, was an intelligent Russian Jewish woman, fifty-one years of age, who complained of an itchy sensation over the entire body, especially severe over the lower abdomen and crural regions. This itch was of eight years' duration, sometimes subsiding for two or three weeks, but no longer, and always on recurrence at first very severe, especially at night, and gradually subsiding after five or six weeks, again to return with fair regularity. She had been treated by various physicians without material relief, and a few assured her that she had a nervous ailment, as they could detect no lesions at any time to account for her subjective symptoms. Physical examination revealed a cleanly, robust female, with a skin pale, moist, and warm, and the abdomen pendulous. There were scratch marks visible over several places on her body, especially the upper and inner regions of the thighs, and a few maculopapules were found over the body, especially on the lower portion of the abdomen. Otherwise she presented no visible lesions, nor did she recall having had a rash at any time. The patient appeared irritable and depressed. Specimens of morning and evening urine were examined and found negative. Blood sugar estimation was 0.11 per cent., which is within normal limits of glycemia. An internal sedative and a soothing external application were prescribed without influencing her symptoms to any degree. Upon her next visit, the complete blood count showed: Hemoglobin eighty per cent., red blood cells 4,210,000, white blood cells 10,200, polynuclears sixty-six per cent., small mononuclears twenty-two per cent., large mononuclears four per cent, eosinophiles eight per cent.

The eosinophilia was inexplicable, since the woman was in fair health and presented neither skin lesions nor a history of chest affliction to account for it. We therefore ordered a fresh specimen of stool following a saline purge, and were rewarded by finding the ova of Bothriocephalus latus in great numbers. The patient had lived in Riga, Russia, before she came to this country six years ago. She denied eating raw fish or engaging in that line of business. Upon close questioning she admitted having had several attacks of cramps and diarrhea in the last few years, which, however, were of short duration and did not apparently influence her general health.

We carried out the following course of treatment. The patient was starved for twenty-four hours, during which period only weak tea or water was allowed. Then she received the following prescription, which she took in one dose. Oleoresin of aspidium forty-five minims, tincture of vanilla forty-five minims, powdered acacia half a dram, and water enough to make one ounce. This was followed, one hour later, by fractional doses of calomel, one half grain each, until she had taken three grains. About eight hours afterward, she sent a knotted mass of tapeworm to the laboratory in a large dish. When unraveled, we found four worms which were easily recognized as the fish tapeworm. They were of the following lengths: Three feet 6 inches, 3 feet 8.5 inches, 4 feet 10 inches, and 5 feet 4 inches. Heads were found on all but the longest parasite, and a careful search failed to disclose it. Upon her next visit to the dispensary, the patient's symptoms had nearly all subsided, and within ten days had entirely disappeared, no ova could be demonstrated in her stool, and to date she has had no recurrence of symptoms, and seems to be in excellent spirits.

Since the completion of this paper, I have seen a very good report of a case of bothriocephalus infestation by J. J. Singer (9), in which, however, castor oil was administered before and after aspidium in treating the case. He states that the patient was severely ill after the treatment. This can be easily explained on the ground that the oil caused the absorption of some of the male fern, which fortunately he had administered in fractional doses. It has been conclusively shown by Katamaya and O. Komoto, as well as Poulssen, that oils increase the absorbability of filix-mas and thus may lead to acute constitutional disturbances. It seems that calomel is especially efficacious in conjunction with anthelmintics, either because it directly affects the parasite or because of the increase in the flow of bile which follows its administration.

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1704 EAST MOYAMENSING AVENUE.

A CYSTOURETHROSCOPE FOR DIAGNOSIS AND THERAPEUTICS.

By C. MORALES-MACEDO, M. D.,
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With the intention of uniting in a single instrument all the requirements of modern urethroscopic practice, I have designed along the lines of Geiringer's (1) device a direct view cystourethroscope, which is especially adapted for operative work. This instrument is so constructed that an operation can be performed either under a current of water or on a dry field, as the case may require.

In frequent use during the last few months, it has proved to give an absolutely true, slightly magnified picture of the trigone and neck of the bladder, and of the urethra, the entire circumference of which can be seen in one image. It is particularly serviceable in the fulguration of growths, in the therapeutic use of endourethral cutting instruments, and in making local applications. It consists of:

1. A straight endoscopic tube, seven inches long and No. 26 Fr. in calibre, with a slightly tunneled part and two faucets for double current irrigation;
2. An obturator provided with a freely movable beak;
3. A direct view telescope and a light carrier, which fit the tunneled part of the examining tube. The telescope slides in a special groove and can be withdrawn, leaving the light *in situ;*
4. A metallic plug, designed to close hermetically the proximal end of the sheath, while the telescope and light carrier are in. This plug is perforated for the passage of a fulgurating wire or any other suitable instrument. It can be removed when a dry intervention is planned; it can be capped with an unperforated rubber tip when only observation under running water is desired.

Technic for observation. The sheath, with the obturator *in situ*, is passed into the bladder. The obturator is withdrawn, and the telescope and light carrier are inserted. The metallic plug, provided with a nonperforated rubber cap, is properly fitted. An irrigator filled with sterile water, which is situated about three feet above the level of the table, is connected to one of the lateral faucets, and the flow is started. The other faucet is used to drain off the excess of fluid; it is advisable to attach to it a thin rubber tube dropped in a waste pail. The light is turned on and the telescope is moved slightly back to obtain the best possible distinct vision. The irrigation can be regulated to suit a thorough observation; when we desire to examine the distended canal, the discharging faucet must be closed, and when we need to bring about prolapse of the mucous membrane, irrigation is stopped momentarily.

We begin the examination of the practically empty bladder by inspecting the trigone and ureteral openings, which are clearly seen. By withdrawing the instrument, the circumference of the internal sphincter can be brought into view. The scrutiny of the prostatic urethra is now begun and the verumontanum is thoroughly inspected. The membranous urethra can be distended and examined. As the instrument is gradually withdrawn, the various parts of the anterior urethra appear successively in a view which ends at the meatus. It is possible to gain a distinct view of the entire circumference of the urethra in one image, provided there is not too much fluid distention.

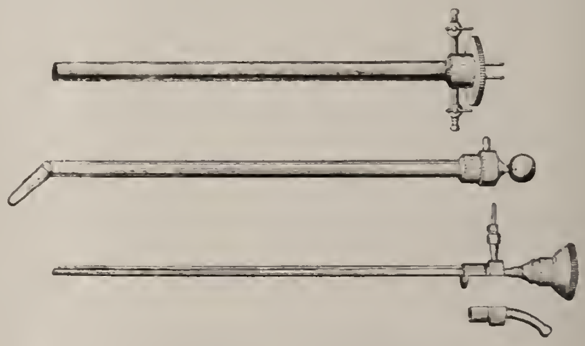

FIG.—Direct view cystourethroscope.

Fulguration and intervention under water current. A heavily insulated wire for fulguration can be inserted through the metallic plug, which is provided with a perforated rubber cap. The channel of this plug affords room enough for the passage of an instrument No. 12 Fr. in calibre; hence we are able to employ all the flexible instruments in common use for operation through a cystoscope. As running water is used, the operative work is done under the control of a clear field of vision.

Dry intervention. By the removal of the metallic plug, and cutting off the water supply, rigid instruments, such as applicators, urethral knives, curettes, probes, etc., can be carried through the endoscopic tube to meet the requirements of local applications and of some endourethral operations. Should magnification not be considered necessary, the telescope can be removed, leaving in only the light carrier, so the operator can take advantage of practically the whole lumen of the sheath.

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131 WEST NINETY-SIXTH STREET.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

DIET IN RELATION TO ACUTE AND CHRONIC ENDOCARDITIS.

By Louis Faugères Bishop, A. M., M. D.,
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The relation of diet to acute and chronic endocarditis is very important because in its ultimate analysis the heart is an explosive engine to which the food products supply the fuel.

The consideration of the heart as a machine is necessary for an analysis of its functions such as may lead to intelligent management. The simplest observation leads to the knowledge that the heart is an active mechanism and that it must be governed by the same principles that govern the operation of any other machine. Energy does not originate from nothing. We cannot conceive of the creation of energy. All we know about energy is as we see it transferred from one form to another. If we drop a stone from a height, the energy which is accumulated by the stone in falling is converted on striking the ground into other forms of energy, particularly heat. Again, heat may be turned back into motion, but there is no such thing as any beginning of energy. It always comes from some other form of energy, and as far as we know energy is never lost.

So the heart as a machine must obtain its energy from some place, from some matter, or some material, and in the production of energy that material must be used up. The heart seems very much like a gasoline engine. It operates by a series of contractions which represent an explosion, as it were, of accumulated force, just as the gasoline engine runs by the explosion of gasoline in its cylinders. The source of heart energy is found, of course, in its ultimate analysis in the explosion of food products, particularly in the explosion of derivatives from the carbohydrate part of the food. We know, in nutrition, the nitrogenous elements of food constitute what we might term the plastic materials of the body—the materials by which structure is built up, in the process of either growth or repair. On the other hand, the carbohydrates and the hydrocarbons, in uniting with oxygen to produce water and carbonic acid gas, produce heat and energy.

These in general are the functions of the two great divisions of food, the proteins and carbohydrates and fats, the fats being hydrocarbons. In addition to this the proteins have certain side actions which consist of stimulation and control of function. A person who is suffering from over-ingestion of carbohydrates may get fat and may have a great many disturbances of digestion and so on, but serious disturbances of functions do not develop, such as are found in the poisoning by over ingestion of nitrogenous foods.

The heart, therefore, is analogous to an engine which works through a series of contractions which are analogous to an explosion of energy.

The only rational explanation of the heart beat that anyone has ever elucidated has been that there is some particular substance formed in the heart between beats, which upon reaching a certain degree of accumulation explodes, as it were, and various considerations lead us to believe that when it is exploded it is fully used up, and must be reformed after each beat.

The older idea, that the heart contained certain material which was able to make contractions and that these contractions were instigated through nervous influence, has been dropped quite generally by students of cardiology.

When life is threatened in the course of heart inflammations, foods which are particularly capable of producing energy by oxidation are absolutely necessary. A few writers have even reported remarkable results from supplying sugar to failing hearts—perhaps on the same principle that a cook throws kerosene on a fire. These observations must have been made with a class of people who were already short of fuel foods because no such phenomenon has been duplicated in the author's experience.

The other point of view from which the question of foods in acute endocarditis may be considered, is that of their influence on the pathological process. From whatever angle this is approached, arguments will appear emphasizing the importance of the proper selection of the protein foods.

In chronic endocarditis the almost inevitable involvement of the kidneys, if by passive congestion alone, would indicate a limitation of nitrogenous foods to the actual needs of the body so as to spare these organs from overwork.

Also, we must mention the frequent association of chronic endocarditis with gouty conditions in which the metabolism of urea is disturbed, leading to the formation of uric acid and sodium urate.

In many persons suffering from endocarditis there is a mechanical passive congestion of the liver that limits their capacity to deal with foods which—in popular language—tend to produce "biliousness"; in other words, very rich foods.

A very great question in cardiac patients is how to deal with the symptoms due or attributable to gases in various parts of the gastrointestinal tract.

This is a subject almost coextensive with the practice of cardiology, and the solution of it pertains as much to the art of medicine as to the science of the vocation. The man who jumps to the conclusion that this consists *merely* of a fermentation of carbohydrates is very, very wrong; equally so the man who attributes it to the purely local digestive disorders. It is a symptom often enough of reflex nervous origin pertaining largely to the defective function of the liver depending upon the circulatory disturbances of passive congestion or high blood pressure. In proportion as the cardiovascular disease is relieved, the symptom becomes less troublesome.

Out of door exercise is probably the best single remedial measure. The deprivation of the cardiac machinery of its necessary carbohydrate fuel, with the idea that this may ferment, in the long run leads to the ingestion of too many proteins and interferes with recovery from the cardiovascular disorder.

The principle involved in the dietetics of a person suffering from a heart defective on account of endocarditis is thus seen to be clarified by appreciation of its analogy to an active mechanism. An automobile engine is a hydrocarbon engine; the heart is a carbohydrate engine.

Proteins may act as stimulators of the heart and in minute proportion they may go to build up structure, but it is the fuel foods that supply the energy. Therefore, in proportion to the proper adjustment of our fuel supply, both in quantity and in mixture, will be the length of time during which satisfactory action may be expected.

54 West Fifty-fifth Street.

Antimony in Foods.—Poisoning of mysterious origin is doubtless more common than is generally appreciated. By this, remarks the *Journal A. M. A.* for September 16, 1916, we do not refer to the obviously profound effects of large doses of highly deleterious compounds, but rather to the more subtle intoxications of a mild grade which often escape notice because of the unexpected ways in which they may arise. Industrial poisonings are occasionally of this character. Recently we called attention to the possibilities for harm in the accidental employment of daffodil bulbs as food.[1] Some time ago the warning of the Hygienic Laboratory of the United States Public Health Service against the use, for milk bottles, of rubber nipples containing antimony was mentioned.[2] Recently unexpected possibilities of harm have been detected in some of the enameled cooking utensils that are sold in American markets.[3]

When these dishes first becan to supplant crockeryware, considerable agitation arose in Europe regarding the possibility of lead poisoning from food prepared in dishes highly glazed, because this metal is employed in the arts in which glazing is carried out. In the case of sheet steel enameled ware, for which a glaze of great brilliancy is not required, it has been possible to use other substances to act as a flux. It is now widely believed that lead is not used in the manufacture of popular enameled dishes. Investigations by Miss Miller[3] at the University of Chicago indicate that this element was liberated in exceptional cases only, by vigorous cooking tests with enameled dishes of standard make.

Not so with antimony, however. This relatively cheap substance has long been added to certain enamels to make the glaze opaque. Usually tin oxide is employed. Arsenic is said to be used only in enamels for decorative purposes. Presumably enamels containing antimony can be made so resistant to mild chemicals that practically none of the poison will dissolve in the ordinary cooking process. Nevertheless, some of the European countries have forbidden the use of antimony in culinary utensils. No such prohibition exists in America. Miss Miller has recently found that some antimony was dissolved in every case after cooking various foods in cheap gray enameled kettles purchased in certain stores where the poorer classes trade. As an illustration of the quantities liberated in this way, acid substances like grape juice, cider, and cranberries acquired from three to fourteen mg. during a cooking test. A serving of spinach incorporated nearly ten mg. of antimony from a small dish. Even fresh milk dissolved out three mg.

Various factors seem to influence the amount liberated. The acidity of the foods, the number of times the dish has been used, the amount of abrasion in the culinary process, temperature, and a time factor doubtless all play a part. Miss Miller remarks that the fact that one make of enamel is so readily attacked as to betray its inferiority by the abrasion produced would probably prevent its use by intelligent persons; but the less intelligent might adopt it without question. The toxic dose of antimony is not so large—the average dose of tartar emetic contains only five mg. of the element itself—that its introduction into foods through the medium of cooking utensils can be overlooked. Further investigation is desirable in the interest of public health.

Hypertension, Interstitial Nephritis, and the Diet.—An editorial writer in the *American Journal of Electrotherapeutics and Radiology* for July, 1916, points out, referring to the hypertension with arterial changes often associated with interstitial nephritis, that the more recent scientific investigations have shown that hypertension precedes the structural changes both in the kidneys and the arterial system. Persistent hypertension is thus considered to be the primary cause of these structural changes. The actual cause of this hypertension, furthermore, is held to be in many cases an excessive decomposition of proteins in the bowel. The professional mind is turned away from the old theory of the uric acid diathesis, the presence of uric acid being itself similarly due to an excess of protein in the diet. The paramount indication in hypertension thus lies in correcting the diet and in anticipating the protein decomposition processes in the colon through timely evacuation of the bowel contents. Such procedures bear the same relation to the administration of lactic acid bacilli as prophylaxis does to an antidote, and it becomes a question whether the longevity in certain Balkan peoples ascribed by Metchnikoff to the consumption of sour milk, is not due rather to a simple and relatively restricted diet. The fact that arteriosclerosis is rapidly increasing in the United States compares significantly with the steady rise in the per capita consumption of animal food in this country. Reeducation of the public mind in this direction is thus a matter of the first importance from the standpoint of prophylaxis. In respect of advanced hypertension cases in which arteriosclerosis and nephritic changes have already developed, the impression has been prevalent that the high blood pressure in these cases is compensatory and should not be lowered. This is entirely disproved by the experience of numerous observers. On the contrary, measures to lower the pressure, including a meat free diet and treatment calculated to improve the hepatic and renal functions, should be taken, for under such treatment casts and albumin disappear from the urine and vascular tension is readily kept below the danger point. The static wave current is of great utility in lowering the blood pressure and coincidently ameliorating the renal condition.

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[1] Poisonous Properties of the Garden Daffodil, *Journal A. M. A.*, July 22, 1916, p. 290.

[2] Bull. 96, Hyg. Lab., U. S. P. H. S., 1914, p. 56. Rubber as a Source of Hygienic Danger, *Journal A. M. A.*, Nov. 28, 1914, p. 1954.

[3] Elizabeth W. Miller: The Solution of Antimony from Enameled Cooking Utensils, *Jour. Home Econ.*, viii, 361, 1916.

The Rice Diet: How to Prepare It and How to Eat It.—H. S. Bartholomew (*Medical Record*, August 19, 1916) states that this diet consists of rice, butter, bread, water, and salt with absolutely nothing else. This is taken three times daily at regular meal time and eaten hot with a fork, at least half an hour being consumed at each meal. No cream, milk, or sugar is to be used, while water is to be taken at each meal, but not while rice is in the mouth, as it interferes with the action of the saliva on the rice granules. Water should be freely consumed between meals, and at least four ounces of butter must be taken daily. The preparation of the rice is important; five tablespoonfuls of rice are boiled thirty minutes in two quarts of water without stirring; after straining and allowing to stand for a few minutes to dry, it is eaten hot.

[Proper selection of rice is of prime importance. The natural or brown rice is preferable to the talcum coated or polished rice usually sold. Natural rice is not only of much higher nutritive value, but is far more appetizing.—Editors.]

The Dietetic Treatment of Round Gastric Ulcer.—A. I. Iarotsky (*Roussky Vratch*, June 4, 1916) maintains that gastric ulcer can be cured by diet alone, but the diet must contain a sufficient number of nutritive elements, and yet be so bland that it does not stimulate the secretion of gastric juice. It must leave the stomach quickly and be digested largely in the intestines. Egg albumin, olive oil, or unsalted butter fulfills these requirements better than any other food. The white of eggs not only leaves the stomach rapidly, but possesses the additional advantage of combining with the free hydrochloric acid which may be present. The whites of about eight eggs should be mixed with water (not beaten up) and given in the morning, and 160 grams of butter in the evening. This diet contains about 1,200 calories. No water or ice is given by the mouth, thirst being allayed by the use of enemas. To the latter may be added small amounts of sugar. The diet is kept up for ten or twelve days, when carbohydrates are added in the form of potato purée, with butter, rice, barley, or farina soup; later, fresh ground vegetables with butter. On this diet patients may be maintained for weeks and even months. This treatment, according to the author, allays pain, gastric distention, and eructations, rendering the use of drugs unnecessary. The drugs usually employed in the treatment of gastric ulcer are worse than useless. Morphine, for instance, following a temporary inhibition, increases gastric secretion. Atropine has a similar action and, besides, exerts an undesirable systemic effect. Nitrate of silver, the old standby in the treatment of gastric ulcer, is distinctly contraindicated because of its stimulation of gastric secretion. Subnitrate of bismuth is harmless and may be employed.

The diet recommended by the author is indicated also in toxic gastritis, hyperchlorhydria, and after operations on the stomach.

Food Causing Renal Disease in Soldiers.—Albert Albu and Erich Schlessinger (*Berlin klin. Woch.*, February 7, 1916).—A wide experience with so called trench nephritis seems to show that exposure to moisture and temperature fluctuations has little etiological relation to the condition. There is, further, no evidence of an infection being the underlying cause. Only one common factor could be found, namely, an altered and unbalanced diet. Under war conditions the men receive a diet deficient in fresh vegetables and fruits, low in fats and meats, the majority of which are salted or otherwise preserved. It is suggested that this diet is largely deficient in the necessary vitamines and that its continued use gives rise to a toxic state which damages the kidneys and causes an acute nephritis.

Dietetic Management of Hypercholesterinemia in Cholelithiasis.—M. A. Rothschild and N. Rosenthal (*American Jour. Med. Sci.*, Sept., 1916) divide cases of cholelithiasis into those with normal cholesterin content of the blood, and those which are hypercholesterinemic. The latter is subdivided into the obstructive and the diathetic, and is the only group considered. The object of treatment is to reduce the cholesterin content of the blood, which may be secured by diminishing the cholesterin content of the food, and by rendering the absorption of cholesterin as difficult as possible. These two conditions can be satisfied by placing the patient on a fat free diet, which both excludes lipoids to a large extent, and renders difficult the esterization of the free cholesterin in the food. Our foods in general are poor in cholesterin esters. Eggs, cream, butter, meat, and fish are excluded, as they are rich in lipoids. On a strictly lipoid free diet only vegetables are allowed, excluding beans and peas, which are fairly rich in phylocholesterin. All other vegetables, as well as cereals and sugars, are allowed. Milk should be skimmed and fat free buttermilk permitted. This diet is so strict that the majority of the patients will not maintain it for a long period, so "fast and feast day periods" have been devised. For three or four days a week the patient lives on the strict, lipoid free diet, which serves to deplete the organism of the stored up lipoids. For the next three or four days, depending upon the grade of the hypercholesterinemia, he is allowed, in addition to the vegetables, well cooked lean meats and fish, excluding salmon, shad, and bluefish, the fat content of which is high; oleomargarine is allowed in place of butter. The writers promise to publish a report of the permanent effects of this treatment in their cases, which have not been under observation long enough for such effects to be determined.

Contemporary Comment

Discords.—Under this heading, H. G. W., an editorial writer in the *Long Island Medical Journal* for September, 1916, bursts into gloomy lyrical numbers as follows: On the hottest night of summer, when there's not a breath of air, when no fan will lure the coolness of old Zephyr from his lair, and you sit in dripping misery apraying for a breeze, what is that which gently agitates the leaves upon the trees? It's the pianola thumping from the house across the street, while the lamplight shows the player and his madly prancing feet. And deep sympathy is added to the perspiration's woe; not for the cussed player, but the tune he's mangling so. Then you seek another window as far as far may be from the ragtime irritation of the fiend who's made you flee. But the music teacher's practising her never ending scales and her exercises punctuate the tom cat's hideous wails as they rise in deafening unison from fence and first floor back and your tortured nerves are stretched so taut it seems that they must crack. And the phonograph three doors away is playing shrill and thin the *Rocky Road to Dublin* or that *Tipperary* thing, while your neighbor's baby calls its Ma to find some torturing pin. The city in the summer's full of music's flats and sharps, full of auto horns and wagon wheels and licensed canine barks; full of shrieking trolley car brakes and the shrill street vendor's cry; so if you're seeking peace on earth just pack your duds and fly.

The Physicians' Opportunity.—The physicians in every city, town, and village should avail themselves of the opportunity to bring home some forceful truths to the laity, at this time. The people are in a mood to listen and to act. Just at present all eyes are upon New York and the people are dreadfully worked up over the fact that 1,260 persons (mostly babies) have died of infantile paralysis since January, 1916. This is a waste of precious life and a condition to be deplored.

But why not call the attention of the people now that they are awake and in a listening attitude, asks the *Texas Medical Journal* for September, 1916, to the fact that diphtheria, scarlet fever, typhoid fever, measles, and whooping cough are much more dangerous as causes of death than infantile paralysis? Tuberculosis is many times more important than infantile paralysis, both as regards the amount of sickness it causes and the number of people it kills. The people should be convinced that typhoid fever need not exist at all if all that is known about it were actually utilized.

The bubonic plague of today is identical with the black death of the middle ages. It is estimated that every case of human plague costs the municipality in which it occurs $7,500. It is well known to physicians that rats are the carriers of the pest bacillus, which occurs in three forms, viz., the pneumonic, with a death rate of almost 100 per cent.; the septicemic, which is nearly as fatal, and the bubonic, which claims fifty per cent. of its victims—but are the people making war on rats? Would they want these pests in the home if they could be made to understand how great the danger? There is absolutely no excuse for the existence of the fly, the mosquito, the rat or mouse, and a number of other things not mentionable in polite society. If the general public could be awakened and kept awake long enough to become convinced and aroused to these facts what a cleaning up there would be. But there must be "line upon line and precept upon precept," and it is greatly to be feared that until the end of time we shall have these unwelcome, obnoxious pests among us.

Poliomyelitis to Great Britain via Canada.—Some alarm as to the possibility of an outbreak of infective poliomyelitis in this country is not unnatural in view of the epidemic from which New York is at present suffering. Transit from America nowadays is very rapid, and if the disease should spread to the training grounds in Canada, we might be subjected suddenly to a terrible outbreak among our soldiers. Both as sanitarians and as physicians we are peculiarly helpless in face of infective poliomyelitis, observes the *Medical Press and Circular* for August 30, 1916. We do not know the organism, and we know little of its manner of infection. The organism appears to be present in the nose, throat, and intestines of the affected subject, but as to the manner of carriage from one patient to another we know little. It is a summer disease, and dust has been blamed as the infective medium. Flies also have been supposed to carry the infection, but at present the favorite theory is that of the human carrier. It is supposed that a human subject may be infected as to the mucous surfaces without the spinal cord suffering or symptoms being caused, and that he may give the infection to those with whom he associates. In view of this uncertainty as to the mode of spread, American sanitarians are reduced to the medical precaution of quarantine, and it is likely that similar precautions will have to be adopted here toward travelers from infected areas.

Compulsory Health Insurance.—In this delightfully cool season with the daily temperature seldom running over 95° F. in the shade, we crave treatment by acupuncture or something equally soothing. We get this treatment fortunately, from time to time, from self constituted legislative Solons whose panacea for social misery is that every worker shall be compelled, whether or no, to insure his health. "Compulsory health insurance," their rapid fire typewritist assures us, "is the *only* means for checking the lowered vitality and the poverty created by present day conditions!" He adds persuasively, "that this system of health insurance for a small sum divided among employer, worker, and State, will bring medical care to the wage earner and his family, will assure for a maximum of twenty-six weeks in a year, a weekly payment of two thirds of wages during the bread winner's illness and in additionally (*sic*) a small funeral benefit should he die." "Compulsory health insurance is an economical means of providing adequately for the sick wage earner and will prove a mighty force for the inauguration and of a comprehensive campaign for health conservation."

We doubt whether even in cool weather the American working man will care to be Prussianized by these altruistic friends of the people.

Editorial Notes and Comments

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THE CLEARING HOUSE IDEA FOR MENTAL DEFECTIVES.

The menace of the army of the feebleminded and the otherwise mentally deficient has been brought so near to the public and to the profession that the work of identifying them, keeping them under surveillance, and treating them has progressed rapidly. Beside being an economic burden on the community, the mentally deficient are criminals and social outcasts in embryo, and prolific propagators of generations of like kind. For those whose mentality is low, crime is the path of least resistance. Necessarily, to be of much constructive value, the detection of the defective element in society must take place in early life, before damage of this nature has been accomplished. The exclusion of alien foci of feebleminded strains is rapidly being controlled by the Public Health Service. The large number of the certified mentally defective is ample illustration of the reality of this condition among aliens and quite justifies their exclusion. Experience in the rapid examination and diagnosis necessarily developed in handling the vast throng of immigrants will be of untold value in carrying on this work among native classes on a large scale.

Until recently, however, little has been done to detect and to treat mental deficiency among school children, except to relegate backward children to special classes. Very few extra or reinforced methods of training were put into use. To be sure, the defective child was allowed a much longer time to learn than the normal child, but the main purpose—none the less a good one—of the separation was to put the defective where he would not impede the progress of apparently normal children. The wait for the end of the school period, when the unfortunate could be legally shooed out of school and into the world to take his place among the human derelicts, was always an impatient one; and the medical inspection of school children, while in vogue for a comparatively long time, was directed toward the conservation not so much of the child's mental as of its physical condition. Now, however, most enlightened school boards are beginning to introduce systems of special examinations to determine, to separate, and to treat the mentally feeble. The systems are still in the experimental stage; only children whom the teachers consider particularly defective are referred, and not every child receives the benefit of examination.

Modern principles of schooling require intelligent appreciation of impediments to learning rather than of special aptitudes of the school child. Children's abilities and taste change rapidly, even from month to month, and attempted vocational guidance is of illusory value; it is always feasible, however, to detect and often to remove obstacles to growth. As a condition of progress in school grades the child should be examined by the psychologist to determine incapacities. No psychologist or psychiatrist can measure even approximately the latent possibilities of most children. Probably the majority of the leading originating minds of the world have been backward students while at school, retarded by the deadening routine and inflexibility of conventional school methods. It is quite possible for the school registration desk, when properly organized and conducted, to become the largest, most thorough, and most efficient aid in ascertaining causes for mental retardation, and thus lessen waste of the public funds and of the child's time.

In the absence of this method, the clinical clearing house idea is a good temporary substitute. The clearing house receives all suspected persons for diagnosis and treatment. A record is kept and cases are followed up. In order to increase the number coming under the influence of the clearing house, large employers of youthful labor should be urged to send their employees and prospective employees through the clearing house. This proceeding alone would tend to reduce the industrial accidents. We cannot help feeling when in contact with those engaged in the simple and automatic occupations in large factories and packing houses, that they are good for little else, and that in some way and to some extent, they are defective. Proper training after clearing house diagnosis would serve to rehabilitate many of them.

The main value of the clearing house idea as a force in preventive medicine lies in determination of the nature and the degree of deficiency, the presence of some patent faculties, and their amenability to training for some vocation. The removal of mental disabilities does more to develop the social idea and to discourage the antisocial tendencies so prominent in the criminal defective, than any other factor.

But the most comprehensive project for the determination of the incidence of the mentally defective among the general population, and the determination of the best methods for combating this evil, has been undertaken on a large scale by the National Committee for Mental Hygiene under the directorship of Dr. Thomas W. Salmon. It is the clearing house idea on a national scale; under direction mental surveys are being carried on wherever possible, and before long the result will be a crystallization of the knowledge on this subject, while attacks thereon will be conducted more scientifically. The whole subject, the work of this committee in particular, deserves the encouragement and the support of the public, especially of the medical profession.

THE COMPLICATIONS OF RENAL TUBERCULOSIS.

Tuberculous cystitis is the necessary consequence, the first complication of renal tuberculosis, and by itself alone reacts intensely on the patient's general health. Surgical interference, such as a cystotomy, will have a tendency to improve the vesical lesions and by placing the organ at rest the severe and constant pain is done away with. The excellent results of this operation can hardly be overestimated.

The tuberculous lesions of the ureter produce stricture resulting in stagnation of the urine above. The importance of these lesions in renal tuberculosis is great, yet they are often overlooked. A pyonephrosis thus set up may be purely tuberculous, or on the other hand, be due to a secondary infection. In the latter case the clinical picture may very likely be that of an ordinary nontuberculous pyonephrosis.

This dual infection may also take place in the perirenal fat and the presence of tuberculous lesions can be demonstrated, although it may appear healthy and play an important part in fistulæ following nephrectomy. Koch's bacillus may produce true cold abscess in the perirenal fat, and such collections must not be mistaken for abscesses having their starting point in the ribs or vertebræ. These abscesses are sometimes the first evidence of renal tuberculosis, but in most cases they are due to a secondary infection, particularly by the colon bacillus, the organism reaching the perirenal fat by way of the blood or lymphatics. The evolution of these perinephritic collections is most variable. As they usually extend downward toward the abdomen they may simulate an appendicitis or open into some hollow viscus or even through the abdominal wall, when the resulting fistula remains permanent.

The extension of the infection toward the thorax is less common, although cases have been met with, and the real origin of the pleural or pulmonary suppuration will be difficult to detect. Pleurisy during a renal tuberculosis is not uncommon, and a careful history of the case will often reveal this lesion in the patient's antecedents before the renal lesion has given rise to any symptom. In this case the pleurisy will usually be on the same side as the affected renal gland. A bilateral infection of the kidneys, at least at the beginning of the renal process, is relatively rare and is a great handicap to surgical treatment. When the lesions are of mild degree in one kidney, however, it is well known that an operation on the severely diseased renal gland may produce a great improvement in the patient's health.

TUBERCULOSIS IN THE BRITISH ARMY IN FRANCE.

Perhaps the most remarkable and, from the hygienic standpoint, the most satisfactory feature of the European war has been the comparative absence of epidemics which in former wars have wreaked more devastation in the ranks than shot and shell. Enteric fever, in particular, has been rare and the control of what may be termed war epidemics has been a triumph for efficient sanitary measures properly enforced. As to the incidence and prevalence of tuberculosis among the soldiers of the allied armies on the western front, accounts have been somewhat confusing. The statement has been made more than once, that there has been little tuberculosis in the French and British armies, that many tuberculous cases were benefited by the outdoor life which these fighting men perforce had to lead. While in some instances, however, the course of tuberculosis may have been arrested by the conditions of living, it is hard to believe that trench life and the fearful hardships which those at the front had to endure, can have exerted a wholly favorable influence. Sir William Osler, on July 26th, delivered an address at the annual meeting of the National Association for the Prevention of Tuberculosis, taking as his text the tuberculous soldier. He pointed out that pneumonia and tuberculosis had levied the heaviest toll among the British soldiers, and predicted that when the mortality statistics of disease were published from the army of the west, the "best killer" would be found to be the pneumococcus, a home bred germ which the soldier takes with him or catches easily from a comrade. With regard to tuberculosis and its martial relationship, Osler made three preliminary statements: 1. In a majority of the cases the germ enlists with the soldier. A few, a very few, catch the disease in infected billets or barracks. What percentage of the men is infected is not known, but it is exceptional not to find traces of tuberculosis in the bodies of men of the enlistment age, who died of other diseases. 2. Of one million enlisted men of the age aforesaid the proportion to acquire tuberculosis is probably much smaller than if these men had remained in civil life. It will be possible later to work out the exact incidence for comparison with figures already available; but the circumstances of the soldier's life, as a rule, do not weaken, but strengthen resistance. 3. Exposure, hardships in the field, injury, drink, and syphilis may bring about favoring conditions for bacilli which already exist or which may gain access to the patient, and the soldier reports sick with tuberculosis of lungs, glands, pleura, bones, or brain.

It is evident that tuberculosis is prevalent in the British army in France, which may be explained, to a great extent, by the lax methods of examination. Until conscription was enforced, men were so badly needed for the army that the medical examination was not very searching; consequently, many doubtful cases were let through. Under the strenuous life which is the lot of the soldier today, it is no wonder that those who were infected with the tuberculosis germ, were unable to stand the strain. A soldier's life is not indicated for those who are so tuberculous as to be unable to pass a searching medical examination. However much fighting material may be required, to enlist doubtful cases on the supposition that they may become hardened involves too great a risk.

SYPHILIS AND DIABETES.

Syphilis has been called upon to explain many of the aches and ills of mankind, and has, in the large majority of instances, been obliged to plead guilty to the indictment. One of the most interesting possibilities of causal relationship at the present time is that which may exist between syphilis and diabetes. Ever since Opie first began his investigations, it has become an accepted tenet that the latter disease seems very commonly to follow the transformation of the vascular islands of Langerhans of the pancreas into fibrous tissue. As to the ultimate cause of this lesion little, if anything, definite has been determined, and yet that is essentially the crux of the matter.

In Osler's *System* Futcher states that in occasional cases diabetes may be traced to a syphilitic infection, but that these cases are undoubtedly rare. He holds that when syphilis plays a part, the lesion is most likely to be a local one, most probably situated in the region of the medulla or pituitary gland. He adds, however, that nutritional changes in the brain and pancreas from syphilitic arterial disease must be considered as a possible cause.

Treponema has been found in fibrous pancreatitis of the intraacinous type accompanied by diabetes. It has not as yet been proved, however, that syphilis is the common cause of diabetes, but it evidently plays a very important role at times. A Wassermann reaction in every case of diabetes might go far to establish the relationship between these two diseases.

Another point of interest is the so called diabetic gangrene that occupies so prominent a place among the complications of diabetes. To quote Futcher again, "The artery supplying the affected area shows arteriosclerosis in the vast majority of cases." That this is the underlying lesion is stated by both pathologists and clinicians, yet the possibility of syphilitic infection being at the bottom of the trouble is nowhere mentioned. A careful microscopic study of the tissues might reveal the presence of treponema.

It would appear that, although syphilis may not be the cause of every case of diabetes, yet the combination of the two diseases occurs more commonly than is suspected. Consequently it behooves the physician to do more than make a mere urinary examination; a Wassermann reaction may assist materially in determining the diagnosis, and thereby give a clue to the treatment.

A LETTER FROM HOT SPRINGS, ARK.

An old and valued acquaintance, Dr. Loyd Thompson, of Hot Springs, Ark., in a personal communication, complains that some remarks of his made at the Detroit meeting of the A. M. A., on the intensive treatment of syphilis, were somewhat garbled in their publication abroad, and asks if we cannot help set him right in the eyes of his confrères. Doctor Thompson was accused of stating that he used metallic mercury intravenously in one gram doses—Heaven help the patient! the doctor ejaculates piously. Another accusation was that he injected mercury intraspinally. Furthermore, the impression was conveyed that the doctor did not believe in the waters of Hot Springs for the treatment of syphilis—a most unlikely belief, we think, in a resident.

To cite the doctor's own words in refuting these ridiculous statements: "This certainly is a mistake, as I do believe such bathing to be of decided benefit in the treatment of this disease. I do not consider the waters of the hot springs as possessing any treponemacidal properties, but it is a fact that the majority of patients bathing in these waters can tolerate much more mercury than those not bathing. It is also a fact that these baths cause an increase in the elimination of the products of catabolism, which undoubtedly is of direct advantage in the treatment of syphilis. Added to these direct advantages the syphilitic who is treated in Hot Springs usually is free from business worries, leads a regular life, participates in outdoor exercise, and finally, the average patient who comes to this or any other resort follows the physician's directions more implicitly than when at home; in short, makes a business of getting well."

AUTOTHERAPY IN IVY POISONING.

Dr. J. M. French, of Milford, Mass., reports in *Clinical Medicine* (August, 1916) remarkable results in the prevention and cure of rhus poisoning by chewing the young leaves of the plant and swallowing the juice. The simplicity of the remedy certainly commends itself, though until more reports are made it would hardly be well to advise patients who have not been infected to look for the poison ivy plant so as to use it for prophylactic purposes. Remembering the nature of the cutaneous lesion of rhus, recipients of this oral prescription are likely to suspect a practical joke and to imagine themselves with very sore mouths. The remedy, however, seems to be in perfect accord with the theory and practice of Dr. Charles H. Duncan, who will pounce on this case report as a fine example of his beloved autotherapy.

EFFECTS OF DEPOPULATION IN FRANCE.

At a meeting of the Académie de médecine on August 1, 1916, M. Debove (*Paris médical,* August 19th) presented a pamphlet from the pen of M. R. Lépine, of Lyons, in which it was proved that if the French birth rate had equalled the German since 1870, France today would have a population of seventy millions. On the other hand, if France wins in the present war and the birth rate does not improve, victory will be of no value to her because she would be unable to resist future German invasion. The author of the pamphlet lays stress on the absolute necessity of bringing strong and healthy children into the world, quality being an important corollary of quantity.

Obituary

SIR THOMAS LAUDER BRUNTON, Bart., F. R. S.,

of London, England.

Sir Thomas Lauder Brunton died in London, on September 16th, in his seventy-third year. He was born in 1844 and educated at the universities of Edinburgh, Vienna, Berlin, Amsterdam, and Leipsic, receiving his degree of Doctor of Medicine in 1868. Subsequently he had conferred upon him the degrees of Sc. D., by Edinburgh in 1870, and M. D., by Dublin in 1908; the F. R. C. P. he had achieved in 1876. Sir Thomas was consulting surgeon to St. Bartholomew's Hospital, London, and until lately was lecturer there on pharmacology and therapeutics. He was a copious writer on medical subjects, his principal work being the *Handbook on Pharmacology, Natural Medicine and Therapeutics,* an edition of which became popular in this country on account of its listing the preparations of the U. S. P. as well as the British. Sir Thomas was knighted in 1900 and became a baronet in 1908. He was vice-president of the Royal Society.

ADONIRAM BROWN JUDSON, A. M., M. D.,

of New York.

Doctor Judson died at his home, 53 Washington Square, on September 20th. He was born in Maulmain, Burma, in 1837, his father being an American missionary in that country, and after his preliminary education took the A. M. at Brown University in 1859. He then studied medicine at Harvard and Jefferson, obtaining the M. D. from the latter in 1865, and an *ad eundem* from the College of Physicians and Surgeons, New York, in 1868. During his earlier medical studies the Civil War broke out, and Doctor Judson became successively assistant surgeon and surgeon in the United States Navy. At the conclusion of the war he began practice in New York and soon became identified with orthopedic surgery. He was an inspector of the board of health until 1877 and an examiner for pensions till 1884. From 1878 until 1908 he was orthopedic surgeon to the outpatient department of New York Hospital. In 1891 he was president of the American Orthopedic Association. Doctor Judson was the author of several medical works and a frequent contributor to the New York Medical Journal, being a consulting member of the editorial staff in orthopedic surgery and matters of public health.

News Items

Woman's Medical College of Pennsylvania.—The opening exercises for the session of 1916-1917 were held by this college on Wednesday afternoon, September 20th. Dr. Albert P. Brubaker, professor of physiology and medical jurisprudence, Jefferson Medical College, Philadelphia, delivered the address.

Silliman Lectures.—These lectures will be given in the Lampson Lyceum, Yale University, at 5 p. m., Monday, Tuesday, Thursday, and Friday, October 9th to 13th, by J. S. Haldane, M. D., LL. D., F. R. S. The subject of the lectures is Organism and Environment as Illustrated by the Physiology of Breathing.

The Opening Exercises of the College of Physicians and Surgeons, Columbia University, for the academic year 1916-17, will be held in the lower lecture room, Wednesday, September 27th, at 10:30 a. m. After a brief address of welcome by President Nicholas Murray Butler, an address will be delivered by Dr. Warfield T. Longcope, Bard professor of the practice of medicine, on Milestones in Medicine.

The Naval Medical School will open at Washington, D. C., September 29th, with eighteen students. The assistant surgeons, Medical Reserve Corps, who compose the class that will enter the school at that time are L. D. Arbuckle, Franklin T. Bower, Julian C. Brantley, A. H. Cecha, Theodore E. Cox, Carroll H. Francis, James A. Halpin, Arthur W. Hoaglund, Lincoln Humphreys, Irving W. Jacobs, Harold L. Jensen, Ogden D. King, Aubrey M. Larsen, J. J. Laughlin, Franklin F. Murdoch, P. F. Prioleau, Arthur C. Siston, Jr., and Louis H. Williams.

Personal.—Dr. Louis Heitzman, of New York, has been appointed professor of pathology and bacteriology at Fordham University School of Medicine.

Dr. L. D. Bristol, a graduate of Johns Hopkins University, formerly a member of the faculties of Minnesota and Syracuse Universities, and for the past two years professor of bacteriology and hygiene and director of the State Public Health Laboratories at the University of North Dakota, has accepted the newly created Boston Dispensary Fellowship in Public Health in the Department of Preventive Medicine at Harvard Medical School, Boston.

Influence of Occupation on Health during Adolescence.—Massachusetts is now engaged in a systematic effort to collect information that may be of value in determining the need of changes in its present laws and regulations governing the employment of minors. At the request of the Massachusetts Board of Labor and Industries, Assistant Surgeon M. Victor Safford, of the United States Public Health Service, was detailed by the Federal Government to cooperate with the State authorities in a study of the effect of employment in various occupations on the health and physical development of children now permitted by law to work therein. A report of this study, with respect to the cotton manufacturing industry in Massachusetts, has just been published by the Federal Government as Public Health Bulletin No. 78. This bulletin shows that in Massachusetts boys between the ages of fourteen and sixteen for the most part do not remain long in the cotton mills. Evidence of injurious effects on normal boys of their work or working conditions was seldom found, and few cases of dangerous diseases were discovered. There was, however, a wide variety of defective conditions disclosed by the investigation.

Canadian Associations Hold Joint Meeting in Quebec.—The Canadian Public Health Association held its fifth annual meeting in Quebec, Wednesday and Thursday, September 13th and 14th, conjointly with the Canadian Association for the Prevention of Tuberculosis, which held its fifteenth annual meeting on September 12th and 13th, and the Services sanitaires de la Province de Québec, which held its sixth annual meeting on September 12th, 13th, and 14th. The general sessions of each association were held in the City Hall and the evening sessions for September 12th and 13th were held in Promotion Hall, Laval University. At a public meeting of the three organizations, held on Thursday evening, September 14th, in City Hall, Sir James A. Grant, of Ottawa, delivered an address on Carriers of Disease; Ex-Controller McCarthy, of Toronto, spoke on the Economic Value of Preventive Medicine, and Dr. J. A. Beaudoin, médecin municipal, Lachine, P. Q., addressed the conference on *l'Importance de l'hygiène dans l'administration municipale.* After the meeting a smoker was held in the Château Frontenac. Friday, September 15th, was devoted to an excursion to the Saguenay River, calling at Grosse Isle Quarantine Station. The local committee of arrangements was composed of the following members: Honorary president, Dr. A. Simard; president, Dr. J. D. Pagé; joint secretaries, Dr. Emile Nadeau and Dr. Edgar Couillard; treasurer, Dr. P. H. Bédard.

Examination for Medical Intern, St. Elizabeth's Hospital.—The United States Civil Service Commission will hold an examination on October 4th, open to both men and women, to secure a list of eligible persons for the position of medical intern, St. Elizabeth's Hospital, formerly the Government Hospital for the Insane, Washington, D. C. The positions are tenable for one year and pay $75 a month and maintenance. Applicants must be twenty years of age or over and unmarried. For further information regarding the examination, address the United States Civil Service Commission, Washington, D. C.

Joint Meeting of Connecticut Medical Societies.—The 152d semiannual meeting of the Litchfield County Medical Association will be held in conjunction with the ninth semiannual meeting of the Connecticut State Medical Society, on Tuesday, October 3d, at the Charlotte Hungerford Hospital, Torrington. Dr. D. D. Reidy, of Winsted, will deliver the address of welcome, which will be followed by an address by Dr. Samuel M. Garlick, of Bridgeport, president of the State society. Dr. Joseph I. Linde, of New Haven, will read a paper on Infantile Paralysis, and Dr. Herbert K. Thoms, of New Haven, one on Post Partum Hemorrhage. Guests will have an opportunity to inspect the new hospital before the meeting is called to order.

Child Labor Bill No Fake.—The National Child Labor Committee has issued a protest against current statements to the effect that the recently passed Federal child labor law is a fraud and a joker. "We hope no one will be misled by these rumors," says Owen R. Lovejoy, general secretary of the committee. "The law is as airtight as a law can be. The thirty day clause which has been attacked as a 'joker' does not relate to shipment in interstate commerce but to removal from the factory, and was intended, chiefly, to prevent evasion of the law by the storage of child made goods in a warehouse. The Federal child labor law was framed by the best constitutional lawyers in the country; it was passed by a Congress that had given it close attention; and we of the National Child Labor Committee believe that, whether the next president be Mr. Wilson or Mr. Hughes, the child labor law can and will be enforced in accordance with the will of the American people."

Municipal Civil Service Examinations.—The Municipal Civil Service Commission of New York will hold examinations on October 6th to fill the positions of surgeon to the Police Department and medical officer to the Fire Department. Candidates must be between twenty-six and forty years of age, must be residents of New York State, and have had five years' experience. These positions carry a salary of $3,500 a year and present unusual opportunities for exceptional and valuable experience.

It is interesting to note that the duties of medical officers in the two big departments formerly consisted of attending and relieving the sick or injured, whether members of the department or not, in a manner similar to that of the present ambulance doctors. As time went on, accident cases increased so rapidly with the growth of the city that it was impossible to provide sufficient medical men to meet the demand without impairing the main function of the department to protect life and property. As a result, the present ambulance service was inaugurated and the Police Department was entirely relieved of the unfair burden.

At the present time the duties of the twenty surgeons of the Police Department and the ten medical officers of the Fire Department are very similar, except that the latter maintains one active clinic where the members of the department are supplied with medicine free. The Police Department contemplate inaugurating a clinic modeled after the one of the Fire Department. The physicians' duties consist of examining all successful candidates for the service prior to their final acceptance, caring for members during sickness and disability, and recommending for retirement those unfit or beyond the age limit for duty.

Added to the prestige of the rank of Battalion Chief in the Fire Department and of Inspector in the Police Department, medical men are eligible for retirement at half pay after twenty years of service.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

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Thirty-seventh Communication.

TUBERCULOSIS (CONTINUED).

Locality in the treatment of tuberculosis is a minor problem, except in relatively few cases. Not infrequently one patient responds to treatment more readily in a dry climate, while another shows more rapid improvement in a humid atmosphere; but the primal considerations are that the patient shall be under strict disciplinary control, that the nutrition shall be adequate, that the atmosphere shall be reasonably free from debilitating contaminations, and that the environment shall be conducive to both physical and mental repose.

Inasmuch as several recent textbooks on the practice of medicine recommend sundry drugs in the treatment of tuberculosis, it becomes incumbent on the pharmacologist to examine these recommendations; but it is desirable that a distinction be made between drugs which have some favor as alleged cures and those which are frankly acknowledged as merely palliative in the later stages of apparently hopeless cases.

The use of tuberculin, in minutely ascending doses, has been given extended trial in some of the Adirondack resorts, the object being to establish an antitoxic immunity; but the results, while gratifying in many instances, are not yet of such extent and character as to gain general acceptation for this method of treatment.

Creosote and codliver oil were in much repute ten to twenty years ago, and are still lauded in a recent textbook, yet it is doubtful whether any beneficial result in the treatment of tuberculosis may be attributed directly to either of these substances. Creosote has been administered orally, rectally, hypodermically, and intratracheally, to the utter loathing of the long suffering patient; yet under this treatment no one has computed the ratio of deaths to recoveries, nor established the relation of creosote to either.

Concerning the oil a recent textbook says: "Codliver oil is another special remedy of great value"; yet there is not one shred of reliable evidence to prove that codliver oil is of any utility in the treatment of tuberculosis. Moreover, its nauseating smell, its heavy disgusting feel on the tongue, and its relative difficulty of emulsification in the duodenum, all make it prejudicial to the accelerated nutritive anabolism fundamental to the present method of treatment. Codliver oil should be thrust into the same discard with creosote and the hypophosphites.

Does anemia exist, the carbonate and the citrate of iron may be justifiably recommended as adjuvants; arsenic is sometimes helpful for its stimulant effect on the hematopoietic tissues. A syphilitic taint may demand the addition of mercury and the iodides, but any amelioration thus obtained does not indicate, as was once assumed, that mercury is a valuable drug in tuberculosis. Possibly some enterprising experimenter may yet find a synthetic specific in the treatment of tuberculosis as salvarsan sometimes is in chronic syphilis, but such a compound has not yet appeared; in fact we possess no drug at present that is of positive curative utility for this dread disease.

The distressing cough of the later stages is best inhibited by some agent which checks reflexes, like codeine; but as the cough is usually Nature's measure for removing accumulated secretions, its complete inhibition is undesirable. The fever requires no specific treatment except when unduly high. Fever in tuberculosis is an important indicator which registers the degree of success of general treatment; antipyretics temporarily mask the gauge, giving no adequate compensation in return. The night sweats are best treated with atropine.

In all treatment of tuberculosis the important thing to bear in mind is the urgency of early diagnosis, followed by prompt and energetic attention to hygienic measures as a mode of treatment.

Intensive Treatment of Syphilis. — Loyd Thompson (*Journal A. M. A.*, Sept. 2, 1916) states that the earlier in the disease one begins treatment the better the chances of cure, but the diagnosis should always be made certain by finding the spirochetes, or by obtaining a positive Wassermann reaction. Treatment must be pushed to the limit of tolerance and continued with intermissions until there is clinical cure and a persistently negative Wassermann. The initial dose of salvarsan should be 0.4 gram dissolved in forty mils of freshly distilled water and given intravenously. Beginning the following day intramuscular or intravenous injections of mercury should be started. The benzoate of mercury is the best preparation for intramuscular injection and should be prepared by dissolving 2.5 grams of chemically pure sodium chloride in fifty mils of distilled water in a graduated flask. Then two grams of benzoate of mercury are added and dissolved by shaking. Distilled water is added to make 100 mils, and the initial dose is 0.5 mil, containing 0.01 gram of the mercurial This dose is rapidly raised to one mil, or 0.02 gram. For intravenous injection the requisite dose of mercuric chloride in a two per cent. solution is dropped into a twenty mil glass syringe containing ten mils of normal saline. The whole is shaken, the air expelled, the needle inserted into a vein and blood drawn in to fill the syringe. The contents are then injected slowly. All cases of cerebrospinal syphilis require intradural treatment, which is best carried out as follows: Salvarsanized serum is prepared freshly by adding 0.1 mil of a fresh solution of salvarsan (0.25 mgm.) to one mil of fresh serum, incubating at 37.5° C. for three quarters of an hour and inactivating at 55° C. for thirty minutes. Under novocaine anesthesia the needle is inserted in the lumbar region connected with twenty-five cm. of rubber tubing to the barrel of a twenty mil glass syringe, which is then lowered until about fifteen mils of spinal fluid collect in it. Then one or two mils of a five per cent. novocaine solution are added, and the whole is allowed to run back into the dural space. After three minutes' spinal fluid is again collected in the syringe barrel and the salvarsanized serum added and injected as before. Mercurialized serum may be given in the same way. Potassium iodide must be given in addition to salvarsan and mercury in cases with gummas or arteritis.

Ringworm of Hands and Feet.—Oliver S. Ormsby and James Herbert Mitchell (*Jour. A. M. A.*, Sept. 2, 1916) show that the involvement of the glabrous skin surfaces of the hands and feet by ringworm is far more common than is usually believed. Since the lesions produced in these regions resemble closely several common dermatoses, the diagnosis must rest on the discovery of the parasite. Treatment is successful, but should differ according to the lesions. In severe purulent and eczematoid forms, preliminary use of a soothing application of naphtalin with zinc oxide and starch should be prescribed, followed by application of a five per cent. solution of chrysarobin in a chloroform solution of gutta percha. Five daily applications of the latter are usually sufficient. If not, the treatment may be repeated after an interval of three days. In other forms chrysarobin alone may be used, or more prompt results may be secured from an ointment of the following composition:

℞ Acidi salicylici, ...2.0;
Acidi benzoici, ...4.0;
M. Unguenti simplicis, ...30.0.

This may be used daily for several weeks, if necessary, without causing irritation.

Treatment of Gonorrheal Conjunctivitis.—J. H. Claiborne (*Virginia Medical Semi-Monthly*, July 21, 1916), in gonococcal conjunctivitis of the newborn, advises the use of two per cent. silver nitrate solution every other day, the eyes being meanwhile kept clean with boric acid solution. If the lids are much swollen, ice should be applied from time to time. Manipulation of the lids should be avoided as much as possible; slight external pressure on the lids with the finger tips should alone be used to evert them for the instillation. The silver nitrate should be discontinued when the secretion begins to lessen, or sooner if it causes undue irritation. In cases seen only when there is already great thickening of the lids, with a membrane and a brawny condition of the mucosa, thirty per cent. argyrol solution should be substituted for silver nitrate. Where corneal ulcer appears a one per cent. solution of atropine sulphate should be used, and one should cease trying to inspect the cornea. After the discharge has stopped and the lids are improved, occasional use of silver nitrate on the succulent lids will promote recovery. In gonococcal conjunctivitis of the adult, Claiborne succeeded in two consecutive cases in which the disease had been under way from twelve to forty-eight hours in aborting the process with silver nitrate. The sound eye was sealed hermetically, the patient put to bed, the conjunctival sac washed out, and six or eight drops of two per cent. silver nitrate solution instilled and allowed to remain twenty to thirty seconds. This was then washed out with one in 3000 mercury bichloride solution, and ice applications given day and night as often as required to keep the lids chilled. Every hour the nurse, gently lifting the upper lid with the thumb, wiped away any secretion formed and instilled boric acid solution. The lids swelled somewhat and slight chemosis developed, but in two days the disease was under control. In each of these two cases the eye had originally shown at the inner canthus a bead of yellowish pus containing numerous gonococci. Soon after the infection in the first eye had been controlled the second eye in each case became involved, but this was soon subdued by like treatment, and in two weeks neither case showed any trace of the disease, save a slight redness of the lids.

Treatment of Nerve Injuries.—S. Loewenthal (*Berlin. klin. Woch.*, February 28, 1916) considers that the prime indication for treatment, other than restoration of function, is relief of pain. This is often difficult, but among the most satisfactory measures are: Judicious use of small doses of morphine; cold, moist applications or baths; in some cases, moist, hot applications; antineuralgics, such as pyramidon in single doses of 0.4 to 0.6 gram; and the local inunction of a two per cent. veratrine salve, for which the following is an excellent formula:

℞ Veratrinæ, ...1.0;
Adipis vel vasogen, ...ad. 50.0.
M. External use only.

Colchicum and cannabis indica have proved worthless in the control of this form of pain. If the lesion is not recovered from after sufficient time, during which expectant treatment has been employed, then operative treatment of the lesion causing the disturbance should be considered.

Treatment of Condylomata acuminata.—David Watson (*Medical Standard*, August, 1916) finds that the treatment for venereal warts which is most simple, effective, and free from objection is application of lactic acid. The mode of employment depends on the conditions. In the male circumcision is performed first when necessary, then pedunculated warts may be removed with scissors, and pure lactic acid is applied to the base after the bleeding has been controlled. Other growths are treated with a continuous one per cent. wet dressing, or with the occasional application of a strong solution. In the female, when there are several large masses, each portion is isolated and kept surrounded by strips of lint wet with a one half to a one per cent. solution. The base of these growths may also be touched with the pure acid at intervals of a few days. Smaller growths are painted with the undiluted acid or a strong solution, and when there is a large field of minute growths the wet dressing is employed. The dressings are changed in accordance with the discharge, and at each change the parts are thoroughly bathed with an antiseptic; in the case of females a sitz bath is used. The largest masses wither and drop off, small growths are inhibited, and cure results without formation of cicatrices and without pain. The only disadvantage the writer has encountered in the use of lactic acid is the occasional occurrence of a general erythema when the treatment is pushed too energetically. This erythema is of trifling significance and subsides quickly on the temporary withdrawal of the acid and the substitution of a zinc and calomel dusting powder or ointment, but when large areas are involved it may be necessary to intermit the treatment for two days each week, and to protect the surrounding healthy tissues with petrolatum in order to discourage excessive absorption of the acid. As soon as the seats of gonorrheal infection can be reached appropriate treatment is instituted.

Vaccine Treatment of Whooping Cough.—Charles James Bloom (*New Orleans Medical and Surgical Journal,* September, 1916) states that the treatment of pertussis by vaccine is most efficient provided the procedure followed is correct. Give a large initial dose, not less than 120,000,000, increase 60,000,000 for each succeeding dose, and give the maximum quantity every other day until one of the marked symptoms shows an appreciable improvement. Continue every three or four days until the patient is cured. Vaccine produces no reaction, it reduces the duration of an attack to an average of twenty-eight days, the loss of weight is minimum, the intensity and number of coughing spells become less after three injections have been given, vomiting ceases after six injections, sleep is not disturbed after from five to twelve days, and no complications were observed by the writer in thirteen cases after observation ranging from eight to twelve months.

Sodium Citrate and Sodium Chloride for the Prevention of Interperitoneal Postoperative Adhesions.—J. Wesley Bovee (*Surgery, Gynecology, and Obstetrics,* September, 1916) says that acting upon the theory that "before a fibrous exudate can form in the peritoneal cavity, with its resultant plastic agglutination, there must be the liberation of that hypothetical ferment, thrombokinase, its activation of prothrombin in the presence of calcium and the production of thrombin," Saxon Pope experimented on sixty rabbits and published his work in January, 1914. These experiments were made with many different materials and he concluded that a solution of a two per cent. sodium citrate in a two per cent. solution of sodium chloride was the best remedy. His faith in his conclusions is proved by his reporting in February, 1916, the results of the employment of this hypertonic solution in 400 abdominal operations in the University of California Hospital. Walker and Ferguson during 104 operations on sixty-three rabbits found three per cent. of the citrate in one per cent. of sodium chloride solution was the most satisfactory, giving complete success in 70.5 per cent. and in 88.2 per cent. partial success. In the presence of sepsis or deep or wide destruction of tissue it is not stated that these hypertonic solutions can be regarded as infallible, but even here they are of use. In Bovee's personal experience with the three per cent. solution of the citrate in quantities of 200 to 300 c. c. shock has been noted. Among the questions that arise in our minds are: 1. If it gives absolute success in 70.5 per cent. of cases of mild peritoneal traumatism, can its use be extended successfully in more severe peritoneal injuries such as separated adhesions? 2. How long must it be in contact with the area to be of the highest efficiency? 3. What is the duration of its activity? 4. Can it be used efficiently in gauze covering large areas of peritoneal denudations, and brought out through the abdominal wall? If these questions are answered later satisfactorily, then we shall have positively mastered the much dreaded and dangerous complication of peritoneal adhesions.

Treatment of Sydenham's Chorea.—Augusto Natali (*American Medicine,* August, 1916) concludes that intraspinal injections of magnesium sulphate in the proportions and doses indicated by Marinesco give good results. This is particularly true of cases of chorea minor, where soon after the first injection improvement is usually noticed. In some cases improvement is progressive up to the time of recovery. Others need a second or a third injection before improvement sets in or recovery takes place. Recurrences are rare. A short treatment with arsenic following the injections is of value. The method is not to be used in all cases of chorea, but should be restricted to two classes of cases: a, Those in which other treatment has not given good results, and, b, those in which the choreic movements are pronounced to the point of interfering with the patient's rest.

Administration of Diphtheria Antitoxin. Safety First.—Louis Weiss (*Medical Review of Reviews,* September, 1916) urges that this is an important procedure, to be prepared for and carried out with infinite care. The history should be ascertained, and the present condition of the patient carefully noted, with especial attention to the heart. The patient should always be in the recumbent position, no matter what the age, in order that the work of the heart may be as light as possible. Cleanse the skin of the part selected with ordinary hand soap, or tincture of green soap, or lysol in solution, and paint with tincture of iodine. Cleanse your own hands. The antitoxin outfit comes to you sterilized. Pinch up the skin and introduce the needle through the iodine stained area. With the syringe in one hand ready for action feel the pulse with the fingers of the other hand, or with the stethoscope over the heart. Inject drop by drop, slowly and carefully. If the heart continues as before or improves, continue the injection until finished, but if the heart shows a tendency from normal, or grows worse in any way, remove the needle at once. The pulse shows the first sign of danger, which is detected easily. If the pulse is overlooked and the injection continued, other symptoms may follow: A temporary stoppage of respiration, a blank stare, an anemic, shrunken face, beads of cold perspiration on the forehead, dropping of the arms and head to one side, and collapse. Such an experience does not occur if the slow, careful, watchful, drop by drop method is followed with the patient in the recumbent position.

Pituitrin in Labor.—Frank Perry (*American Medicine*, August, 1916) records twenty-three cases in which pituitrin was used. The dose employed was one c. c. and in several cases it had to be repeated. A summary of the cases shows that labor pains were induced in from three to five minutes. They were intermittent at first, but became regular in about fifteen minutes. Delivery of the child was hastened and expulsion of the placenta was accelerated. An agreeable aftereffect of the remedy is its favorable influence on the evacuation of the bladder. It should not be used in anatomical obstruction of the birth canal, nephritis with high blood pressure, or exophthalmic goitre. Where secondary hemorrhage is anticipated, it may be given late in the secondary stage. He advises against the early use of pituitrin. Before its administration, the cervix should first be well dilated and rigidity should be overcome.

Chancroids.—Goubeau (*Jour. A. M. A.*, September 9, 1916) uses cotton swabs soaked in ether, each ulcer being cleaned and freed fom all traces of pus. The surface is then swabbed with a solution of the following composition:

℞ Sodii arsenatis, ...1.0;
Alcohol, ...50.0.
M. et fiat solutio. S. External use only.

The alcohol is allowed to evaporate in a current of air, leaving a thin film of sodium arsenate covering the surface and lining all of the minute crevices. The swabbing is repeated once, and a dry gauze dressing is applied after the alcohol has again evaporated. This treatment is carried out daily for three to four days, when the chancroid will have become a small, healthy wound which should be sponged with ether and dusted with iodoform once a day. Healing is usually complete in ten days. For buboes one may aspirate the pus and inject one mil of a one per cent. aqueous solution of arsenate of soda every two days if necessary. The same treatment should be used even before pus has formed.

Goitre.—Harry G. Sloan (*Cleveland Med. Jour.*, July, 1916) states that since thyroid trouble is prevalent in certain localities in which there seems to be a deficiency of iodine in the food, such as the Great Lakes region, it is well to prescribe small amounts of iodine for children as they approach and go through puberty, and a similar plan is advisable in pregnant women. For this purpose it is enough to give 0.3 mil of the syrup of the iodide of iron after meals for one month out of every three. This preparation also supplies a small amount of iron which is beneficial. In any case of goitre one should make a careful physical examination to locate any foci of infection. If found, these should be eradicated before any form of treatment may be expected to give fully satisfactory results. Such examination should include the teeth, the nasopharynx and the sinuses emptying into it, the uterus, prostate, and similar regions likely to be overlooked. The condition of the alimentary canal should also be investigated and if there is any reason to suspect toxic absorption from stasis or fermentation, measures should be taken to secure proper regular evacuations; it is well in addition to prescribe capsules containing 0.3 gram of thymol, one to be taken after each meal. The regular use of buttermilk and the administration of small doses of iodine should be combined with these measures in Graves's disease, but we must be on the watch to control the dose of iodine, so as not to produce an increase in the symptoms. Usually after four to six weeks of regular administration of iodine, the gland will begin to diminish in size and become firmer. The patient must be placed at complete rest in bed for a month or more, if Graves's disease is present, and if at the end of that time there has been no decided improvement, it is then appropriate to consider the need for resort to some one of the accepted surgical modes of attack.

Complement Fixation in Tuberculosis.—H. J. Corper (*Journal of Infectious Diseases*, September, 1916) points out the necessity of being able to determine the presence or absence of tuberculosis at a time when tubercle bacilli are not present in the sputum. At present the complement fixation test is being employed and the technic is being improved until Doctor Corper thinks that it may become as valuable a reaction as the Wassermann in syphilis. The results of his experiments, however, hardly seem to justify his optimism. He found that the test was positive in only about thirty per cent. of all the clinically definite cases of tuberculosis, both active and inactive. Its chief claim to value seems to be that a positive reaction is practically final.

Seborrheic Eczema.—A. Winkelried Williams (*Medical Standard*, September, 1916) includes under this term a number of skin diseases commonly supposed to be distinct, but which he thinks are divided only by endless synonyms. Perhaps the ordinary name by which it is known is dandruff, but he defines it as a type of the parasitic forms of eczema. Acne and impacted cerumen of the external auditory meatus are mentioned as complications, or possibly varieties. He states that local treatment will cure seborrheic eczema, and that scalp treatment is imperative, as otherwise recurrences and exacerbations are inevitable except in a small percentage of the rarer cases of ascending eczemas. In case of infants cleanse the scalp with boric starch dressings, one teaspoonful of boric acid and four tablespoonfuls of starch mixed with a little cold water over which a pint of boiling water is poured so as to form a jelly to be spread three fourths of an inch thick on linen or calico, allowed to cool, covered with muslin, and applied. The scalp should be covered with impervious wool or jaconet, and the dressing should remain on a few hours. After its removal if the crusts are not wiped off easily the dressing should be reapplied. After removal of the crusts a mild antiseptic ointment should be applied, such as boric acid in lanolin and olive oil. If the infant has little or no hair, Ihle's paste may be used. If there is pustulation we may use:

℞ Hydrargyri ammonii chlorinati, ...gr. x;
Petrolati, ...ʒj.
M. ft. mist.

or, if in addition to the pustulation there is much liquid exudation, he recommends eight grains of the mercurial salt in two drams each of zinc oxide, starch, lanolin, and olive oil.

Older children and adults should have the scalp cleansed with this wash:

℞	Ammonii carbonati,	ʒij;
	Sodii biboratis,	ʒiv;
	Aquæ,	ad ℥xij;
	Solve, deinde adde:	
	Glycerini,	ʒvii;
	Spiritus vini rect.,	ʒvij.

M. ft. mist.

which should be rubbed in freely and allowed to soak into the scalp for ten to twenty minutes, or until the scalp tingles. Then the head should be washed with soap and hot water and dried well. Medication should be applied by means of an ointment, a pomade, or a lotion. When there is a large quantity of scaling, ointments usually are the best to begin with.

℞	Sulphuris præcipitati,	ʒss ad ʒj.
	Acidi tannici,	gr. xx ad xxx;
	Adipis benzoati,	ʒj.

M. ft. unguentum.

the stronger to be used when there is no distinct redness of the skin, or Unna's pomade:

℞	Resorcini,	gr. xiii;
	Sulphuris præcipitati,	gr. xxv;
	Olei amygdalis dulcis,	ʒvii;
	Olei theobromæ,	ʒiv.

M. ft. unguentum.

The hair should be parted at two inch intervals and a small quantity of the ointment or pomade rubbed along the parting lines on the skin, getting as little as possible on the hair shafts.

A good lotion is:

℞	Resorcini,	gr. lxx ad c;
	Olei ricini,	ʒiii ad ʒv;
	Spiritus vini recti (80 per cent.),	ad ℥iii;
	Aquæ cologniensis,	ʒss.

M. ft. lotio.

the stronger to be used in chronic cases, the weaker in the more acute.

An essential detail is the prior cleansing and disinfection of brushes and combs and twice weekly during treatment. They should be soaked for ten minutes in hot soda, and then rinsed in several lots of cold water. Pillow cases, hats, and wigs are similarly infected, but are less dangerous.

The writer then passes to the treatment of the skin where it is not covered by hair, dealing exclusively with adults and older children, not infants. The varied types require modifications. First, cases with dry or slightly greasy scaling from slightly raised or nearly plane, somewhat reddened or yellow surfaces. Wash with superfatted soap, dry thoroughly, and apply one of these ointments:

℞	Sulphuris præcipitati,	ʒss;
	Acidi tannici,	gr. xx;
	Adipis benzoati,	℥i ad x.

M. ft. unguentum.

℞	Liquoris carbonis detergentis,	ʒss;
	Hydrarg. am. chlor.,	gr. x;
	Petrolati,	℥j.

M. ft. unguentum.

℞	Resorcini,	ʒss;
	Sulphuris præcipitati,	ʒss;
	Adipis lanæ.,	ʒvi;
	Olei olivæ,	ʒij.

M. ft. unguentum.

Second, cases without very acute signs, but considerable scaling, resembling chronic psoriasis: Patient should soak in hot bath for half an hour. It is better to add to each thirty gallons of water a quarter of a pound each of tannic acid or borax. The scales should be scrubbed off, using soft soap if necessary. After drying, rub the patches well with a test ointment, such as

℞	Acidi salicylici,	gr. xxx;
	Liq. carbonis detergentis,	ʒss;
	Petrolati,	℥j.

M. ft. unguentum.

and if the skin bears this well use the next day:

℞	Chrysarobin,	3 to 6 parts;
	Ichthyol,	4 to 6 parts;
	Acid salicylic,	2.5 parts;
	Benzoated lard,	to 100 parts.

The weaker should be used first, the stronger a few days later if a good reaction is not obtained. It should be applied twice a day, at first being merely smeared over the patches, later rubbed in with a flannel if the skin bears it. Chrysarobin should never be used on the head, as it may excite a serious inflammation of the eyes. After four days' use of this ointment, or less if it causes an acute inflammatory reaction, the patient should take another bath. If the areas have lost all thickening and are surrounded by erythema, an ointment is substituted such as

℞	Sulphuris præcipitati, Acidi tannici,	āā gr. xx;
	Adipis benzoati,	℥j.

℞	Hydrargyri ammonii chlorinati,	gr. v;
	Liquoris carbonis detergentis,	ʒss;
	Petrolati,	ʒj.

M. ft. unguentum.

When no distinct reaction has been caused, another four days' treatment with an increased strength of chrysarobin should be instituted.

A third type is acute cases complicated with vesication. Keep the patient quiet and soothe the skin with dusting powders. Then apply a mild paste until the skin becomes dry, and administer the treatment for the first type.

The fourth type resembles pityriasis rubra and should be treated with the tannic acid and borax bath, inunction with unguentum glycerini plumbi subacetici, and when the case has been reduced to localized areas, like the first type.

For treatment of the external auditory meatus, it is recommended that after the cerumen and scales have been washed out and the meatus dried, the irritated skin should be carefully swabbed with a solution of silver nitrate in spirits of nitrous ether, gr. xii to ʒj, after which an ointment of twenty or thirty grains of tannic acid to the ounce may be applied. Another application said to be recommended by G. Elliot is one part of resorcin in ninety-nine parts of benzoinal.

The umbilicus may be cleaned with a solution of borax, then painted with the foregoing solution of silver nitrate, and an ointment applied of

℞	Acidi salicylici,	gr. xv;
	Sulphuris præcipitatis,	gr. xx;
	Petrolati,	℥j.

M. ft. unguentum.

rubbed in and then applied on lint fastened by a pad and bandage.

For seborrheic eczema in the axilla, use ichthyol, sulphur, or tannic acid ointment spread on strips of lint made to fit and kept in place by a lady's axillary dress protector with a pad between the wings secured by a bandage.

Miscellany from Home and Foreign Journals

Fever in the Puerperium and Puerperal Fever.—F. Villanueva (*Revista de Medicina y 'Cirugia Practicas*, August 14, 1916) states that every woman during the puerperium is exposed to various morbid processes, which must not be looked upon as caused by puerperal infection. Proper treatment of puerperal infection depends largely upon proper diagnosis, both clinical and bacteriological. Care should be taken that a given suspected infection is real before beginning treatment, and intercurrent or accidental disease requires quite as careful treatment. Errors in diagnosis are almost always produced by a mental predilection that all puerperal fever should be considered as caused by puerperal infection.

Babinski's Sign.—M. Astwazaturof (*Brit. Med. Jour.*, Aug. 12, 1916) states that various unsatisfactory explanations have been offered in connection with the mechanism of this important diagnostic sign, but that no one has done much more than restate the fact without elucidation. The author, however, attempts an explanation on the basis of ontogeny. The sign is normally present in infants before walking begins, and in certain primates a transitional stage in the development of the great toe from the thumb is present. With this development of the toe not all of the original reflexes are lost, but that of extension is held to be suppressed by cortical inhibition, and is normally replaced in man by a cortical reflex which causes a simultaneous flexion of all five toes. This reflex passes by way of the pyramidal tracts, and hence lesion of these tracts gives rise to the older, suppressed extensor reflex of the great toe by virtue of a release of the cortical inhibition. The Babinski reflex is a purely segmental spinal phenomenon. The same explanation holds for these similar reflexes observed by Oppenheim, Gordon and others.

An Anomaly of the Widal Reaction.—A. F. S. Sladden (*Lancet*, Aug. 12, 1916) remarks that when a macroscopic method is employed, a "zone phenomenon" is occasionally observed in which there is no agglutination with the lower dilutions, while agglutination occurs with the higher ones. Using Dreyer's method, the author studied this phenomenon as it occurred with B. typhosus and B. paratyphosus A and B. He observed it thirty-five times in a series of 116 different serums. The average range of its occurrence was found to be: for B. typhosus in dilutions up to one in fifty of serum; B. paratyphosus A up to one in twelve; and B. paratyphosus B up to one in eighty. It was found that the addition of another serum to the one being tested would increase the zone of inhibition of the former. The use of salt solution as a diluent had a similar effect, while distilled water diminished the zone and rendered the reaction more delicate. Where there was a marked zone of inhibition in a serum of feeble agglutinating power, the latter might be altogether missed if only a short range of dilutions was used. The extent of the zone, when present, increased as the infection progressed. Zone phenomena were present for all three organisms, but in varying degrees.

Obstetrical Paralysis—An Orthopedic Problem.—James Warren Sever (*American Journal of Orthopedic Surgery*, August, 1916) finds, from a study of 471 reported cases, that the paralysis is always due to force during a difficult labor; that it occurs more frequently on the right side and in cases with head presentation; that the upper arm type is more frequent; the prognosis in this type is more favorable; it may be associated with fracture of the clavicle, but does not result from a fracture of the humerus or a dislocation of the shoulder. He believes that the condition is due to injury of the cervical roots of the brachial plexus. He performs a modified Fairbanks' operation in which he divides the pectoralis major and the tendon of the subscapularis and, if necessary, the coracobrachialis and the short head of the biceps, and then applies a cast with the arm held in elevation, abduction and outward rotation and the hand in supination.

Trismus during Serum Sickness.—R. F. Bolt (*Brit. Med. Jour.*, Aug. 12, 1916) reports that while operating on an empyema a medical officer pricked his finger, which promptly became septic. The finger was incised and fifteen mils of antistreptococcic serum were administered. Eleven days later an urticarial rash developed; the next day there was fever and a severe headache; and on the following day—thirteen days after the dose of serum—the victim had pain in the neck, back and extremities, stiffness of various muscles and trismus. Treatment with the salicylate of soda, chloral and morphine reduced the symptoms and the patient recovered after about five days of trismus. The trismus and muscular symptoms were thought to be due to serum sickness, although tetanus could not be excluded absolutely. The patient from whom the original infection was derived made an uneventful recovery without symptoms of tetanus.

Precancerous Dermatoses.—W. J. Heimann (*Journal of Cancer Research*, July, 1916) states that carcinoma so frequently develops from certain dermatoses as to exclude mere coincidence, yet these dermatoses cannot properly be called precancerous lesions. It is very evident that many carcinomas are not preceded by such changes, and that every so called "precancerous dermatosis" does not invariably lead to cancer. Heimann maintains that the precancerous stage is unrecognizable, both clinically and microscopically. It was evident that at some stage in the evolution of the tumor there was a point separating the noncancerous from the cancerous, but as yet there is no way by which this may be recognized. There is, however, a group of lesions which frequently terminate as epitheliomas, yet neither their gross nor their minute appearance is that of cancer, nor do they possess peculiarities so separating them from other lesions as to make it possible arbitrarily to consider them the forerunners of cancer. It may be that individual experience will justify the impression that such lesions are capable of leading to cancer, but this is improbable.

Specificity of Wassermann Reaction.—Rudolph Bahman (*Surgery, Gynecology and Obstetrics,* September, 1916) concludes thus regarding the specificity of the Wassermann reaction: Theoretically, the Wassermann reaction is not specific, but practically it is highly specific. A strong positive reaction with proper controls and accurately titrated reagents is conclusive evidence of syphilis. The diagnosis of syphilis cannot be made upon a weakly positive reaction without some clinical evidence of the disease. A negative reaction does not exclude a syphilitic infection. Malignant diseases do not give positive reactions.

Cessation of Tachycardia on Outbreak of Spontaneous Perspiration.—Thomas Oliver (*Lancet,* August 5, 1916) states that a young man, twenty-eight years of age, suffered a severe attack of paroxysmal tachycardia accompanied with cyanosis, pallor and recurrent vomiting. Remedies failed to relieve the tachycardia, but after several hours profuse sweating began spontaneously and brought prompt relief from all symptoms, including the tachycardia. The patient had experienced similar attacks and relief had always come in the same way. No explanation of the phenomenon could be given.

Unexpected Results of Testicle Grafting.—Robert T. Morris (*Jour. A. M. A.,* Sept. 2, 1916), grafted three small fragments of testicle excised from a healthy man fifty-four years of age, into a man twenty-seven years of age, fourteen years after apparent total atrophy of his testicles from mumps. All three grafts underwent absorption, but the remnant of the man's right testicle near which one graft had been made, began to enlarge, and a testicle about one third normal size developed and was still growing when seen a year after operation. Along with the growth of the testicle there were developed some of the normal sexual characteristics which had previously been wanting, including the power of erection, enlargement in the size of the penis, and a normal libido.

Continuous Morning Headache in Arterial Hypertension.—Louis Rénon (*Paris médical,* July 1, 1916) finds this special form of headache more frequent in men than in women. It is seen exclusively in subjects forty-five to sixty years of age, chiefly around the fiftieth year, and is associated with arteriorenal sclerosis, whether due to interstitial nephritis following scarlet fever in childhood, to neglected syphilis, tobacco intoxication, or excessive eating of meats. A sedentary occupation, mental overwork, and worry are also factors. The hypertension is characterized by a high diastolic pressure—140 to 170 mm. with the Pachon, somewhat lower with other instruments—with the systolic pressure at 240 mm. (Pachon) or higher. The headache may be diffuse or be limited to the right and left frontal or parietal region, or both these areas; it is seldom occipital. It awakens the patient at 5 to 7 a. m., grows worse at 9 or 10 a. m. and tends to disappear about noon or an hour after lunch. The tortured patient, however, seldom lets it run its course, usually relieving it for a time with divers analgesic tablets, often with chronic drug intoxication as an ultimate result. The heart in these patients is large, the left ventricle hypertrophied, the urinary output much increased, with slight albuminuria. In some less pronounced cases, the headache is dull on arising, but becomes acute and unbearable upon the least physical or mental exertion—walking, going upstairs, or writing and thinking (the so called "painful thought" of Josué). These forms of headache, though remitting under treatment, are rarely cured, and render the prognosis of the high pressure cases in which they are found much worse, death usually following some overexertion or dietetic error and being due usually to apoplexy, less often to acute pulmonary edema, heart failure, angina pectoris, or uremia. The headache is of mechanical rather than toxic origin. Migraine attacks in arthritic patients are distinguished from it by their occurrence chiefly in younger patients, unilateral distribution, preceding vertigo, hereditary incidence, and coexisting disorders such as eczema, asthma, and lithiasis. The treatment of the headache consists, first of all, in breaking up the analgesic drug habit, forbidding the use of tobacco, and insisting upon complete rest, mental and physical. An exclusive milk diet—not exceeding two liters a day, with 2.5 grams of sodium citrate added to each—should be imposed for a week, and on two days in each of the second and third weeks. On the remaining days a vegetarian and fruit diet should be ordered. After the third week, fresh meat may be taken once daily, at the noon meal. A paper containing three grams of salt should be given to the patient each day, not to be exceeded during that day. If headache persists and the pressure fails to descend, thiosinamine and cratægus should be ordered for prolonged use. Iodides and antisyphilitic treatment may be of value.

Epidemic Pneumococcic Septicemia.—P. Carnot and De Kerdrel (*Paris médical,* July 8, 1916) call attention to certain epidemics of pneumonia recently noted among the Annamite and Senegalese native troops in the French service. The severe type of infection observed in these men combined the manifestations of ordinary lobar pneumonia with those of experimental pneumococcic septicemia in the rabbit or mouse. In some series of cases the blood of no less than one half the patients yielded a pure culture of pneumococci. Among the earlier cases, which arose in the winter time and while the men had insufficient shelter, the mortality was 100 per cent., the patients succumbing a few hours after admission; later, as the weather grew warmer, the mortality sank to fifty per cent., then lower, and finally the epidemic came to an end. Only nine of a series of eighteen cases showed frank lobar pneumonia, the others exhibiting lung congestion, acute edema, bronchopneumonia, hemorrhagic infarcts, etc. Concomitant pleurisy was noted in nine cases pericarditis caused death in many instances; peritonitis and otitis occurred four times, and marked splenic and hepatic enlargement was uniformly noted. The severity of the condition is ascribed to the marked susceptibility of the tropical troops suddenly exposed to rigorous climatic conditions. Treatment was of use only in the later mild cases. Gratifying results were obtained with subcutaneous injections of bile, local use of bile—notably in otitis—and especially by the use of pneumococcic vaccines in bile.

Physiology of the Phenols.—Dubin (*Jour. Biol. Chem.*, August, 1916) as well as others, believes that the urinary phenols arise from intestinal putrefaction, and are derived from the tyrosin portion of the protein molecule. Among the many conclusions drawn from his experiments he states that the phenols in the urine may be taken as an index of intestinal putrefaction.

New Spine Brace for the Rotation (Abbott) Treatment of Scoliosis.—H. Winnett Orr (*American Journal of Orthopedic Surgery*, August, 1916) describes a brace which consists of a posterior upright bar, fixed at the pelvis, with adjustable ribs on both sides for pressure. The ribs do not extend anteriorly, and hence no counterpressure at the chest can be obtained. The author states that rotation correction can be procured by its use and that it is easily fitted to any patient.

Typhoid Inoculation and Endemic Goitre.—M. A. Nicholson (*Lancet*, Aug. 12, 1916) through McCarrison's suggestion that endemic goitre is due to a waterborne intestinal organism and may be benefited by the use of vaccines of intestinal organisms, has been led to study the effect of typhoid inoculation on this disease. He made two series of observations on large groups of patients with equally large numbers of "controls." He was, however, unable to observe any effect from the vaccine on the size or prevalence of the goitre.

Treatment of Caries of the Spine by Bone Transplants—A Report of Twenty-three Cases.—Rutherford L. John (*American Journal of Orthopedic Surgery*, August, 1916) makes an unfavorable report of cases operated in. The author finds that half of the number were improved by bone transplanting, the remainder being reported as poor, indifferent, and resulting in death; that the incipient cases benefited most; that the danger of dissemination of the infection by operation may be often overlooked; and that the six deaths occurred in children of five years or less.

Effects of Retention in the Kidney of Media Employed in Pyelography.—William F. Braasch and Frank G. Mann (*American Journal of the Medical Sciences*, September, 1916) give the following conclusions derived from clinical and from experimental data. From clinical data: 1. The greatest danger in the use of silver preparations is their retention in actively secreting kidneys. 2. With multiple foci of necrosis the condition should be regarded as a septic nephritis and immediate nephrectomy is indicated. 3. Focal necrosis as the result of infection may follow the introduction of a ureteral catheter or of bland fluids into a pelvis with insufficient drainage. 4. Silver iodide suspensions are less harmful than the colloidal silver preparations. 5, Thorium nitrate in ten or fifteen per cent. solutions causes the least reaction, but casts a less distinct shadow. From experimental data: 1. Mild chemical irritants, as sodium chloride and boric acid, when injected and retained in the pelvis of the kidney, do not produce lesions of that organ. 2. The effect of methylene blue was practically negligible. 3. Stronger chemical irritants, as sodium citrate and twenty per cent. thorium nitrate, when tested in the same drastic manner, produce lesions of the kidney which seem to be directly due to the chemical injected, and not to any concomitant or subsequent infection. 4. Argyrol, collargol, and cargentos were about equally responsible for producing the most marked changes. It was often possible to find areas in which the metal could be distinguished. 5. The weaker solutions of colloidal silver did not appear to be less harmful than a more concentrated solution. 6. The silver iodide preparations produced less changes in the kidney than the other silver solutions. The one which is suspended in quince seed emulsion caused the least necrosis. 7. So far as determined, a fifteen per cent. thorium nitrate solution did not produce changes in the kidney, except possibly in one experiment. Care must be taken in its preparation that the solution is thoroughly neutralized.

A Case of Renal Calculi.—C. Thurston Holland (*Archives of Radiology and Electrotherapy*, August, 1916) cites the case of a woman forty-two years of age who complained of pain coming on in acute attacks throughout a period of ten years. The pain occurred on the right side and was associated with pain on micturition, and vomiting; the attacks were followed by the passage of large quantities of urine. Latterly the attacks had increased in severity. The right rectus was somewhat rigid, but the right kidney seemed palpable and was taken to be movable. The urine contained no pus and no albumin, but a few blood cells were reported. From radiographs the diagnosis of stone in the lower right ureter was suggested. Other tests were made which provided sufficient evidence for operation. In the abdomen high up in the kidney region on the right side, a tumor about the size of two oranges was found. It proved to be a dermoid cyst with a long pedicle, and the shadow which gave the impression of a ureteral stone was found to be caused by an immature tooth.

Effect of Potassium Iodide on the Luetin Reaction.—John A. Kolmer, Toitsu Matsunami, and Stuart Broadwell (*Jour. A. M. A.*, Sept. 2, 1916; note that Sherrick's observation that a positive luetin reaction occurred in ninety-nine per cent. of all persons, even if nonsyphilitic, if potassium iodide was administered shortly before, during, or immediately following the test, was confirmed in a series of careful investigations on normal subjects. Adequate "controls" were carried out, using the same material and the same subjects. The reaction was found to be positive in some persons as long as a month after the last dose of the iodide. Similar results were secured in guineapigs and rabbits. A marked reaction was also observed when agaragar was substituted for the luetin in iodized persons Inflammatory reactions also developed at the site of previously negative luetin injections when potassium iodide was given subsequently. The dose of iodide required to cause positive reaction differed in the different subjects. These findings showed the necessity of care in interpreting the luetin reaction and the need of certainly excluding recent administration of iodide when the test is made.

Proceedings of National and Local Societies

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Third Annual Meeting, Held at Washington, D. C., May 11 and 12, 1916.

The President, Dr. J. W. Jobling, of Nashville, Tenn., in the Chair.

Presidential Address: The Relation of Lipoids to Immune Reactions.—Dr. James W. Jobling, of Nashville, stated that the relation lipoids bore to immune reactions had been studied extensively during the past few years, but in this review it would be impossible to give more than a brief summary of the work. The relation of lipoids to biological phenomena did not receive much consideration until Meyer and Overton suggested their possible importance; they stated that the cell wall was composed chiefly of lipoids, a view that had been held for plant cells for a number of years, and, if this view was accepted, they must concede the possible importance of lipoids in protecting bacteria and the cells of the body against antagonistic substances. With regard to the resistance of bacteria to injurious agents, Petersen and the speaker had shown that bacteria were protected from the action of ferments by the unsaturated fatty acid compounds present in the cells, and that oxidizing agents such as iodine, hydrogen peroxide, etc., would destroy this protective action. It had been known for some time that many oxidizing agents had a bactericidal action. Bacteria might be so situated as to become inaccessible to the agents that normally brought about their destruction. This was particularly true in tuberculosis and syphilis, where the necrotic and avascular tissues surrounding a focus might be such as to prevent the entrance of immune substances, or other bactericidal agents. Their demonstration that the failure of autolysis was due to the protective lipoids made this phase of the subject more accessible to attack. They had shown, in addition, that oxidizing agents such as iodine inhibited the action of the antiferments, accelerated autolysis, and, as a result, exposed the infecting organisms to attack from without. The differences in results obtained by the various investigators suggested that lipoids in certain combinations might act as antigens, while the pure lipoids did not have this property. This might explain why the protein free lipoids of tapeworms and tubercle bacilli acted as antigens. It had been shown by Stuber, Dewey, Nuzum, and others that certain lipoids inhibited phagocytosis. What Graham observed suggested that the inhibition of phagocytosis was not due to injury of the cells. Muller concluded that bacterial lipoids were unimportant in the process of phagocytosis. Stuber believed that the agglutinins were produced as a result of the stimulus afforded by the fats liberated after destruction of the bacteria. Stuber also found that immune serum extracted with ether lost most of its agglutinating power, and that normal serum to which the ether extract had been added acquired an agglutinating value almost equal to that of the immune serum from which the extracts were obtained. Graham stated that ether anesthesia did not affect the agglutination titre of serums. Petersen and the speaker found that soaps injected intravenously into guineapigs in proper doses produced the symptoms and post mortem findings of anaphylaxis. It had been known for some time that the serum antitrypsin was increased after the recovery from anaphylactic shock, and with this in mind Peterson and the speaker investigated, first, the action of lipoids when given with the intoxicating dose of antigen, and, secondly, the influence of increasing the antitryptic power of the serum and the addition of soaps to an intoxicating dose, enabled the animal to resist several times the amount of the specific protein fatal for the controls, while a smaller dose of the antigen was required when lipoid free proteins were used Petersen and the speaker had shown that the removal of lipoidal antiferments from serum permitted the formation of toxic substances which they had termed "serotoxins." These toxic substances were formed through the action of the serum proteases on the serum proteins as soon as the protective lipoidal substances were removed.

Until recent years the entire focus of attention of immunologists centred about proteins and the chemistry of proteins. This was natural considering the remarkable development of protein chemistry that occurred during the time when immunology was in its infancy. At present, however, they had come to realize that the lipoids of the body were of far reaching consequence in almost all vital cellular phenomena, and to the realization of this fact the work of Funk had contributed materially. When contrasted with the relatively inactive protein molecule, the lipoids and fats stood out particularly by their great reactiveness, both physical and chemical. The rapidity with which colloidal changes could occur, the ease with which the water insoluble forms might saponify and become soluble, the intersolution of one form in the other, the frequent occurrence of combinations of proteins and lipoids, were all factors that tended to explain the constantly manifest influence of the lipoids in the various immunological and physiological balances. These considerations indicated that the fats and lipoids might play an important role in at least some of the immunity reactions.

Additional Facts Concerning the Protein Poison.—Professor Victor C. Vaughan, of Ann Arbor, Mich., stated that since his last publication on this subject, the following facts had been ascertained by his students and himself: 1. Casein yielded a large percentage of the protein poison. 2. The protein poison after the removal of all traces of mineral acid was strongly acid in and of itself. 3. The protein poison did not give the ninhydrin test, but did so after being split up with acid. 4. The poison gave a skin reaction in all persons. 5. The poison was not without harm when administered by mouth. 6. Animals might be acutely or chronically poisoned by oral administration. 7. In chronic poisoning by feeding, extensive fatty degeneration resulted. 8. The protein poisons from diverse proteins were not identical. 9. The protein poison from casein combined with certain unbroken proteins. In this combination the acidity of the poison was neutralized and its physiological action diminished. 10. From the tissues of animals killed with the protein poison, it might be extracted with acidified alcohol, and its presence demonstrated an amount roughly estimated by intravenous injections of guineapigs.

Inadequacy of the Anaphylatoxin Theory of Anaphylaxis.—Dr. Richard Weil, of New York, limited the discussion to the consideration of anaphylatoxin in the sense originally intended by Friedberger, namely, the product of the incubation of antigen and antibody in the presence of serum. The characteristic features of the test tube reaction were: 1. It took place not only through the interaction of an immunological couple, namely, antigen and antibody, but of entirely unrelated serums; 2, the two factors must be in certain definitely limited quantitative relationships; 3, it was slow and gradual; 4, it required the presence of complement. In every one of these features it differed from the anaphylactic reaction in the living animal or in the suspended uterus. The crucial test consisted in the fact that it was impossible to produce the anaphylactic reaction in the animal by conditions which duplicated those in the test tube, namely, the simultaneous intravenous injection of the two factors, antiserum and antigen.

According to the physical theory, the reaction was simply an expression of the alteration of cellular equilibrium which resulted when external antigen was brought into contact with cellular antibody. The characteristics of the reaction were all entirely in keeping with this interpretation. The precipitation reaction in the test tube, which was not accompanied by the chemical destruction of either factor, was: 1. Immediate; 2, proceeded in the absence of complement; 3, required relatively large amounts of antibody and relatively minute amounts of antigen.

(To be continued.)

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 6, 1916.

The President, Dr. Walter B. James, in the Chair.

(Concluded from p. 573.)

The Influence of Alcohol on Man, with Special Reference to Psychological Effects *(Continued.)*—Dr. Charles R. Stockard, of Cornell University, spoke from the point of view of animal experimentation, and gave a few of the results of such experimentation, in the past eight or nine years, on the effect of alcohol on the developing embryo and on the descendants of animals treated with alcohol. In order to study the chemical effect of alcohol on the development of human offspring of those addicted to its use, it was necessary first to study its effect on animals. It was of vast importance to know how the children of alcoholic parents were affected and whether the taking of alcohol by the pregnant woman endangered the makeup of the child.

The first experiments were made on the eggs of fishes and of hens. In the former, the eggs were placed in a weak solution of alcohol and water and the eggs never developed normally, the abnormalities being confined chiefly to the central nervous system, while ninety per cent. had eye abnormalities. Magnesium chloride had much the same effect. Hens' eggs, if placed over a funnel containing alcohol fumes for a few hours before incubation, developed into abnormal chicks.

The question of whether the embryo developing within the body of the mother could be affected by the mother being treated with alcohol, was solved by experiments on guineapigs; this also applied to the effect on the offspring of the father being treated so as to change his cells. The effect of alcohol was watched on five generations and comparisons were made with the offspring of the same strain, which were not treated, as well as of other strains. A father treated with alcohol was mated to an untreated mother and vice versa; of one generation of offspring the father or the mother or both were treated; the untreated offspring of the first descendants of a treated father or mother were mated, but only the one generation was treated. There resulted an abnormal number of abortions, stillbirths, and abnormalities, and there was also much abnormal sterility among the children, grandchildren, and even great grandchildren from alcoholized ancestors. The worst complications resulted from the inbreeding of animals poisoned; they were dwarfs, deformities, animals with paralysis agitans, cyclopean monsters, and blind ones. Fifteen per cent. of inbred descendants from alcoholics were defective; some had no eyeballs, others had only one eye, lacking also the optic nerve, the optic tract, and optic fibres.

It was not held that these experiments could be transferred to man; they were made to see if it was possible to control embryonic development, whether defects due to alcohol could be transmitted by male or female or both, and it had been shown that such effect was possible whether it occurred in man or not.

Dr. Bernard Sachs, of New York, said that he could not be expected to discuss the addresses previously made, as everyone must have been benefited by hearing them and he admired their originality. If anyone believed alcohol innocuous, Doctor Stockard's experiments would disprove such belief. As a clinician, he was interested, as well as the laboratory workers, in the effect of alcohol, and he shared the belief that unless the body was sound the individual could not prove himself efficient. It seemed in order to call attention to one or two facts of importance. A few months ago, there was a symposium at the academy on syphilis in its relation to disease, and alcohol was the subject of tonight's; both these severe poisons had an effect on the nervous system. In regard to alcohol, it was unfortunate in one respect that it was not possible through laboratory experimentation to discern, as in syphilis, the early effects on the nervous system; at the present time, by examining the spinal fluid of the person suspected of syphilis, a diagnosis could often be established before the poison had brought about any actual changes. That was not the case with alcohol unless the disease had reached the stage where positive symptoms appeared.

In view of the interesting statements of Professor Benedict, it was possible that some day the reaction time of alcoholic persons might give early warning of impending changes just as did the cytological changes in the cerebrospinal fluid and there might thus be given a clue to the early inroads alcohol made on the human system. There was one thing about alcohol which made it in a sense worse than syphilis; syphilis began as an exudative process whereas alcohol inaugurated a destructive process; it produced degenerative disease more effectively and chronically than syphilis and the effects were as noticeable from long continued use of moderate doses as from the occasional use of excessive doses. Another unfavorable point was that the signs and symptoms were noticeable long after the habit ceased.

The reason why alcohol was indulged in to such a great extent was the need of occasional stimulation. For certain duties and for the continuation of work, the ordinary fatigue of the day had to be neutralized in some way, and for this purpose many resorted to alcoholic stimulants, beginning with small doses. The habit was then continued until it was difficult to break. It would be well if it were more generally known that the best substitute for alcohol was coffee, which would give the desired immediate stimulation. On the whole, coffee was not injurious, though even that might be continued until it became a pernicious habit. It was to be regretted that coffee had been so maligned, and that its value as a stimulant had been greatly underestimated.

Dr. Haven Emerson said that, though impartiality had been advised in the discussion and in the analysis of the facts presented by the laboratory experts, it was difficult for any physician to be impartial if he had treated in homes, dispensaries, or hospitals the victims of alcohol. When the title of the Bureau of Infectious Diseases was changed to the Bureau of Preventable Diseases, it indicated a change in the point of view which had been going on throughout the country in the interests of public health. If they considered the possibility of the prevention of congenital defects of infants due to the use of alcohol by the parents, they must admit that it was within the sphere of public health officials to take up the propaganda against alcohol. It was admitted that the death rate from infectious diseases was higher among alcoholics; infectious diseases were more easily acquired by alcoholics, and recovery was in a smaller ratio among them. This was strikingly illustrated in pneumonia, typhoid fever, and septic conditions. The incidence of diseases due to alcohol itself and the results from its use in diseases of the central nervous system and of the assimilative organs justified an energetic campaign against its use. The question of economic efficiency could not be considered as part of the public health, yet the attitude of large employers of labor indicated that they were in accord with all efforts to diminish the use of alcohol, whether from an altruistic point of view, or from the standpoint of profit and loss.

Dr. Frederick S. Lee reported the results of his experiments on the action of alcohol on muscles. He spoke of the conflict between the two schools of pharmacologists regarding the action of alcohol on the central nervous system, Binz holding that the drug in small doses augmented the activity of nervous tissues and in large doses depressed it, while Schmiedeberg believed that there was always a depressing effect, whatever the quantity of the drug. In conducting his own experiments, which were performed with the aid of Salant and Levine, frogs were selected as subjects. One thigh was ligated in order to obtain a control muscle, and a solution of ethyl alcohol was then injected into either the stomach or the dorsal lymph sac. One half or three quarters of an hour later, the frog was killed and both gastrocnemius muscles, one normal and one alcoholized, were removed and stimulated until exhausted. It was found that alcohol in small doses increased the working power of the muscle, the results being shown in both a lengthening of the working period and an increase of the total work performed; but in large doses it diminished the working power. The same result was obtained after the animal had been given a dose of curare which paralyzed the nervous supply of the muscles. Under such circumstances, the action of the alcohol was purely muscular.

The most probable explanation of the results seemed to be that, in small quantity, alcohol might be used by living tissue as a food and a source of energy; but, in larger quantity, its toxic action predominated. Only when the physiological action of this peculiar drug on all the bodily tissues was fully analyzed and understood, would the essential data be in hand for a complete solution of the problem.

Dr. John H. Kellogg expressed his appreciation of the invitation to make a few remarks on the absorbing subject of alcohol, from the depths of his experience both at the Battle Creek Sanitarium, with chronic invalids from the pernicious effects of alcohol, and in connection with settlement work in Chicago. From his observations, he felt that it would eventually be proved that it was entirely possible to dispense with alcohol as a drug, as the results sought could be better obtained in other ways, and the great increase in chronic disease in this country could to a large extent be attributed to alcohol, especially the increase in diseases of the heart, bloodvessels, etc. Doctor Lee's experiments hardly seemed to have a direct bearing on the subject of the use of alcohol by human beings, as they showed the effects of alcohol on muscle only, and not on the nerve centres and the nerves themselves, and might be due to increase of muscle irritability. The experiments of Parkes and others had shown that alcohol in ordinary doses decidedly diminished man's working capacity.

Dr. Abraham Jacobi said that so many diverse opinions had been expressed that one or two more would not be amiss. He had felt in listening to Doctor Stockard that there could be no doubt of the affirmative answer of those guineapigs, could they reply to the question, To be, or not to be.

His experience of over fifty years in practice gave strength to his positive assertion that there was no remedy to equal alcohol in cases of mixed infection. There were septic diseases that could not be treated or cured unless large doses of alcohol were given. Mixed infection in diphtheria could not be cured by antitoxin, but treated with large doses of alcohol the sufferers might be saved. He had seen many such living, dying, or moribund patients since 1858, who had recovered absolutely through taking whiskey; they were not guineapigs, however, but human beings.

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Letters to the Editors

AUTOINOCULATION IN POLIOMYELITIS; A RENEWED CRITICISM OF THE METHOD.

NEW YORK, *September 16, 1916.*

To the Editors:

My knowledge of "autoinoculation" was derived from the statement in the *Bulletin* of the department of health for August 12th, which read that the method "consists of using the fluid withdrawn by spinal puncture for reinjection subcutaneously or intramuscularly into the same patient." I assumed that a small quantity of fluid was withdrawn and this entire quantity reinjected. I therefore restricted my critical remarks (JOURNAL, p. 477) to the lack of experimental foundation and the inadmissability of the method, omitting discussion of the clinical soundness of the conclusions drawn from the results obtained by the procedure. Now, in this week's JOURNAL (September 16th) Doctor Agar tells us that the treatment "consists in drawing off from fifteen to sixty, seventy, or even a larger number of c. c. of spinal fluid and reinjecting into the muscular tissues from 0.5 to two or three c. c. of fluid." He tells us further that "in a number of instances the treatment was followed by marked improvement, reduction in temperature, and partial return to consciousness." So, then, Doctor Agar ascribes "the marked improvement, etc.," in his procedure exclusively to the reinjection of "0.5 to two or three c. c. of the fluid" and designates this procedure as a method of autoinoculation, neglecting entirely to take into consideration the possible effect of the withdrawal of relatively large quantities of spinal fluid. This statement was quite a surprise to me. I am sure that I am conservative in my estimate, when I state that eight out of every ten competent clinicians would be equally sure in their conclusion that the marked improvement and partial return to consciousness—not to speak of the reduction in temperature—which occurred in a number of instances, was due to the withdrawal of "fifteen, sixty, seventy, and more c. c." and that the improvement may have occurred *in spite of* the reinjection and not *because of* it. Why did Doctor Agar neglect to test his notion by the elementary procedure usually practised in investigations of this kind, namely: 1. By withdrawing only the small amount of the spinal fluid which is to be reinjected and wait for results; and, 2, by withdrawing aseptically sixty or seventy c. c. of the spinal fluid, putting it aside in a refrigerator, and twenty-four or forty-eight hours later, when no improvement followed, injecting two or three c. c. of it? If marked improvement had followed these injections, there would be at least some logical support for the hypothesis of the therapeutic value of autoinoculation. Furthermore, how soon after the autoinoculation did the "marked improvement, etc.," set in? If it had set in four or five days after the injection, I doubt that Doctor Agar himself would ascribe the improvement to the injection. If, on the other hand, the improvement had already set in on the next day, nobody who knows anything about immunity would ascribe the improvement to the intramuscular or subcutaneous injections of the previous day, because we do not deal here with passive immunization, but with an attempt to produce active immunization in a disease in which, even after an intracerebral injection, the incubation time is pretty long. Moreover, it is a well known fact that in active immunization during the first two or three days after an injection, the immunity is rather definitely *decreased.* It is therefore obviously very difficult to connect the improvement observed with the autoinoculation. Finally, what does "a marked improvement, reduction of temperature, and *partial return to consciousness*" signify in a disease in which the mortality even under the "expectant" method of treatment is comparatively low? Under these circumstances, Doctor Agar was surely justified in becoming, as he says, "personally very skeptical of the real value of autoinoculation," in spite of his experience that "many of the families in which autoinoculation has been used, and many of the physicians who have used it are enthusiastic about the results."

Now as to the possible harm which the autoinoculation may do. From his letter in the JOURNAL I learn that Doctor Agar injected the spinal fluid exclusively into the *muscle tissue.* Here I agree with him that the small quantities which he used have probably done no harm. Auer and I have shown in several communications that the effect of an intramuscular injection is practically equal to that of an intravenous; and we know that in order to produce poliomyelitis experimentally by intravenous injections, large quantities of virus must be used. But the statement in the *Bulletin* which induced me to write my first criticism speaks of "reinjections *subcutaneously* or intramuscularly," and in my letter to the JOURNAL I criticised exclusively the subcutaneous injection. Most practitioners and medical writers do not yet distinguish between intramuscular and subcutaneous injections, and as a rule they practise rather the latter form. As far as the subcutaneous injection is concerned, I wish to repeat emphatically my former dictum, namely, *"that such therapeutic experiments should not be made on human beings!"*[1] Doctor Agar says that I "failed to mention the fact that the experimenters who have endeavored to inoculate monkeys by intramuscular injections have reported that it is difficult and in some instances impossible to produce a general infection in this way." But my statement reads that "*subcutaneous* injection of live virus is *often* capable of setting up an injection of poliomyelitis." This was based on the following statement of Flexner and Lewis: "Our impression is that infection is *readily* accomplished by way of subcutis" (*Jour. Exp. Med.*, XII, p. 241). Doctor Agar says further that I assume "that a larger number of organisms are being introduced *into the system* than there were previous to the treatment." Of course, I never said and could not have assumed it, since in any event no more organisms could have been injected subcutaneously than were withdrawn from the spinal canal. But my objection was not based upon the assumption that a larger number of organisms were being introduced into the system. I said: "The first effect of an injection into a patient of a medium containing live virus, while the disease is still in an active state, will not be an immediate active immunization, but an *additional infection.*" Perhaps I had better try here to elucidate my statement by the following admissible suppositions:

1. The virus contained in the spinal fluid of an individual, sick with poliomyelitis, although very toxic when introduced into the spinal canal and in the fresh spinal fluid of a normal individual, may, while still present in the spinal fluid of that sick individual, be more or less restrained in its toxic action upon nerve cells of the patient, and for a variety of reasons: First, surviving nerve cells of the surface of the cord which is continuously in contact with the spinal fluid, may have acquired a degree of resistance to the virus. Second, on account of the inflammation and the occlusion of many of the capillaries, the virus may not readily get at the nerve cells. Finally, the virus may have *lost some of its toxicity* and may need the contact with fresh normal tissue for *reactivation.*

2. When injected subcutaneously, the virus finds there fresh tissue and fluid for *activation,* and from here even two or three c. c. may cause an additional infection by getting into nerve cells previously entirely unaffected. The experiments with subcutaneous injections of the virus of poliomyelitis were made exclusively on *normal* animals; the results may be entirely different, however, when the injections would be made *into sick animals*—experiments which, according to my knowledge, have not yet been carried out. It is assumed that in individuals, sick with polio-

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[1] In a letter I received recently, the writer—if I understood the letter correctly—seemed to contemplate injecting fifty or seventy c. c. of spinal fluid subcutaneously!

myelitis, the *permeability of the choroid plexus is increased*, and therefore the injected two or three c. c. of the freshly activated spinal fluid may, indeed, pass rapidly into some new and vital spots of the central nerve system and thereby cause more extensive paralysis or even death.

I am aware that these suppositions are mere hypotheses; but they are perfectly admissible ones and can and ought to be tested by experiments on animals before attempting to use this method on human beings. The latter must always get the benefit of any doubt, and surely that of a reasonable doubt.

Furthermore, while I am inclined to believe with Doctor Agar that no harm was actually done by his *intramuscular* injection, I cannot see that there is definite evidence for such a positive assertion. Suppose that some one took up the opposite attitude, namely, that in the instances of Doctor Agar in which the treatment was followed by a *partial* return to consciousness, the patients would have returned to full consciousness and have remained alive, if some of the spinal fluid had not been reinjected; or that a certain residual paralysis would, without the autoinoculation, have been less extensive—what evidence could be brought forward to refute such an assertion?

On the basis of the foregoing I am therefore of the opinion that: 1. *There is no evidence that autoinoculation is serving any useful purpose;* and, 2, *that the method may actually do harm.* Furthermore, there is no positive evidence sufficient to refute a statement that it actually has done harm.

I thoroughly disagree with Doctor Agar when he says, "These observations could be much more readily made in human beings than in monkeys, and under the circumstances I consider the trial justifiable." I hold the opposite view, namely, that *no therapeutic procedure or remedy should be tested on human beings before it has been well studied on animals.* Even those who master their subject, let us say, immunity, should not take anything for granted before it has been established by animal experimentation.

In one point I willingly accept the statement of Doctor Agar, namely, that he was not *prohibited* by the health department to carry on the autoinoculation treatment. My information to that effect I received from the department in a message by telephone which I may have misinterpreted.

One statement of Doctor Agar has been a surprise and a disappointment to me, namely, that *it now appears that the convalescent serum has little or no value.* By newspaper reports we were led to believe that this treatment gave nearly 100 per cent. success in another hospital under the control of the health department.

S. J. Meltzer, M. D.,
Rockefeller Institute.

[With this letter we must regretfully bring the discussion to a close; we feel that ample opportunity has been given to advance every argument pro and con.—Eds.]

THE TREATMENT OF POLIOMYELITIS: A NOVEL METHOD.

Seattle, Wash., *August 14, 1916.*

To the Editors:

Infantile paralysis is caused by inadequate maintenance of calcium and phosphorus absorption, the usual sources of which are fresh eggs, raw milk, whole grains, fresh fruits and vegetables; and depleted by climate, environment, stress.

Contributing causes are, 1, lack of money to meet exigencies of distribution of fresh foods; 2, lack of advice of men properly trained in Materia medica.

New York cannot cope with the situation because medical efficiency is sidetracked by bacteriophobia. Health boards are dominated by politicians rather than physicians. To hold their jobs, they must worship at the shrine of Bacterium.

Such men were described by Mirabeau as "bonzes who despise medicine, consider therapeutics a low charlatanism, and whose whole life is devoted to chatter of congresses and to intrigues of salons and academies."

Bugs are not superhuman any more than witches are. Man is a superbug, becomes so by concentrated acquisition and harmonious exercise of organized calcium and phosphorus, the most essential elements of brain and cord structure. By the loss of these, or of the capacity for exercise of them, he loses his supremacy and reverts to a lower type of organism.

Resistance against diseases generally classed as infectious or contagious, can be, and is provided by the internal administration of calcium carbonate alternating with phosphoric acid—perfectly safe if intervals are four or more hours.

Calcium carbonate should be given with, 1, such alimentary antitoxins as calomel, camphor, ipecac; with, 2, such assimilants as magnesium oxide and potassium nitrate; and with, 3, such correctives (of nausea, stagnation) as rhubarb, senna, anise, coriander, opium, belladonna, nux vomica.

W. M. McDowell, M. D.

DOGS AND INFANTILE PARALYSIS.

New York, *September 11, 1916.*

To the Editors:

The papers today record on medical authority that a dog has died of infantile paralysis. If this is true, the disease could be carried to children by either mosquitoes or fleas that had bitten the dog and then bitten children. In the epidemic of bubonic plague in Siam, in 1905, there was an enormous and disproportionate death rate among children in the town of Pechaburi. This was traced by me to the fact that the rats infected by plague had all died. As soon as the bodies became cold the infected fleas deserted them and took up their habitat on the pariah dogs. Petting these dogs, the children were bitten by the fleas and died of bubonic plague in great numbers. So any mosquito or flea biting an animal having infantile paralysis, and subsequently biting a child, would transmit the disease. The board of health of New York is doing one thing of greater value than any other undertaken to stamp out infantile paralysis in this epidemic, and that is the atomization of mineral oil in the rooms of the public schools. This will kill all of the mosquitoes, fleas, flies, bedbugs, and roaches there.

In this way the parasites were fought in the bubonic plague epidemic in Siam, in 1905, where the oil was sprinkled over the floors by watering pots; oil was atomized also in Serbia in the epidemic of typhus fever, last year, in order to kill the lice on the bodies and clothing of the Serbians.

Charles S. Braddock, Jr.,
Late Chief Medical Inspector,
Royal Siamese Government.

RAW EGG ALBUMIN

Buffalo, N. Y., *September 12, 1916.*

To the Editors:

Your quotations from Bateman's article in the *Journal of Biological Chemistry* and your editorial comment on the utilization of egg proteins, deserve commendation. Our knowledge regarding the subject is not very recent, so far as practical matters are concerned, but, like pepsin and starch indigestion, it seems to permeate the profession very slowly. For instance, in a book on dietetics published in 1908 and, of course, prepared somewhat earlier, I made the following statements: "While caseinogen is the only instance of a proteid normally coagulated by the body, egg albumin is a somewhat analogous, unique instance of a substance which, if given in considerable quantities—five or six egg whites or more—is eliminated to some degree, as a foreign substance, by the kidneys." The reputation of eggnog, a raw custard reinforced with whisky or brandy, is exaggerated. The raw egg albumin is not so likely to be assimilated as the cooked. . . ." In an earlier book, published in 1904, is the following statement: "Raw egg albumin introduced into the circulation or even into th stomach in considerable amounts is excreted unchanged by the kidneys, at least in part." It should be understood that no claim of originality, explicit or implicit, was made for these expressions.

It may be allowable to express the further opinion, based on clinical and experimental observations, that hard boiled egg albumin is not especially difficult of digestion if moderately well chewed or comminuted. I have not, however, noticed a tendency to diarrhea from reasonable amounts of eggnog or other forms of raw egg, except to the degree to be expected from any sweet, liquid food.

A. L. Benedict, M. D.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Rontgenographic Diagnosis of Dental Infection in Systemic Diseases. By SINCLAIR TOUSEY, A. M., M. D., Consulting Surgeon to St. Bartholomew's Clinic, New York. Published by Paul B. Hoeber, New York City.

Since pyorrhea has been found to be the cause of so many systemic conditions the etiology of which has long been a matter of doubt, any contribution to the subject must of necessity be of great interest. In making the diagnosis of pyorrhea, the x ray is of the greatest assistance, as through its agency any source of infection connected with the teeth or the pneumatic sinuses of the face can be revealed. In this small volume Doctor Tousey has set forth the numerous conditions which may have pyorrhea as their cause, and the x ray pictures which it contains make it one of the most valuable additions to the literature on this particular subject.

Hay Fever, Its Prevention and Cure. By W. C. HOLLOPETER, A. M., M. D., LL. D., Attending Physician St. Joseph's Hospital; Pediatrist to the Philadelphia General Hospital, etc. New York and London: Funk & Wagnalls Co., 1916. Pp. 347. (Price, $1.25.)

In this little volume will be found practically all that is known about hay fever, its history, causes, periodicity, symptoms, pathology, diagnosis, prognosis, and treatment. Under the last heading will be found a discussion of preventive treatment, local treatment, diet, exercise, rest, serums, phylacogens, calcium salts, pollen therapy, and surgical measures. The book closes with an extensive bibliography. The author has certainly been industrious in bringing together most of what has been written on the subject, and we think that he is unduly handicapped by the publishers, who announce that this is "a book for laymen as well as for physicians." Our experience is that books intended for both of these classes of readers are of real value to neither.

The Sex Complex. A Study of the Relationships of the Internal Secretions to the Female Characteristics and Functions in Health and Disease. By W. BLAIR BELL, B. S., M. D., Lond., Examiner in Gynecology and Obstetrics to the University of Belfast and to the Royal College of Surgeons, England, etc. New York: William Wood & Company, 1916. Pp. xvii-233. (Price, $4.)

The phenomena of sex have become the subject of a vast amount of recent literature. How radical the differences are which students expect to find between the sexes may be judged by a remark of the author of this book (p. 17), viz.: "Some day, perhaps, we shall be able to base our knowledge of these physiological and morphological dissimilarities on the variations to be found—both quantitative and qualitative—in the primary sex characteristics of the endocritic organs." Some gross distinctions already known are that the human male uses more oxygen than the human female, and that in men the blood has a higher specific gravity, more red corpuscles, and a higher percentage of hemoglobin than in women. What will suffragists say to the statement in this deeply scientific work that, while man shows a tendency to psychical domination and certainty, woman is psychically dependent and hesitant? The work of Professor Bell comprises a study of the relationships of the internal secretions to female characteristics both in health and disease. The study of the parathyroids, the pineal, and the thymus is incomplete, owing to the outbreak of war; this is to be remedied in a future book. The author is to be congratulated on the lucidity of his exposition, which makes the book interesting to the general medical reader. The effects of excess and of insufficiency of each ductless gland are taken up in turn. A chapter is devoted to the sexual psychoses, and emphasis is laid on the fact that insanity may depend on the state of the internal secretions—something, the author says, that has been staring alienists in the face, but which they failed to recognize. Excessive ovarian secretion, for example, may lead to various moral irregularities. There is a short appendix devoted to the physiological effects of extracts of the endocritic organs.

This is an entertaining as well as a suggestive work and throws much new light on the psychology of women. Physicians should read it, for it contains information not likely to be elicited from even the most intimately known patient and yet essential to the comprehension and diagnosis of many an obscure case. Probably only women physicians are likely to hear individual confessions which will corroborate many of the general statements of Professor Bell.

Interclinical Notes

The pictures in *Leslie's* for September 7th are unusually good and exciting; the survivors of the great war will have received a remarkable training in facing emergencies, which ought to stand them in good stead in their future civilian life—that is, if they do not die of old age in the army. An unusual sort of picture shows Canadian trained nurses beating their military patients in short distance sprinting at Woolwich, England. Interesting details of the life of our boys along the Mexican border are given.

* * *

A picture of the great war has appeared in many American papers entitled The Fighting Fifth after the Battle of St. Eloi. It shows a regiment singing, cheering, and laughing, adorned with the spoils of the enemy, evidently quite hysterical with good humor, despite the fact that their numbers have been more than decimated by the battle just concluded. This is precisely the horrid fascination of warfare, this intoxication of the hand to hand fight, which will bring men from anywhere, from peace and luxury, at the call of the authorized commander.

* * *

Richard Watson Gilder practically revolutionized the manners and customs of editors; he assumed all responsibility for the contents of his magazine and made the entire staff eat out of his hand. This is told in the September *Century* in a series of his letters collected and edited by Rosamond Gilder; these letters make mighty good and comforting reading for editors, and should be read by authors also, to whom they will reveal many strangely human qualities with which they have not been disposed to credit editors. Fewer manuscripts than now were turned out in the good old Gilder days, which gave him an opportunity to write individual letters of rejection, many of which must have proved priceless to the recipients.

* * *

Thomas J. Riley, general secretary of the Brooklyn Board of Charities, tells in the *Survey* for July 29th, what he saw during a walk through that borough that seemed to hold some causal relation with the epidemic: Tenement houses of all kinds, Italian, Syrian, and Scandinavian communities, the water front with its shipping from all parts of the world, communities settled at the foot of hills, streets filled with small shops, streets with car lines, streets with push carts, streets which children and even adults used for recreation and other social purposes, dirt of various kinds. Negroes seemed to be exempt. Is infantile paralysis due to the same causes as give us tuberculosis, poverty, ignorance, deformity, delinquency, and drunkenness?

* * *

Despite Kipling, we are not sisters and brothers under our skins; this is proved by the queer phenomena of protein sensitization, which vary from one individual to another in a strange way. So far, we believe, only one house manufactures the soluble proteins used in the test—the Arlington Chemical Company, of Yonkers, which gives details in its circulars. Only recently it has been discovered that the merest trace of an unwelcome food may produce in one case acute swelling of the tongue, pharynx, or esophagus, in another severe bronchial asthma, in a third vomiting, diarrhea, or abdominal pain, in a fourth urticaria, angioneurotic edema, eczema, or erythema. Such sensitization will some day be discovered in childhood and much suffering will be avoided.

Meetings of Local Medical Societies

Monday, *September 25th.*—Poughkeepsie Academy of Medicine.

Tuesday, *September 26th.*—New York Psychoanalytic Society; New York Dermatological Society; Onondaga Medical Society, N. Y.; Valentine Mott Medical Society, N. Y.; Medical Society of the County of Chautauqua, N. Y.

Thursday, *September 28th.*—Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo.

Friday, *September 29th.*—New York Society of German Physicians; Manhattan Medical Society; Italian Medical Society of New York.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 13, 1916:

Foster, M. H., Surgeon. Directed to proceed to Washington, D. C., for conference relative to poliomyelitis.

Fox, Carroll, Surgeon. Directed to proceed to Denver and such places in the State of Colorado as may be necessary for the investigation of health organization and administration.

Hurley, J. R., Passed Assistant Surgeon. Relieved from duty at Philadelphia, Pa., and directed to proceed to Baltimore, Md., for duty in the prevention of the interstate spread of poliomyelitis.

Lavinder, C. H., Surgeon. Granted one day's leave of absence, September 9, 1916, under paragraph 193, Service Regulations.

Lombard, M. S., Assistant Surgeon. Granted leave of absence for one month, from October 20, 1916.

Olesen, Robert, Passed Assistant Surgeon. Granted leave of absence for the period October 2 to December 4, 1916.

Schereschewsky, J. W., Surgeon. Detailed to deliver an address before the American Chemical Society, at New York, N. Y., September 21, 1916, stopping en route at Scranton, Pa., to present a paper on occupational diseases before the Pennsylvania State Medical Society, September 20, 1916; also detailed to institute an investigation of occupational diseases incident to chemical industry in several States east of the Mississippi River.

Tanner, W. F., Assistant Surgeon. Relieved from duty at Columbia, S. C., and ordered to proceed to Spartanburg, S. C., for further duty in investigations of pellagra.

Voegtlin, Carl, Professor. Relieved from duty at Spartanburg, S. C., and ordered to return to station at Hygienic Laboratory, Washington, D. C.

Warren, B. S., Surgeon. Directed to proceed to Spartanburg, S. C., for conference with officer in charge of studies of pellagra, with special reference to economic and budgetary data.

Wildman, H. V., Jr., Assistant Surgeon. Detached from Coast Guard cutter *Seneca,* and directed to report to Division Commander U. S. Coast Guard, Tompkinsville, N. Y.

Appointments.

Dr. Edwin Owen Woods, Dr. Joseph Duerson Stout, and Dr. Clifford Rush Eskey appointed and commissioned as assistant surgeons, from date of oath, August 18, 1916.

Casualty.

Surgeon R. H. von Ezdorf died suddenly near Lincolnton, N. C., September 8, 1916. Doctor von Ezdorf was born in Philadelphia, August 13, 1872, and graduated from the medical department of George Washington University in 1894. He was commissioned an assistant surgeon, March 2, 1898; was promoted to passed assistant surgeon five years later, reaching the grade of surgeon October 1, 1912. He served at various quarantine stations in the United States, Cuba, and at Panama, and had been engaged on numerous occasions in the suppression of yellow fever. At the time of his death, Doctor von Ezdorf was in charge of the malarial investigative and eradicative measures of the Service in the South.

Boards Convened.

Boards of commissioned medical officers convened September 18, 1916, for the purpose of examining candidates for appointment as assistant surgeons in this Service, as follows: Washington, D. C. Detail for the board: Assistant Surgeon General W. C. Stimpson, chairman; Assistant Surgeon General R. H. Creel, member; Assistant Surgeon General J. W. Trask, recorder. St. Louis. Detail for the board: Surgeon M. J. White, chairman; Assistant Surgeon K. E. Miller, recorder.

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Births, Marriages, and Deaths

Born.

Lieb.—In Watkins, N. Y., on Monday, August 7th, to Dr. and Mrs. Clarence W. Lieb, a daughter.

Married.

Dunn-Martin.—In Hartford, Conn., on Thursday, September 14th, Dr. George Washington Dunn, of New Britain, Conn., and Miss Mary Isabel Martin.

Fraenkel-Wolska.—In New York, on Thursday, September 7th, Dr. Joseph Fraenkel and Madame Ganna Wolska.

Grady-Doherty.—In Worcester, Mass., on Monday, September 11th, Dr. Thomas H. Grady, of Clinton, Mass., and Miss Minnie Elizabeth Doherty.

O'Connell-Nugent.—In Holyoke, Mass., on Tuesday, August 29th, Dr. George B. O'Connell, of Lewiston, Me., and Miss Claire E. Nugent.

Whoriskey-McDonald.—In Cambridge, Mass., on Tuesday, September 5th, Dr. John J. Whoriskey and Miss Katherine E. McDonald.

Died.

Brede.—In Minneapolis, Minn., on Tuesday, September 5th, Dr. William G. Brede, aged forty years.

Dinkelspiel.—In New Rochelle, N. Y., on Monday, September 11th, Dr. Leo Dinkelspiel, of New York.

Duer.—In Odessa, Del., on Wednesday, September 6th, Dr. Edward L. Duer, aged eighty years.

Dwight.—In New Bedford, Mass., on Wednesday, September 6th, Dr. Henry L. Dwight, aged fifty-five years.

Hennessy.—In Bangor, Me., on Sunday, September 10th, Dr. Daniel Hennessy, aged seventy-nine years.

Leffingwell.—In Oswego, N. Y., on Sunday, September 10th, Dr. Elisha D. Leffingwell, aged sixty-six years.

Maddox.—In Stone Mountain, Ga., on Thursday, August 31st, Dr. G. W. Maddox, formerly of Birmingham, Ala.

Myers.—In Mount Vernon, N. Y., on Thursday, September 14th, Dr. Frances M. Myers, aged forty-six years.

Nunez.—In New York, on Friday, September 15th, Dr. Enrique Nunez y Palomina, of Havana, Cuba, aged forty-four years.

Parker.—In Winthrop, Mass., on Thursday, September 7th, Dr. George C. Parker, aged sixty-five years.

Preston.—In Pawtucket, R. I., on Friday, September 8th, Dr. John N. Preston, aged sixty-nine years.

Provost.—In Berlin, N. H., on Saturday, September 9th, Dr. Azarie Provost, of Lewiston, Me., aged forty-six years.

Smyth.—In Londonderry, Ireland, on Monday, September 4th, Dr. Andrew Woods Smyth, of New Orleans, La., aged eighty-three years.

Steele.—In Mongaup Valley, N. Y., on Sunday, September 10th, Dr. Wellington G. Steele, aged sixty-one years.

Stone.—In North Sutton, N. H., on Wednesday, September 6th, Dr. Eugene P. Stone, United States Navy, retired.

Stratton.—In Richmond, Va., on Wednesday, September 6th, Dr. Thomas E. Stratton, aged seventy-seven years.

Townsend.—In New York, on Wednesday, September 13th, Dr. Emma Albertina Walser Townsend, aged fifty-one years.

Turner.—In Hartford, Conn., on Saturday, September 9th, Dr. George H. Turner, Jr., of Portland, Me., aged thirty-eight years.

Wardell.—In Maplewood, N. J., on Thursday, September 7th, Dr. Percival G. Wardell, aged eighty-one years.

Willis.—In Somerville, Mass., on Wednesday, September 6th, Dr. Reuben Willis, aged seventy-four years.

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Original Communications

INJURIES OF THE CHEST DURING WAR.

By R. MURRAY LESLIE, M. A., B. Sc., M. D.,
London, Eng.,

Senior Physician, Prince of Wales' General Hospital; Physician, Royal Hospital for Diseases of the Chest; Late Civil Physician, Hampstead Military Hospital.

The great majority of injuries of the chest in the present war are the results of gunshot and shrapnel wounds. It is quite exceptional to meet bayonet wounds in the base hospitals, probably because a large proportion of the wounded die on the field of battle. Crushing injuries of the chest from falling trench parapets, due to shell or mine explosions, are not uncommon.

Frequency of chest injuries. Inspector General Delorme of the French army, states that among ambulance cases chest injuries represent an average proportion of ten per cent., one third of which end fatally on the battlefield; while at the rear the proportion of chest cases is from six to eight per cent. When men are advancing the gunshot wounds they receive are generally transverse, in contradistinction to those received while lying prone on the ground, when they tend to be longitudinal in direction.

CLASSIFICATION.

Gunshot wounds of the chest are classified as nonpenetrating and penetrating, according to whether the chest wall only or the thoracic cavity with its contents, has been pierced by the missile.

A. *Nonpenetrating wounds of the chest.* The consideration of nonpenetrating wounds of the chest need not detain us long, for the questions involved are mainly surgical. Shrapnel injuries come under this category, the round bullets often lodging in the chest without perforation, and producing jagged, painful wounds, which are invariably septic. Glancing rifle bullet flesh wounds in the axillary and infraaxillary regions are quite common.

One or two points of medical interest deserve special mention. In the first place it is to be noted that the lung may be contused without actual penetration of its tissue by the missile, as the blow caused by the impact of a bullet on the bony wall of the thorax may produce a bruising of the lung substance immediately subjacent, resulting in a slight amount of infarction and consequent hemoptysis. Hemoptysis, therefore, is not a conclusive sign of lung penetration. The following case under the writer's care well illustrates this point:

CASE I. Private F. M., twenty-eight years old, while advancing in Gallipoli, was hit in the right chest by a bullet, which, fortunately, first struck a pocket camera in his right breast pocket. Several fragments of the camera and of the bullet casing entered the chest wall, some of which came away in the dressings, some could readily be felt under the skin, while others could be seen by the x rays to be lodged in the underlying muscular tissues. The patient expectorated blood for about an hour after being shot. There was absolutely no other evidence of injury to the pleura or lungs. (Fig. 1.)

Hemothorax may also occur without lung perforation, as the result of contusion or rib fracture, with laceration of intercostal or pleural vessels.

It may be well here to make a few remarks on the occurrence of shock and other functional disturbances in connection with wounds of the chest. Some authorities are of opinion that the degree of shock, even in the case of penetrating wounds, depends principally upon the damage done to the chest wall. The shock may be severe when the ribs or vertebral column are injured, while on the other hand, in the majority of gunshot wounds of the chest, there is remarkably little shock, as is illustrated by the following case:

CASE II. A young officer was shot in the chest by a sniper, the bullet producing, close to their angles, a comminuted fracture of the fourth and fifth ribs, from which it was deflected backward and outward, so that it passed between two spinous processes, emerging under the skin by an exit wound in the back, some inches to the right (opposite side) of the vertebral column. Notwithstanding this serious injury, the patient was able to get up in ten minutes and run to the dressing station some distance away, spitting blood all the time. (Fig. 2.)

Many similar cases, with little or no shock, have been recorded. Hypodermic injection of an efficient dose of morphine (one half to three quarter grain) is marvelously effective in relieving the pain, dyspnea, and shock.

Apart from gunshot injuries, the writer has had several cases of spinal concussion, followed by functional, or, more rarely, organic paraplegia, as the result of crushing injuries of the chest, e. g., being buried in the trenches owing to shell explosions. The functional paresis was generally bilateral. One patient, however, exhibited a unilateral condition, being unable to put one heel to the ground, owing to the involuntary contraction of the opposing group of muscles. Most of these

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functional cases were instances of so called "defective inhibition of the antagonist group of muscles." One case exhibited symptoms suggesting spinal hemorrhage, with ankle clonus, extensor plantar response, anesthesia below a certain level, and other evidence of a sudden organic lesion of the cord.

B. *Penetrating wounds of the chest.* The effects of penetrating wounds depend upon two factors: 1. The direction and site of the bullet track; and, 2, the presence of septic material within the thoracic cavity.

1. *The direction and site of the bullet track.* The direction of the bullet track and the particular zone affected are of the utmost importance. Longitudinal wounds in the long axis of the body, owing to the tendency to cervical and abdominal complications, are more dangerous than those which are transverse, whether the latter be anteroposterior or lateral. As regards anteroposterior transverse wounds, the particular zone affected is all important. Wounds in the middle of the chest or central zone are extremely dangerous, and often immediately fatal, owing to the presence of the heart and pericardium, the great vessels at the root of the neck, and the large bronchi and bloodvessels at the roots of the lungs. Wounds of the peripheral or lateral zone involve least risk, for the bloodvessels and bronchioles in the lung substance are quite small. Wounds in the middle zone are more serious, for the bloodvessels and bronchi are of larger size, and the resulting hemorrhage is correspondingly greater. Lateral, transverse wounds are much less dangerous than one would imagine, and it is extraordinary with the modern, small, high velocity bullet, how often the important structures in the posterior mediastinum escape injury.

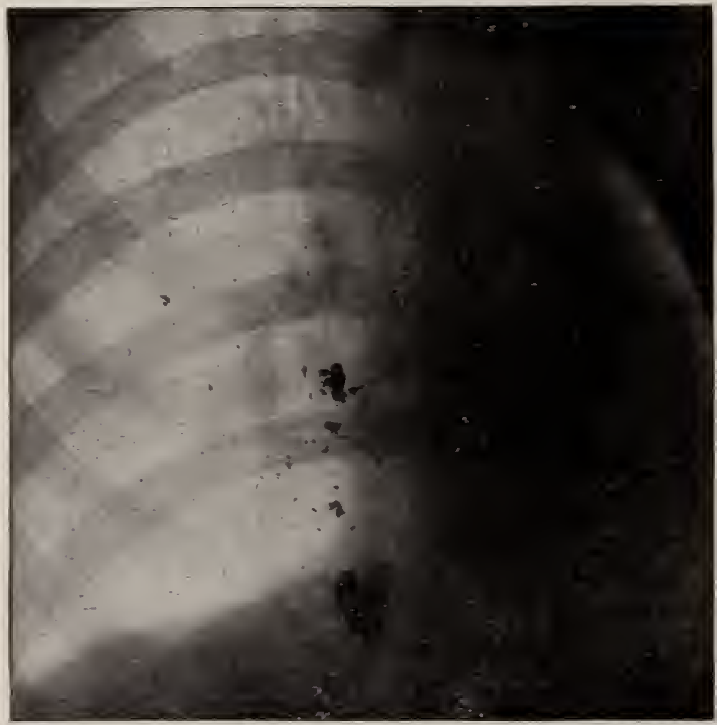

Fig. 1.—Case of nonpenetrating wound of chest with hemoptysis. Bullet struck a pocket camera, the fragments of which and of the bullet casing lodged in the chest wall. There was expectoration of blood for an hour after the injury, but no signs of involvement of pleura or lungs developed. (Radiograph by Mr. Shenton.)

It is important to remember that perforating wounds of the chest may exist without an external wound on the actual surface of the thorax. Thus, for instance, the entrance wound may be found in the neck, the bullet passing longitudinally into the chest behind the clavicle; or it may be situated in the upper arm, if that happens to be extended horizontally at the time of injury, the bullet passing into the chest beneath the skin of the shoulder or axilla; or it may be found in the abdomen or loin, the bullet penetrating the chest by way of the diaphragm. The writer had an Australian soldier recently under his care with pyohemothorax, in whom the entrance wound was represented by an extremely small scar immediately to the left of the second lumbar spine, the bullet—as shown with the x rays, and found on operation—lying below the eleventh rib, on the left side, in the pleural cavity.

2. *The presence of septic material within the thoracic cavity.* Round shrapnel bullets and shell fragments are much more likely to carry in infected material from the skin and clothing than the small, pointed, high velocity rifle bullets. Wide, gaping shell wounds naturally tend to facilitate infection, while wounds from ricochetting rifle bullets, which have been deflected by contact with the ground, are much more apt to be septic than those which have struck the chest directly. The question of intrathoracic sepsis is mainly of importance in connection with pleuritic effusions, and will be specially considered in connection with hemothorax and pyothorax. Curiously enough, although the entrance and exit wounds in the chest are generally septic, the bullet track in the lung appears, as a rule, to be sterile. Notwithstanding the presence of the heart and great bloodvessels, chest wounds are much less dangerous than abdominal wounds, owing to the absence of hollow viscera with septic contents.

The principal points of medical interest in connection with penetrating wounds of the thorax may be grouped under the following headings:

1. Injuries of the pleuræ and lungs.
2. Injuries of the heart and great bloodvessels.
3. Complicated injuries.

1. *Injuries of the pleuræ and lungs.* Pleural effusions are by far the most important phenomena in connection with bullet wounds of the chest, and these, in order of frequency, are: *a*, hemothorax; *b*, pyothorax; *c*, pneumothorax (air effusion), and *d*, simple serofibrinous pleurisy.

a. Hemothorax (hemorrhage into the pleural cavity) is such a common accompaniment that it may be considered as the distinctive clinical feature of penetrating wounds of the chest. It occurs in fully seventy-five per cent. of such wounds.

The source of the blood is still a matter more or less *sub judice.* Sir J. Rose Bradford states (*British Journal of Surgery*, III, p. 250) that the exact source cannot be determined in life, but that every case should be treated as if the blood had been derived from the lung. He admits, however, that post mortem evidence has shown that in some of the cases the blood came from the vessels of the chest wall, and in others directly from the lungs. On the other hand, Mr. Keogh Murphy, in his recently published work, *Wounds of the Thorax in War*, makes the following statement: "All are agreed that hemothorax is the result of slow *bleeding from the chest wall*, through the parietal pleura, and that it does not come from the perforated lung." He speaks of a "gradual continued oozing from an intercostal vessel." Advocates of the latter view maintain that the small lung wound is almost immediately sealed by the puckering due to the action of the elastic lung tissue. On the other hand, the writer has seen a lung, post mortem, with a patent opening leading into the lung track, the latter being surrounded by an extensive blood infarct. In fractured ribs, particularly when the fracture is a comminuted one, the intercostal bloodvessels are almost certain to be torn across or lacerated, when we have the requisite conditions for hemothorax, apart altogether from injury to the lung.

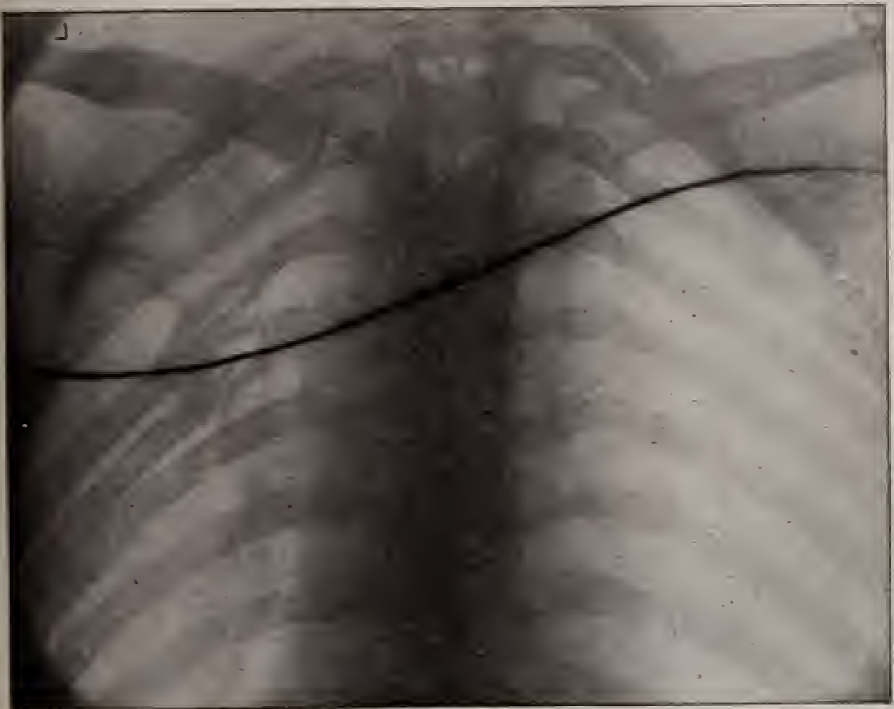

FIG. 2.—Case of hemothorax treated by breathing exercises. Radiograph taken two months after injury. Note united fracture of fourth and fifth ribs on left side. Breathing exercises begun at the end of third week. Hemothorax not aspirated. No sign of effusion in six weeks. In two months' time the fluorescent screen showed perfect movement of the left diaphragm quite equal to that on the right side. N. B.—The dark line represents a wire passing partly round the chest and joining the entrance and exit wounds to indicate the line of the bullet track. (Radiograph by Doctor Knox.)

There is considerable difference of opinion as to the degree of clotting which takes place inside the pleural cavity. Th investigations of Captain Elliott and Captain Henry make it probable that clotting always takes place, and, as a rule, before the fourth day, through the action on the blood of a ferment liberated at the surface of the wounded tissues. These observers showed that the presence of the blood induces a certain amount of inflammatory effusion of fluid containing fibrinogen, and that a layer of compact fibrin is often found post mortem adhering to the pleural surface and closing the wound.

The clinical features of sterile hemothorax may briefly be described as follows: When the soldier is first wounded, he generally feels as if he had been suddenly "winded," and sometimes speaks of a momentary whiplike pain in the chest. He usually spits blood, and there is shortness of breath accompanied by a sense of oppression in the chest, which, in sterile cases of hemothorax, is well marked during the first two or three days, after which the dyspnea is scarcely noticeable in the recumbent posture, and there is then, as a rule, but little pain or discomfort. Fracture of the ribs aggravates the dyspnea. The writer has seen only one case of orthopnea with cyanosis, and in this instance the hemothorax proved to be an infected one, the symptoms being ultimately relieved by rib resection and evacuation. There is generally pyrexia of a mild type, oscillating between 98° in the morning and 101° or 102° F. in the evening. There is no blanching as in the case of other internal hemorrhages. After the first few days, the patient looks extremely well, and lies comfortably in bed. The physical signs are those of pleurisy with effusion, although, owing to the fact that collapse of the lung readily takes place, the phenomena of collapse play a larger part than in ordinary pleuritic effusions in modifying the orthodox clinical picture.

The following physical signs are worthy of special mention: There may be a considerable blood effusion, without much displacement of the heart; this is particularly the case after the first week, when the chest has become more or less immobile from pulmonary collapse. Retraction of the chest sets in earlier than in ordinary pleuritic effusion, and may be well marked in two or three weeks' time. Above the area of percussion dullness, there is frequently a distinct area of subtympanitic percussion —in reality, Skodaic resonance—due to the emphysematous expansion of the upper lobe of the lung which may even cross the middle line. In one case, still under observation, the stomach resonance passed into and was almost part of a tympanitic lung resonance, giving the superficial impression of an extensive pneumothorax. This tympanitic percussion frequently leads to a mistaken diagnosis of pneumothorax. In place of absent breath sounds, we fairly often have tubular breathing, bronchophony, and whispering pectoriloquy, and these signs, in association with the pyrexia, may lead to a mistaken diagnosis of pneumonia—the so called "traumatic" pneumonia of the early stages of the war. It has been well said that, in the first two or three days, we have urgent symptoms and few physical signs, and that afterward there are few symptoms but well marked signs.

The symptoms of septic hemothorax (pyohemothorax) are much more pronounced. The patient is obviously ill, there is a higher temperature of the swinging type; a rapid pulse; increasing dyspnea; a dry, furred tongue, particularly in the streptococcal cases, and usually considerable local pain and tenderness over the affected side. The physical signs are the same as in sterile cases except that friction is usually more pronounced and may be pleuropericardial as well as pleural.

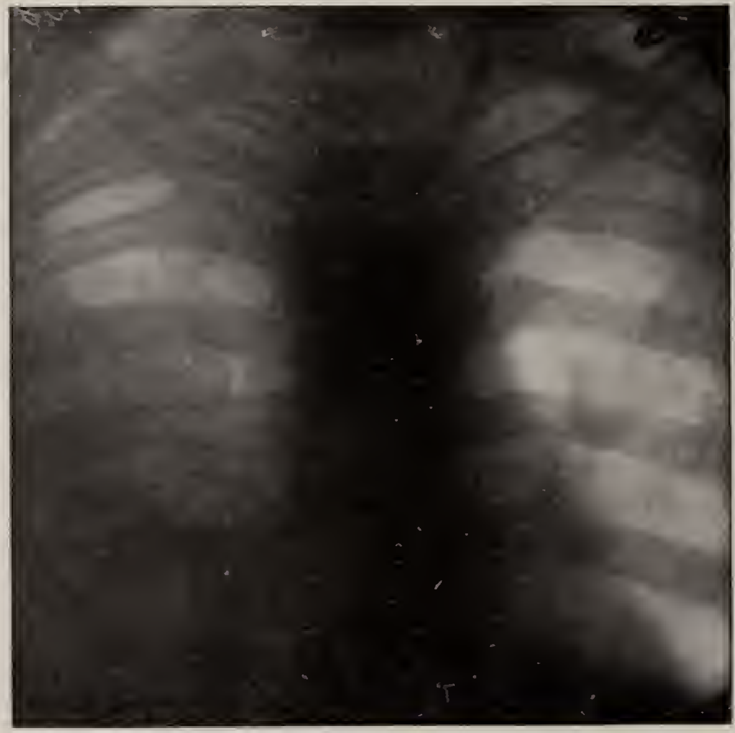

FIG. 3.—Radiograph from case of hemopneumothorax after recovery. Patient wounded in Gallipoli in right chest by shrapnel bullet. Staff surgeon reported hemothorax at base and pneumothorax in the upper part of right chest. The x rays showed well marked opacity of right chest with no movement of diaphragm on right side. Clinically there was immobility, dullness, and retraction. (Radiograph by Mr. Shenton.)

Value of exploration. Rose Bradford believes that patients with hemothorax, which does not definitely improve by the fourth day after wound, must be regarded with suspicion, as being possibly septic, and that, accordingly, the chest should be explored and a bacteriological examination of the fluid made without delay. The fluid so obtained on exploration may, in some cases, show a yellowish deposit of pus on standing, below the supernatant blood and serum; but, on the other hand, the fluid, though septic, may have the appearance and rich color of normal blood, with no obvious purulent character, and yet this blood may be found teeming with streptococci. When the anaerobic, gas producing bacilli are present, the fluid obtained on exploration has an extremely offensive, fecal odor. It is important to remember that the clots in the hemothorax may be the only infected portions to begin with, the free fluid becoming infected at a later period. This proved to be the case in about twenty per cent. of Bradford and Elliott's bacillary cases during the first week. In these, the brownish red fluid obtained on the fifth and sixth day was sterile, while a few days later it was full of anaerobes. As a general rule, the larger the hemorrhage into the pleural cavity, the greater is the risk of sepsis.

Double hemothorax is a very rare condition, but has been met with by Bradford and others in lateral transverse wounds; the hemothorax may be sterile on both sides, or both effusions may be septic, or one may be septic and the other sterile.

Prognosis in hemothorax. For some time, it may be months or even years, there may be dyspnea on exertion (e. g., when going upstairs or climbing hills), depending, to a great extent, on the degree of permanent pulmonary collapse which has supervened. A functional or nervous element has been noted in certain instances, the patient for a time being too frightened to breathe naturally. It is possible that the mechanical alteration of the chest contents may, in some instances, temporarily alter the nervous mechanism of respiration.

Immobility and retraction of the affected part of the chest is extremely common and is almost invariably present in large effusions not treated by aspiration: the earlier the aspiration, the less likelihood there is of pulmonary collapse and consequent immobility and retraction. The writer has a case now under his care in which the chest expansion has been reduced by three inches, while marked retraction is indicated by the calliper tracings.

As regards mortality, Bradford and Elliott's 450 cases gave a total death rate for all cases of ten per cent. Of the fatal cases, seventy per cent. were such from sepsis, five per cent. from simple hemorrhage, and twenty per cent. from various complications, such as spinal and abdominal injuries, contralateral pneumonia, etc.

Death from simple hemorrhage did not occur if the patient survived the third day, no doubt owing to the sealing of the wounds by deposition of fibrin. This fact is of extreme importance in regard to transport, for the movement involved in careful removal to the base after the fourth day does not materially increase the risk of danger from further hemorrhage, while, on the other hand, it enormously increases the facilities for appropriate treatment at the base hospital, whether this is aspiration in sterile hemothorax, or rib resection and evacuation in septic cases.

Apart from the immediate risk of the first three days from fatal hemorrhage, the prognosis depends almost entirely on the presence or absence of sepsis. In the aseptic cases the fluid is gradually absorbed, with or without the assistance of aspiration. As regards the septic cases, the prognosis depends upon the celerity with which the diagnosis of infection is made, and the promptness with which the rib resection and evacuation of the septic pleural contents is carried out.

As regards the treatment of sterile hemothorax, the old safe policy of expectant treatment, or, as it might be called, that of "judicious noninterference," has been to a large extent replaced by more active and effective measures, designed to prevent the occurrence of a greater or less degree of permanent pulmonary collapse. In cases which are not interfered with, the blood is gradually absorbed, but the process may take some months, and, in the case of large effusions, some physical signs of thickened pleura and chest retraction, almost invariably remain. (Fig. 3.) It may be laid down as a safe rule that, in cases treated in properly equipped hospitals, all large blood effusions, with a dullness extending halfway up the scapula, should be aspirated, with a view of preventing pulmonary collapse, and consequent permanent impairment of respiratory activity. It is, however, sometimes a wise proceeding "to play for safety" in the absence of adequate hospital aseptic facilities, and not to aspirate, as the conversion of a sterile into a septic hemothorax would be a calamity.

Methods of aspiration. The most rigid aseptic precautions are necessary, as the blood clot is such an excellent nutritive medium for bacterial growth. A sterile hemothorax should never be incised and drained, as it will almost certainly become infected. The presence of clot sometimes tends to hinder aspiration, and, in order to avoid trouble from blocking of the cannula, the aspirator needle should be introduced well forward in the axilla, and fairly high up, on account of the high dome of the diaphragm. The main portion of the clot accumulates in the paravertebral space behind and in the cul-de-sac of the diaphragm. A convenient site for puncture—whether exploratory or aspiratory—is in the sixth or seventh interspace in the midaxillary line, where the depth from the skin surface to the pleura is from one to one and a half inch. A second paracentesis is rarely necessary, for there is no tendency for a sterile hemothorax to reaccumulate.

If aspiration can be combined with oxygen replacement, so much the better, as the results obtained by this method are wonderfully good. The great advantage of oxygen replacement over ordinary paracentesis thoracis is, that the whole of the fluid may be removed without risk of discomfort to the patient. The introduction of the oxygen removes all pain and tendency to cough. This procedure, however, necessitates familiarity and experience with the apparatus for producing artificial pneumothorax. In most cases, simple aspiration is quite satisfactory when followed up by appropriate breathing exercises. Rose Bradford speaks enthusiastically of the results of oxygen replacement.

As regards the treatment of septic cases, pyohemothorax, the role of the physician is to make the diagnosis as early as possible. If the patient's condition does not improve within the first week, and more particularly if the pain and dyspnea continue and the pyrexia is of a swinging character, it is the medical officer's duty to explore the chest and have the fluid examined bacteriologically. If the blood proves to be infected, the sooner a surgeon is called in to resect a rib and evacuate the septic pleural contents the better.

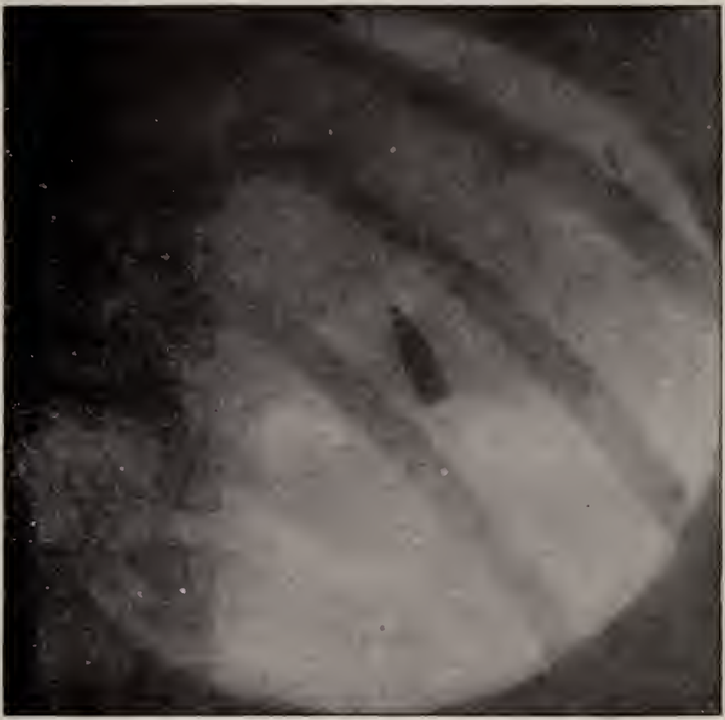

FIG. 4.—Case of abdominothoracic penetrating bullet wound. The bullet entered just above the right costal margin close to the xiphisternum, penetrated liver, and lodged behind in the tenth left interspace. Patient had severe pain. Right hemothorax followed, which was aspirated. Patient made an excellent recovery, the bullet being left *in situ*. (Radiograph by Mr. Shenton.)

b. Pyothorax. Pyothorax is thus in the large majority of instances a *pyohemothorax*, for uncomplicated empyema, as the result of perforating injuries is comparatively rare. The infection may reach the pleura from the carrying in of septic material from the skin or clothing, from the septic entrance or exit wounds, from the septic bullet track, from systemic infection derived from a septic wound elsewhere (pyemic), from open air infection in the case of large shell or shrapnel wounds, or by communication with a hollow tube or viscus in the abdomen. It must also be noted that Sir George Makins, in his *Surgical Experiences in the South African War*, describes many cases of secondary empyema following incision of the chest or aspiration. The writer has certainly seen one case of pyothorax following the removal of a bullet lying immediately under the skin, the incision being merely an extension of the original skin wound. Apart from the evidence afforded by exploratory puncture, the continuance of pyrexia beyond a fortnight—especially if it is of a swinging, hectic character—is very suggestive of pyohemothorax. In two cases under the writer's care, in which exploration was not resorted to until late, severe pain, continuous pleuritic friction, and, in one of the cases, pleuropericardial friction, were prominent features.

The treatment of a pyohemothorax and the much rarer uncomplicated empyema is identical, viz., early rib resection and evacuation, with free drainage, the prognosis depending, as in the case of empyemata in civil practice, on the nature of the causal organism. Streptococcal cases are the most serious, whereas septic effusions, due to staphylococci or pneumococci, as well as to anaerobic bacilli, generally do well. The writer has a strong belief in the value of vaccine therapy, particularly in streptococcal cases, and in his opinion it is well to begin the treatment soon after operation. Sensitized and autogenous vaccines are specially useful. They should certainly be resorted to if the pyothorax continues to discharge after a month or six weeks.

c. Simple serofibrinous pleurisy. Localized friction is often heard for a few days, but rapidly disappears in the sterile cases. Simple pleurisy with clear serous effusion is very rare after gunshot wounds, though Colonel Hale White has described a case. It is probable, however, that in all cases of hemothorax there is a certain amount of associated pleurisy, the presence of the blood acting as an inflammatory irritant. This inflammatory reaction is probably the cause of the mild pyrexia which characterizes a sterile pneumothorax during the first one or two weeks after its occurrence. The enumeration of the red corpuscles in the fluid, obtained on exploration in hemothorax, has been done with the view of determining the proportion of pleural exudate, but the early clotting of the blood in the pleural sac in cases of hemothorax makes such a method of doubtful value.

Pneumothorax and hemopneumothorax. Delorme states that partial pneumothorax is a frequent concomitant of hemothorax, whereas recent English observers are of opinion that it is a rare condition. Thus, in Colonel Hale White's series of fifty cases pneumothorax was present only twice, and Sir George Makins stated that this complication is exceedingly rare with bullet wounds. In Bradford and Elliott's series of 450 cases of hemothorax, only eight indubitable examples of pronounced pneumothorax, with complete pulmonary collapse, were met, while there were only four cases of complete pneumothorax without blood. These twelve cases were all right sided—possibly because the left sided cases proved fatal from heart injury or heart failure before the patients could be transferred to the base. Rose Bradford recommends aspirating the air-containing space first, and opening the pleura afterward, when the lung has partially expanded. It is probable that small temporary air effusions are comparatively common immediately after a perforating injury of the chest and may often escape observation, for the absorption of the air is an extremely rapid process, and the condition may exist for one or two days only, owing to the rapid sealing up of the lung wound, there being no valvular opening into the lung, as in pulmonary tuberculosis. It has already been pointed out that the Skodaic tympanitic resonance above the area of the effusion often leads to a mistaken diagnosis of pneumothorax from misinterpretation of the characteristic phenomena. An x ray examination is of value in the diagnosis of pneumohemothorax. If air is present in any considerable quantity above the blood, the upper level of the fluid is horizontal when the patient sits up on the x ray couch, and it is stated that wavelike oscillations are visible in the fluid when examined through the fluorescent screen in uncomplicated hemothorax; on the other hand the upper surface of the fluid opacity is irregular and slanting. The writer has no experience of the pneumohemothorax caused by gas forming bacilli.

While dealing with the subject of air effusions, we may mention, *en passant,* the fairly frequent occurrence of subcutaneous emphysema in penetrating wounds of the chest. This condition, however, is of surgical rather than medical interest, except so far as the characteristic auscultatory phenomena may be misleading.

INJURIES OF LUNGS.

Delorme states that the bullet track in the lung is smooth, and not lacerated, and that the walls of the canal adhere, owing to the elasticity of the lung tissue, the canal itself being slightly suffused with blood. According to the velocity of the bullet and the portion of the lung affected, we may have fissures, furrows, cul-de-sac wounds, or total perforations. Owing to the yielding nature of the lung parenchyma, the bullet usually passes right through, and if it has not escaped by an exit wound, is often found in the pleural cavity. The bullet track may have a considerable amount of blood infarction around it, and the writer has seen a postmortem specimen in which the infarction approximated to the dimensions of the middle finger. The aperture of entry may look like a small red spot, about three mm. in diameter, with the aperture of exit somewhat larger. A shrapnel bullet forms a larger track, the aperture of "entry" being more rounded than slitlike, and that of "exit" more extensive and irregular. Laurent states that the sanguineous trail indicating the bullet track is undiscoverable at the end of a week, and it is probable that the elastic character of the lung, which keeps the walls of the track in apposition, rapidly seals up fairly large bloodvessels, and even bronchi which have been torn across by the passage of the missile. Bullets and metallic foreign bodies have a tendency to find their way into the pleural cul-de-sac. Unless the presence of a bullet is giving rise to definite symptoms, it is best to leave it *in situ,* and not to attempt its removal from either the lung or the pleural cavity.

The principal symptom of lung injury is, of course, hemoptysis, though, as already explained, a slight hemoptysis may occur from mere bruising of the lung, without actual penetration. The hemoptysis following perforating wounds of the chest is never severe. Laurent found hemoptysis in seventy-five per cent. of wounds of the lungs. It was present in seventy per cent. of the writer's cases. The hemorrhage varies greatly in amount, from a mere staining to a moderate amount of bright red blood. The staining may occur immediately, or after the lapse of two or three days. It is common for an irritating cough to develop just after the injury, and for the expectoration to become rapidly tinged with blood. After a few days hemoptysis ceases—often almost suddenly—and, as a rule, it does not recur. The bleeding is rarely profuse enough to give rise to danger, except when a large bloodvessel and bronchus at the root of the lung have been perforated, in which case the hemoptysis is generally rapidly fatal. A late hemoptysis coming on five to ten days after the injury is occasionally met, owing, no doubt, to the occurrence of blood infarction around the wound track.

Pneumonia is, fortunately, an extremely rare complication, and more often occurs on the opposite side. Pulmonary abscess and gangrene are also rare phenomena, for the bullet track in the lung is, as a general rule, sterile, and infected areas within the lung substance are rarely developed, while any contusion or laceration which may have occurred tends to heal readily. When gangrene or abscess does occur, it is usually in connection with shrapnel and shell wounds.

INJURIES OF THE HEART AND GREAT BLOODVESSELS.

Perforating wounds in the highly dangerous central zone of the thorax are, as a rule, rapidly fatal. Wounds about the clavicle are extremely dangerous, owing to the proximity of the large vessels and nerves at the root of the neck, and if these are wounded, the patient nearly always dies on the battlefield. It is quite extraordinary, however, how often these important structures in the chest are evaded, when, judging by the line of the bullet as indicated by the position of the entrance and exit wounds, it would seem almost impossible for one or more of them to have escaped. This is particularly noticeable in the case of the large bloodvessels.

Case III. A New Zealander was admitted under the writer's care at Hampstead Military Hospital, who had been wounded in Gallipoli, by a bullet which entered below the right clavicle; passed right through the chest, perforating the blade of the scapula, and now lay under the skin below the spine of the right scapula, where it could be readily felt. He spat blood for ten days after being wounded. He made an excellent recovery with no untoward symptoms, thus indicating the absence of serious injury to any of the numerous important vascular and nervous structures.

Case IV. A case was recently admitted to the Royal Chest Hospital, in which a bullet traversed the upper part of the chest, producing a small, traumatic, pulsatile aneurysm above the sternal end of the left clavicle and also an injury of the left phrenic nerve, indicated by paralysis of the left half of the diaphragm, which, as shown by the fluorescent x ray screen, ascended when the opposite side descended with inspiration; no other symptoms developed, and the patient made an excellent recovery.

Colonel Hale White recently recorded an injury to the left recurrent laryngeal nerve, without involvement of the aorta or other adjacent important vascular or nervous structures.

Mr. Keogh Murphy[1] describes a case of severance of the subclavian artery, the proximal end of the divided artery having become sealed by organized blood clot and the pressure of the surrounding tissues. He has seen four cases in which, from the line taken by the bullet, it would appear that the heart must have been perforated in several places, and yet, apart from slowness of the pulse, there was no disturbance of the heart action, and in only one of these was there pericardial friction. Mr. Murphy, while operating in a case of pyothorax, observed a bullet track ascending along the right ventricle, on to the right auricle, without producing actual perforation. Grazing wounds of the heart are probably the cause of the pericardial friction, which is often heard when the bullet has gone near the heart.

At a recent meeting of the West London Medical Society, Major McAdam Eccles showed a patient alive and well, who was admitted to St. Bartholomew's Hospital with left hemothorax and hemopericardium, and in whom the x rays showed a bullet situated in the muscular tissue of the septum of the heart, the bullet having entered the thorax a little below and internal to the coracoid process of the left scapula, traversed the left lung, fracturing the posterior part of the left fourth rib, and was then deflected forward into the heart. With the x ray fluorescent screen the bullet could be seen moving synchronously with the contractions of the heart. The extraordinary clinical fact in the history of this case was, that immediately after being struck, the man was able to walk to the Ypres hospital, a mile and a half away.

In the *Journal of the Royal Army Medical Corps* for October, 1915, a case is recorded by Lieutenant Birkbeck and Lieutenant Lorimer, in which a bullet was removed by Colonel H. M. W. Gray from the cavity of the right ventricle, under a local anesthetic. The patient was admitted to hospital eight days after being wounded by a bullet, which, after killing the man just in front of him, entered his chest just below and to the right of the xiphisternal junction. The patient was kept at rest, and for some days no symptoms manifested themselves, the pulse averaging 80 to 90, and the evening temperature varying from 100° to 101° F. An x ray examination revealed the bullet shadow moving synchronously with the heart. A week after admission there was some cardiac irregularity, with occasional dropped beats, and it was decided to operate and remove the bullet. The patient lived for four and a half days after the operation, and the post mortem examination showed that the cause of death was multiple pulmonary embolisms, the clots being derived from the right ventricle. Colonel Gray, in commenting on the case, mentions that a French surgeon had recently removed, with permanent success, a rifle bullet which had lain in the left ventricle for five months.

In nonfatal grazing wounds and other injuries of the heart, there are often no symptoms other than occasional slowness or irregularity of the pulse, though pericardial friction may sometimes be heard. In all injuries involving the heart and great vessels, expectant treatment is naturally the only course to adopt, with absolute rest, absence of all excitement, and the use of effective doses of morphine.

It has already been mentioned that pleuropericardial friction is not unfrequently present in left pyohemothorax. Suppurative pericarditis has been described, and has been successfully treated by drainage of the pericardium. Hemopericardium is rarely consistent with life, though it was present and apparently caused no embarrassment of the heart in Major Eccles's case just referred to.

3. *Complicated injuries.* In thoracicoabdominal wounds, the abdominal lesion may be the dominating factor in the situation, and rest, with judicious non-

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[1] Keogh Murphy. *Wounds in the Thorax in War*, 1915.

interference, is the policy to be adopted. In many cases, however, the fact of the bullet penetrating the diaphragm and emerging in the abdominal wall seems to make very little material difference if the hollow viscera are not injured. It is important to remember the great elevation of the dome of the diaphragm. The vault of the diaphragm reaches to the level of the fifth, it may be of the fourth rib on the left side. Accordingly, when an anteroposterior traverse penetrating wound occurs below the level of the fifth rib, the wound becomes thoracicoabdominal. Abdominal complications are, however, commoner in longitudinal wounds of the chest. Vomiting and hiccough in gunshot injuries of the chest should make one strongly suspect a perforating injury of the diaphragm. The organs most likely to be injured in thoracicoabdominal wounds are the stomach, liver, spleen, and kidney. On the right side the liver is frequently injured, but grave symptoms rarely follow, and jaundice does not occur. The writer had recently under his care a soldier wounded in Gallipoli, in whom the bullet had entered just above the right costal margin, and, after piercing the liver, ultimately lodged behind it in the pleural cavity below the tenth rib. The patient acquired hemothorax (sterile), but made an uninterrupted recovery. (Fig. 4.)

Captain T. R. Elliott and Captain Henry have described a case of cholohemothorax. The bullet, after drilling a hole through the left arm above the elbow, entered the chest behind the sternum close to the base of the heart, and passed out through the right side, injuring both liver and lung. A large right hemothorax developed, and was aspirated. Dry pericarditis then ensued. The fluid in the chest reaccumulated, and this time the aspirated fluid contained bile. Recurrent aspirations had to be performed on five occasions, and altogether fifteen pints of bile were withdrawn. There was no jaundice. Recovery took place at the end of the fourth month.

Wounds involving the thorax and upper abdomen may occasionally be followed by a subphrenic abscess—an extremely serious complication. Perforation of the diaphragm on the left side has been known to result in diaphragmatic hernia, the diagnosis of which is one of extreme difficulty, and has been made with accuracy in only seven out of 300 cases recorded in medical literature. In lateral transverse perforating wounds of the thorax, it is common for the bullet to cause a perforating wound of one or other segment of the upper extremities, while in the longitudinal wounds of the cervicothoracic cases there may be serious cervical as well as thoracic injuries. Injuries of the trachea, large bronchi, and esophagus may occur in perforating wounds, involving the central zone or mediastinum, and are generally rapidly fatal.

PROGNOSIS IN CHEST INJURIES.

The main facts in regard to prognosis have already been referred to. As regards the mortality from perforating injuries of the chest, it is extremely interesting to note the different effects at different periods. In the American Civil War, the average mortality for the large bore bullets was as high as 52.5 per cent. In the Crimean war, the mortality of penetrating wounds of the chest in the British army was over seventy per cent., while in the Boer war it was only 13.4 to 18.4 per cent. (Makins.) At the battle of Mukden, the mortality in the Japanese army was said to be actually under four per cent. This remarkable reduction in mortality is due to the introduction of the modern, small, high velocity bullets. In reference to the present European war, no comprehensive statistics are yet available. It has already been mentioned that in Bradford and Elliott's series of 450 cases of perforating wounds with hemothorax, the total mortality was only ten per cent., and this notwithstanding the frequent occurrence of sepsis, so characteristic of wounds received in the trenches of France and Flanders, it must, however, be remembered that this series of cases did not include the chest wounds that proved fatal on the field of battle.

In contrasting the experience in the present war with that in the Boer war, it may be stated that the high velocity bullets at short range, and the fragments of high explosive shells cause greater laceration than was the case in South Africa, with proportionately greater hemorrhage, while the skin and clothing of the soldiers are so saturated with fecal organisms in the trenches, derived from the manured soil of the agricultural country of Flanders, that sepsis is a much more serious matter than it was in the Boer war.

Many cases must have been saved by the modern excellent motor ambulance arrangements, enabling stretcher cases to be conveyed to the field and base hospitals in comparative comfort, while in the ambulance trains there is every facility for emergency measures, including not only the dressing of the external wounds and injections of morphine, pituitrin, or adrenaline for the relief of pain, dyspnea, or shock, but also saline injections when these are indicated, as in profound collapse.

Appropriate breathing exercises, such as those advocated by Mr. Cortlandt MacMahon (*Lancet*, Oct. 2, 1915) are most valuable for expanding the lungs. Inspiratory exercises with Woolfe's bottles may be used with advantage after hemothorax for increasing the respiratory capacity and promoting expansion, just as in cases of pleurisy with effusion occurring in civil practice. An excellent example of the value of breathing exercises is afforded by the young officer already alluded to who had a left hemothorax, which was not aspirated. The patient, an amateur singer, had prior to the war received breathing lessons for the diaphragm, and began breathing exercises a fortnight after his admission to the hospital for wounded officers. The fluid was quickly absorbed, and, after leaving hospital, the patient took walking and swimming exercise. In six weeks the movement of the left diaphragm was so perfect that, apart from the fractured ribs, it was difficult to tell with the fluorescent screen which was the affected lung, both sides moving equally well. (Fig. 2.) After a few months' convalescence he was able to return to the fighting line.

In addition to breathing exercises, hill climbing is excellent for expanding the lungs, the patient gradually increasing the distance and attempting steeper ascents as his progress continues.

152 HARLEY STREET, CAVENDISH SQUARE, WEST.

EXTENSIVE SUBDURAL HEMORRHAGE AFTER TRAUMA.

With Mental Disturbances Due to Involvement of the Right Frontal Lobe: Operation; Cure.

By B. Sachs, M. D.,
New York;

And Charles A. Elsberg, M. D.,
New York.

(From the Neurological and Surgical Services of Mount Sinai Hospital.)

During the past year we have observed the following case, which is of interest both because of the extent of the lesion and of the prompt and complete recovery after the second operation. The mental symptoms increased the difficulties of diagnosis and are especially worthy of note.

Case. Early in August, 1915, H. S., thirty-eight years of age, a man of unusually strong physique, was thrown out of an open automobile, landing on a country road on the right shoulder. He was picked up in an unconscious state and was taken care of for a time at a farm house. He regained consciousness after a few hours and seemed to have suffered so little from the accident that he was able to travel on for some distance and was under the charge of an osteopath until the early part of October. The skull was x rayed at an Albany hospital, and, so far as we know, the findings were negative.

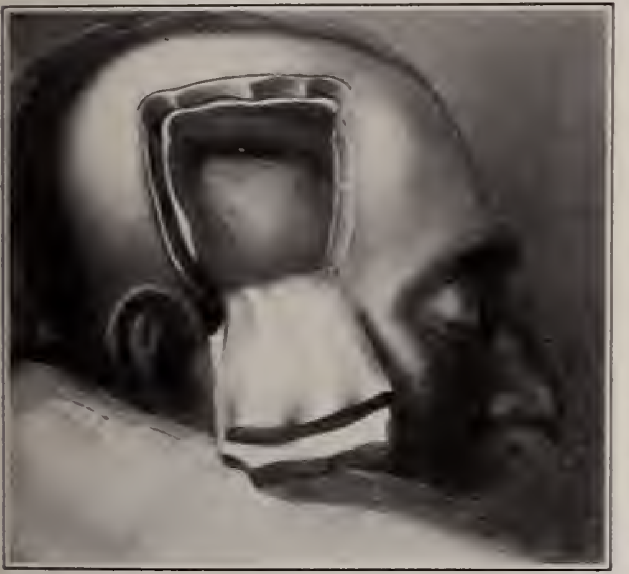

Fig. 1.—Osteoplastic flap turned down and dural flap reflected. Exposed brain covered by layer of organized blood clot.

The only change observed by those around him was that his mental condition seemed to have been altered; that he was more talkative than he had previously been and at times laughed immoderately without cause. He was otherwise well and able to attend to business until October 15, 1915. On that day he consulted his family physician, Dr. Albert Kohn, who at once referred him to Doctor Sachs. To both physicians he stated that three days previously, while at a hotel in Cleveland, he slipped in trying to get out of the bath tub and gave his head a hard knock. He became unconscious; forty-five minutes later he heard a bellboy knock at the door. He called to have the boy come in and then realized that he had given his head a severe blow. He was helped out of the bath tub and was able to walk, but realized that his left hand was weak and that he had some difficulty in using his left leg. He was well enough to travel from Cleveland to Detroit, dragging his leg, and annoyed only by the fact that he was dropping his grip. As he expressed it, he was able to walk, but stepped into things. He would knock against everything and everyone.

When questioned further about his general condition, he confessed that ever since the first accident he became easily drowsy, but not to such an extent as to be prevented from attending to his ordinary business affairs. On the evening of October 14th, he took his ticket to Detroit and slept well during the night, but found that he could not undress himself. In fact, for a few days, he had to have help in dressing and undressing. He also confessed that he had been suffering from headaches for some time before the bathtub accident.

On examination, it was found that the left arm was limp and that the lower two thirds of the left arm and hand showed slight disturbances of all forms of sensation. The muscle sense was entirely normal. The reflexes were not increased either in the left upper or left lower extremity. The motion of the right upper extremity was limited, but this was evidently the result of the original auto injury, when he struck his right shoulder.

At this examination both legs were weak, the patient asserting that the left leg did not "feel heavy" before the second accident. Both feet stubbed the ground easily. He was positive that the right hand did not grow worse after the second accident. He also noted that there was a very slight left facial paresis.

As a result of this first examination the diagnosis of extensive hemorrhage or abscess was considered probable and the patient was advised to go to Mt. Sinai Hospital. The question of operation was at once considered with Doctor Elsberg, and from this time on the patient remained under the care of Doctor Kohn and of the authors of this paper.

In addition to the hemiplegia, the mental condition of the patient attracted our full attention and was for a time somewhat puzzling. At the hospital the patient was extremely noisy; would answer some questions correctly, more often incorrectly. He became extremely vulgar in his speech and was given to inordinate jesting and punning, exhibiting the usual *Witzelsucht* (effort to be funny). After a few days the patient became more drowsy. The left upper extremity became completely paralyzed, not spastic; the left half of the face was involved, and the left lower extremity was more paretic. Although he was well able to stand, he walked with great difficulty. The left upper extremity and the left half of the face were distinctly anesthetic. The sensory disturbances were much less marked in the lower extremity. There was no apraxia or astereognosis so far as these could be satisfactorily determined.

As for other symptoms, he complained of severe frontal headaches; the pupils reacted sluggishly to light and accommodation, the right being larger than the left, and there was a papilledema of more than three diopters in each eye. The abdominal reflexes were present on the right side, but could not be elicited on the left.

While in the hospital the patient was seen by Dr. I. Strauss, who did the lumbar puncture, withdrawing about ten c. c. of clear fluid under increased pressure (230 mm.). The Wassermann was negative and there was no increase of cells or globulin.

On October 26th, the symptoms had increased to such an alarming extent that we decided to do an exploratory operation, particularly as the right optic nerve showed numerous small hemorrhages.

A button of bone was removed in front of the middle of the right motor area and the dura was incised. A large quantity of dark colored fluid escaped. In the depths of the opening the brain could be indistinctly seen. After the fluid had been removed by gauze sponges and more bone had been rongeured away in the subtemporal region for decompressive purposes, the wound was closed without drainage.

It is a fair question whether it would not have been wiser at this time to make a larger incision and expose the greater part of the area involved in the lesion. The patient recovered from this operation, but his condition was not improved. Hemiplegia was complete, and, although the patient was less drowsy, he did not recognize those about him. He was still noisy and could not be quieted with large doses of hyoscine and morphine. Urination and defecation remained involuntary. The eye grounds failed to show improvement. Although there seemed to be some slight improvement in the movement of the left upper extremity, we concluded after further consultation that a second and larger operation was our only hope of rescuing the patient. The continuance of the mental symptoms impressed us with the probability of an involvement of the frontal lobe, and it was evident that the lesion was a very extensive one. We were still somewhat in doubt whether we should find a large hemorrhage or an abscess. At no time during his illness did the patient exhibit any considerable rise of temperature and all the symptoms could have been explained as the result of either hemorrhage or an old chronic abscess.

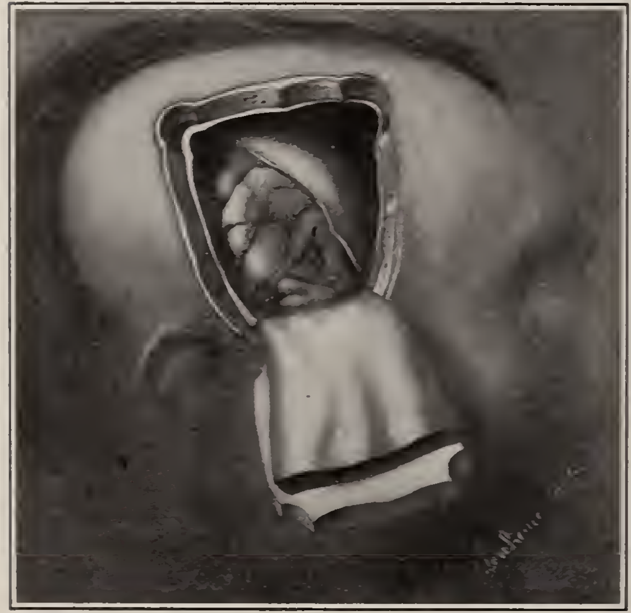

FIG. 2.—The organized clot has been partly peeled off, exposing the brain underneath.

On November 15th, Doctor Elsberg turned down a large osteoplastic flap in the right frontoparietal region. When the dura was incised, much dark fluid blood escaped and the brain was found to be about two inches from the bone and without pulsation (Fig. 1). The cortex was covered by an organized layer of blood clot 0.5 cm. in thickness, which had evidently compressed the parietal and frontal lobes. So great was the compression that the examining finger could palpate the bony roof of the orbit and the greater part of the floor of the anterior fossa on the right side. The layer of tissue which held down the brain was incised and the operator found that he could peel it off in strips, exposing the normal looking cortex underneath. When the greater part of the layer of organized tissue had been removed in this manner (Fig. 2), the brain began to expand and to pulsate normally. Over the outer aspect of the frontal lobe the brain tissue was somewhat soft over a small area which was covered by newly formed bloodvessels (Fig. 3). The dural incision was then closed by interrupted sutures, the bone flap returned into place, and the scalp wound sutured.

The wound healed by primary union. The morning after the operation, the patient was able to move the left arm and leg and the left facial paralysis was less marked. He was restless and his mental condition was not different from what it had been for weeks before the operation. For a few days he was noisy, but then the mental condition gradually changed so that he became more quiet. He began to jest with his nurses and seemed for a time to take special delight in calling the nurses by silly names. He had various delusions. Among other things, he constantly accused his physicians of owing him money, and one day he grew excited because he believed that his ten year old son had been married to his cook. He was especially prone to joke about sexual matters and seemed to derive much amusement from the fact that he voided his bladder into the bed. When asked whether he knew what he was doing he would respond that he did and that he did not care. At various times, he pulled the dressings from his head and always denied that he had done so.

After the fourth or fifth day, distinct lucid intervals occurred, and ten days after the operation he had regained complete control over his mental faculties, and also was able to move the left arm and leg freely, while the left facial paralysis had completely disappeared. The swelling of the discs by this time had also been considerably diminished. He was discharged from the hospital on December 9th, twenty-four days after the second operation. His mental and physical condition was normal in all respects. The fundi were normal and his left arm and left leg were as strong as those of the right side. The abdominal reflexes and the extremity reflexes were equal on both sides.

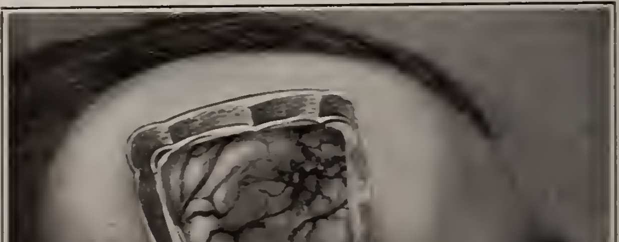

FIG. 3.—All of the clot has been removed, showing an area of brain covered by newly formed bloodvessels.

On December 18, 1915, he insisted that he be allowed to take a business trip to Europe. In spite of the advice of all physicians, he left for Europe, attended to all his business affairs, and presented himself on his return, three months later, when it was found that he had been well during the period, and reexamination showed that he had recovered in every particular.

COMMENT.

Aside from the unusually satisfactory operative results, it is well to record a case in which the mental symptoms were evidently the result of involvement of the frontal lobe, and it is also worth pointing out that the almost maniacal restlessness of the patient and the talkativeness were much more startling than the somnolence which was observed during the earlier weeks after the original accident.

After all, the compression by a blood clot, be it never so large, is less serious than the invasion of brain tissue by malignant growth, and it is conceivable that, for this reason, mental symptoms associated with tumor of the frontal lobe would be more serious than those observed in this case. Moreover, it is probable that there was frequent, if not continuous oozing, finally leading to the formation of this large subdural clot, and that therefore the brain was compressed and not destroyed by a hemorrhage. Any initial hemorrhage of the size indicated by this clot would, in all probability, have proved instantly fatal.

While the patient was favored in many respects by a fortunate combination of circumstances, it is certain that he owes his life and his complete recovery to the success of the operation. None of us had ever seen so large and extensive a clot removed from the brain of a living subject.

116 West Fifty-ninth Street.
Madison Avenue and Sixty-third Street.

INFANTILE PARALYSIS.

With Especial Reference to Its Treatment by Electricity,

By Herman C. Frauenthal, E. E., M. D.,
New York,
Director of Electrical Department, Visiting Orthopedic Surgeon, and Chief of Clinic, Hospital for Deformities and Joint Diseases.

The treatment of this paralytic affection is of such importance that reiteration should act as a stimulus to practitioners and specialists alike; the former to be on the alert to detect the first manifestation of this fearful affliction; the latter to institute proper measures for the treatment. This disease, for convenience, may be divided into four stages, as follows:

a. Acute or febrile stage.
b. Semiacute or stage of hyperesthesia.
c. Period of convalescence.
d. The chronic stage or period of surgery.

THE ACUTE STAGE.

The pathologist tells us that infantile paralysis is a general infection involving principally the cerebrospinal axis. There is a hemorrhagic myelitis, perhaps a mild meningitis, punctate hemorrhages in the cord, most marked in the anterior gray matter, with perivascular infiltration which causes narrowing of the terminal arteries supplying the motor cells, and producing anemia even to the point of necrosis in many of them. The posterior root ganglia may also be involved. If absorption of the infiltration occurs quickly, the anemic cells resume their normal function. During this stage, spinal puncture verifies our diagnosis and blood serum, if used, should be given as early as possible in doses of from six to twelve c. c., repeated the following day. The Hospital for Deformities and Joint Diseases has furnished Dr. George Draper, of the Rockefeller Institute and the State Board of Health, blood serum from many donors. Excellent results are reported when this serum is used sufficiently early. Hexamethylenamine is also recommended, as is adrenaline when the diagnosis is made too late for the administration of serum. The serum obtained from the spinal canal of the patient has been injected into the thigh muscles, in some cases, and, it is stated, with beneficial results. Massive doses of quinine have been given by some practitioners internally, as has echinacea, with alleged benefit. Rest, with quiet surroundings is advised, and symptomatic treatment should be given.

THE SEMIACUTE STAGE.

This stage which begins with the cessation of fever lasts until the disappearance of hyperesthesia. This period varies from a few days, in mild cases, to many weeks, during which time the child should be kept prone, and the muscles paralyzed should be supported by a suitable aluminum, celluloid, or open plaster of Paris splint, or a brace to prevent deformities such as foot drop, flexed knee, flexed thigh, lateral curvature, etc. Little other treatment is necessary during this stage, except that the child should be kept comfortable by warm tub baths, during which the extremities should be gently moved and the child encouraged to make an effort to move them. The brace, of course, is to be removed during the bath.

THE PERIOD OF CONVALESCENCE.

This is the time for active treatment. With the disappearance of hyperesthesia, the process in the cord may be assumed to have reached a stage where therapeutic measures may be begun. This may occur immediately after the febrile stage or may begin many weeks later. We are now ready to take up the active treatment. At this period, the diagnosis of anterior poliomyelitis presents little or no difficulty. The history is one of previous well being with the sudden onset of acute illness, followed by a flaccid paralysis which may affect any or most of the muscles of the body. Atrophy is an early condition in the muscles affected. There is also vasomotor paresis, giving the limb the characteristic blue cold appearance. Reflexes are lost early and the reaction of degeneration in the affected muscles completes the picture.

While considering the advisability of a brace, bear in mind the fact that the ignorant mother whose child wears a brace, often fails to return for treatment, believing that the brace is curative, while its only use is to prevent deformity and to allow ambulatory movements.

Should a brace be deemed necessary, it should be removed daily for the normal use of the limb, and must be discarded when it has served its purpose.

Before applying the brace, it may be necessary to do some tenotomies to place the parts in a functioning position. If the range of motion is limited, perhaps a tenotomy is indicated, a stretching of the shortened muscle, or reefing the lengthened tendon. The limb should be held in an overcorrected position to stretch the opposing muscles. At times, silk tendons are used to steady the joint; then again, the muscle or tendon is transplanted or the joint may be ankylosed or resected.

If a brace is used to prevent or correct a deformity, it should be taken off every day for a few hours, and the child encouraged to make an effort to use the part involved, even if there is no response to the effort. During convalescence, where the arm is involved, the good arm should be placed within the clothes. In all methods of treatment, the mental efforts, without a doubt, play the most important part toward affecting a cure.

FIG.—Children in the convalescent stage after an attack of anterior poliomyelitis.

Continuous attention, not alone by the mother and the physician, but by the patient himself, must be urged, so that the child tries *mentally* to improve the nerve force of the part involved. As a thought conveyed to the brain may induce blushing, laughter, fear, increased appetite, etc., so can a thought improve the circulation of any part of the body and be taught to a child by mental effort. By wearing a brace continuously, the patient loses the value of the mental effort and the physical action and this tends to increase muscular atrophy. Bear in mind that atrophy is synonymous with disuse; use and metabolism go together.

These patients tend to show an improvement for a given time, but sooner or later improvement comes to a standstill: some muscle or muscles seem to have lagged. This is the time for renewed effort or surgical intervention.

The office treatment consists in the application of some form of energy. As we all know, each of the different forms of energy such as heat, light, electricity, vibration, magnetism, sound, nerve force, are converted under certain conditions into one another: nerve force into light as in the firefly, and nerve force into electricity as in the electrical eel.

Any method of treatment that will improve the general health, such as medication, hygiene, fresh air, etc., or that will improve the metabolism of the part involved, is good treatment. This includes massage, vibration, mechanical devices, heat, white light, electricity, and last though not least, psychotherapeutical exercises, or muscle education, with reflecting mirrors so placed that the patient can easily see the part involved. The limb treated must be slightly flexed, when the flexor muscles are involved, so as not to have the muscles strain under treatment by any of the modalities.

In contrast to the belief expressed in the writings of many physicians on the treatment of infantile paralysis by electricity, I know that this has more value than all other methods combined, if used in the proper manner by one who understands which electric modality to use and the method of its application. I feel from my experience at the Hospital for Deformities and Joint Diseases, where I have treated thousands of cases in the past ten years by electricity, and the fact that I am a graduate in the subject of Lehigh University, that I am as competent as, if not more competent, to judge of its efficiency than any other member of the medical profession who has written on the subject.

Dr. Henry W. Frauenthal, in his writings on the comparative value of methods of treatment in infantile paralysis, allows:

Fifty-five per cent. to electricity;
Ten per cent. to massage;
Thirty-five per cent. to physical culture.

In this I heartily agree, and I regret that in my visits to the offices of some eminent orthopedic surgeons, no electric wall plate was seen.

I shall not describe the different forms of electrical currents or their uses, as galvanic, faradic, mixed, d'Arsonval, sinusoidal, high frequency, high tension of Oudin, Tesla, and O'Farrel, for a thorough knowledge of the galvanic is primarily essential to understand the actions of the others; hence, I shall speak only of galvanic electricity which can be very easily obtained from the New York street current. The terms used in galvanic electricity are:

E—voltage—difference of potential or level.
O—ohms—resistance of circuit.
C—ampères—milliampères—the quantity of current used.
Watts—product of E by C.
C—equals $\frac{E}{R}$

Other terms used are multiple, direct, alternating, closing, opening, rheostat, volt meter, milliampère meter, switches, sponges or applicators, etc., which words define themselves. I merely wish to mention here that although I write most on the galvanic current, the other currents are used sometimes to better advantage when they are indicated. I have found of great value the d'Arsonval when used with a series spark gap in producing contraction where none of the other modalities would act.

METHODS OF REGULATING A WALL PLATE.

We have all switches turned off before putting on the main switch which turns on the current from the city main; we select the galvanic current and regulate it with the volt meter. This also regulates the primary faradic current when that current is being used. If we select the combined currents, the amount of current is regulated by the volt meter and the switch in the magnetic coil. If we would use the secondary faradic current alone the amount is regulated on the magnetic coil only. The milliampère meter should be used only in a galvanic current. The sinusoidal is used simply by throwing on the switch and regulating the current with the rheostat of the meter. The galvanic current was originally obtained by placing metals of different electrical potential in a conducting fluid. Zinc is most commonly used as the positive element or negative pole; any other metal may act as a positive pole. Thus our primary battery is made. The method of detecting the pole is to place tips at the end of the electric cord in salt solution. The negative pole gives off the most gas. The positive pole is called the anode, the negative pole is called the cathode. Oxygen, the acids are attracted to the positive pole, and halogens, such as chlorine, bromine, iodine, sulphur. The negative pole attracts the alkalies, hydrogen, and the metals; these travel with the current. If we remember the foregoing, the secret of the chemical physiological action is ours. The positive pole relieves pain, stops hemorrhages, contracts tissues, is astringent, and deposits *metals* in the tissues. The negative is more painful and is used to dissolve tissues, remove hair, increase exudation and for depositing acid in the tissues, etc. Thus, its action is opposite to that of the positive pole.

The positive pole, as we shall see, should be used on paralyzed muscles; the negative pole, which should be larger, is placed centrally in order to regenerate, if possible, the nerve conductivity. The galvanic current acts only on closing or opening the circuit; not at other times; also in increasing and decreasing the current. Contractions are proportionate to the strength and direction of the current. Weak current may give no contraction. If upon a normal nerve or muscle a descending current is used to the limit of exhausting the nerve, and no muscular contraction is then found with the cathode on the muscle, a contraction may be produced by placing the anode on the muscle, thus causing an ascending current. This latter is the current used by preference, with proper interruptions, in the treatment of infantile paralysis.

It is well at this point briefly to review the phenomena of electrical reactions in general to a galvanic current. In a healthy muscle, electrical stimulation from a faradic coil or galvanic current interrupted, produces a sharp response. A paretic muscle gradually loses irritability to response, so that very strong currents are necessary to produce contraction. A good diagnostic point is the feebleness of response and the wormlike character of contraction. In complete reaction of degeneration, the muscles will not react to the strongest faradic or galvanic current. This is only presumptive evidence of degeneration, etc.

The normal reactions are K C C followed by: A C C; A O C; K O C. This reaction is different in degenerate muscles. A O C produces the greatest contraction, so that in the use of the galvanic current it is advisable, for many reasons, to place the anode on the paralyzed muscles. We must not imagine we are going to strengthen a muscle or a nerve by pouring electricity into it. Stress animates; strain destroys tissue.

The time spent in the application of an interrupted galvanic electric current (interrupted eighteen to seventy-two times a minute, synchronous with the pulse) should not exceed five minutes daily, using not over ten milliampères of current, or the least amount that will produce a reaction; it is advisable to use the anode on the paralyzed muscle early, while the cathode, which should be of a very large size, is placed centrally. If the cathode is used upon a paralyzed muscle it must be moved continuously in order to prevent an excoriation. Before the current is used upon the patient, try the current interrupted on yourself, taking the positive pole in one hand and applying the current with the other hand to the patient treated; the negative pole on the patient's spine or sternum. When the muscles contract, wait and repeat, suggesting to the child, at the same time, to contract the muscle. Before electricity is given, the limb should be thoroughly heated and massaged and after being treated the patient goes through a course of voluntary therapeutic exercises, mention of which has been made previously. This educational exercise, undoubtedly, has more therapeutical value than other methods of treatment, with the exception of electricity. It is also used in all forms of paralysis with much benefit, and as before mentioned, the mental effort of the patients should be urged at home, morning, noon, and night.

CHRONIC STAGE.

The best illustration of the treatment in the chronic stage is to describe the management of a case of chronic infantile paralysis.

CASE. Sara P., a child from South America, appeared at my office with a history of having had infantile paralysis five years before, her present condition being foot drop, limitation of motion with flexion at the knee owing to the shortened ham strings, lateral curvature. A tenotomy of the tendo Achillis was done and a plaster cast applied to the upper part of the thigh, the foot being placed in an overcorrected position; knee joint still flexed in plaster cast; flexion of knee joint corrected by wedges placed in a slot made transversely in the plaster in back of the knee. In three weeks, after the plaster cast was removed and the reaction of degeneration taken, we found that the opening of the current of certain muscles gave a greater contraction than the closing; especially was this true with the anode on the muscle. If normal, these muscles would act best on a closing current especially with the cathode on the muscle. These reactions were taken on the anterior tibial group. We found that there was no reaction in the anterior tibial muscles themselves, and no reaction in the quadriceps group. The child had now been treated for a year, and wore a splint part of the day, which was removed for mental effort, massage, and electricity. The anode was placed on the degenerated muscles, and the cathode placed centrally on the spine or upon the origin on the muscle treated. Before the electricity was given, the leg was thoroughly warmed by a white light baker and massage. After the electricity was given, the child received instruction in mental movements of the foot. At the end of one year, great improvement was found in the anterior tibial group, but none in the quadriceps or anterior tibial muscle. The child now being over ten years of age and having been paralyzed for seven years, was ready for surgical procedure. We transplanted the biceps and semitendinosus into the tendon of the quadriceps anteriorly; this procedure allowed the child, after a few months, to extend the knee; the foot still being in pronation as a result of the paralysis of the tibialis anticus, we transplanted the extensor longus hallucis to take the place of the paralyzed muscle. This tendon was passed through a hole bored transversely through the first metatarsal bone and looped back upon itself; the approximate portion of the tendon was attached or sewed to the tendon of the extensor longus digitorum. The foot was then put in plaster cast in an overcorrected position, and after three months, treatment was resumed.

The child was discharged later and walks well without a brace. A plaster corset is still used to sustain a paralyzed back. This child did not receive galvanic electricity alone; at times, galvanic and faradic were combined, sometimes faradic was given alone, frequently high frequency currents on the back, and occasionally the disruptive d'Arsonval current.

146 WEST SEVENTY-SECOND STREET.

AFTERTHOUGHTS OF THE EPIDEMIC OF INFANTILE PARALYSIS.

By BEVERLEY ROBINSON, M. D.,
New York.

Despite the fact that there was much search after the specific cause of the late terrible outbreak, nothing convincing was found. We are still obliged to confess our ignorance and to recur to the time honored statement that an epidemic influence has prevailed. The proof is, as we well know, that cases appear suddenly in widely separated tracts of country; that in some cases children, young men and women and occasionally adults of a certain age have been attacked; that not infrequently, there is no evidence that a possible human carrier of the disease can account for it; that healthy children who are most carefully looked after in every rational way take the disease, and not merely neglected children or those of poor parents.

No system of quarantine, even the most rigid, has prevented the disease from attacking persons at a given time. In all these particulars and others, it is closely allied in my judgment, with the grippe. Again, so far as many symptoms are concerned, it more closely resembles the grippe than any other known affection. True it is that the site of the disease after a few days, is especially the spinal cord and causes the paralytic symptoms, which are lasting and disabling, or indeed, rapidly fatal. Even this may merely be a seat of a poison like that of grippe.

So far as precautionary measures exist, I see no reason to change what is rational in the case of both diseases. Manifestly, when the symptoms of disease are present, it is wisdom to prevent bodily contact with those who are well, and when an epidemic prevails in a known locality, it is sensible, sometimes and when conditions permit, to leave such a place for a time. But this does not mean that there should be an unreasonable stampede and that everyone who can afford it, should seek safety in flight. In the first place, there is no assured safety by so doing, simply because the disease seeks susceptible people and for some unknown reason, may attack them soon in the very place they have gone to for safety. Not a few facts prove this. I have not now in mind instances where the disease developed in a patient who brought it from the infected region whence he came. I mean instances where, after several weeks' absence from an affected place, the child was stricken with spinal paralysis.

I am still of the opinion that by intelligent treatment at the beginning of the disease, its worst effects may be warded off, or appear in only a relatively small proportion of cases.

To me, the simplest and probably the most effective treatment in the beginning of the disease, or as a preventive, is the internal use of ammonium salicylate. This remedy may be supplemented by the local use of carbolated petrolatum introduced into the nares, night and morning. The employment of immunized blood serum injected into the spinal canal has evidently been of great service. But the supply is necessarily limited and it should be only given by an expert and after a very careful examination of the blood donor by a physician of wide experience; otherwise, much harm may result. Obviously, this treatment could not now be given properly, or at all, in many country villages, or isolated regions. The treatment I have recommended may be used by any physician when first called to the case, would do no harm in any event, and might help save many lives, or at least might prevent the worst afterfeatures of the case. Even if it is not so curative as blood serum, it would supplement the latter, and whenever this could not be obtained, would be a saving help in time of greatest need.

The ammonium salicylate has been more valuable to me in the treatment of grippe than any other remedy that I have tried—and I still hope everything from its wider use if another epidemic of infantile paralysis occurs. I plead for it very earnestly, as both preventive and curative. To me, the daily reports from the hospitals of what the physicians are doing is very unfortunate, as they tend to keep alive a condition of great mental anxiety and dread which is not wholly justified by the facts.

Much of the treatment which has been employed in hospitals is experimental and how much of it will remain an acquisition of value is not yet known. Meanwhile, we should be loath to abandon a treatment which has proved itself so valuable, innocent, and simple in a similar disease.

42 WEST THIRTY-SEVENTH STREET.

PELVIC MASSAGE.

An Unappreciated Prerequisite of Success in Diseases of Women,

By FERDINAND HERB, M. D.,

Chicago.

During the winter of 1886-1887 a new and epoch making method of treating gynecological afflictions by means of massage was successfully demonstrated to the medical profession by Thure Brandt, of Sweden, who had devoted a lifetime of observation and study to the subject. The results he achieved in a number of test cases submitted to him by Professor B. S. Schulze, of Jena, at that time the most prominent gynecologist of Europe, were so remarkable that physicians throughout Europe took notice and began using massage in a great variety of woman's ailments.

As often happens in the case of a new method of treatment that holds out great hope in heretofore seemingly intractable cases, so massage in gynecology was overdone and abused. The consequence was that many physicians failed to get the expected good results. Naturally, but unjustly, they blamed the method. They did not consider that the inherent difficulties in the proper application of massage, the lack of experience in selecting suitable cases, and the utter disregard of existing limitations could, possibly, lead to no other end.

Gradually, however, conditions settled. As the outcome of much discussion and a thorough study, the indications, contraindications, and limitations of pelvic massage became better known and are now well established. With increasing knowledge the number of successes also increased until today a great many European physicians are using massage of the female pelvic organs as a routine measure with most satisfactory results and recommend it highly.

In spite of this fact, there are many physicians of skill and knowledge who tried massage and failed even in properly selected cases. They are disappointed and discouraged and disparage pelvic massage as a therapeutic measure. Among these are physicians of prominence and recognized ability. Why have they failed where Thure Brandt and others succeeded? So far, there has not been advanced a satisfactory explanation to clear up the situation, though it would be of great practical value to know the reason.

The very fact that pelvic massage has won a permanent place in the treatment of diseases of women and is successfully practised by many physicians is sufficient proof that the method itself is not at fault. Massage is, indeed, recognized and acknowledged as one of our best palliative or curative measures for the very same afflictions for which it is recommended in women, if such afflictions are at the surface of the body or where they are easily accessible. Here as well as there it is used to remove remnants of inflammatory conditions, to improve local circulation, or to free nerves, bloodvessels, or organs imbedded in, or distorted and displaced by cicatricial tissues, and has proved equally satisfactory in both instances.

If the method is not at fault, we must, of necessity, look to the physician for the cause of failure. With him, in fact, the trouble lies. It is due to the special requirements demanded of the operator. General massage requires comparatively little medical knowledge and skill and no special fitness, save physical strength and endurance. Pelvic massage, on the contrary, requires a high degree of knowledge and skill, but, above all, fingers sufficiently long to render the pelvic organs readily accessible to the masseur. It is this last mentioned requirement which has not received the attention it deserves as an absolute prerequisite to success in pelvic massage.

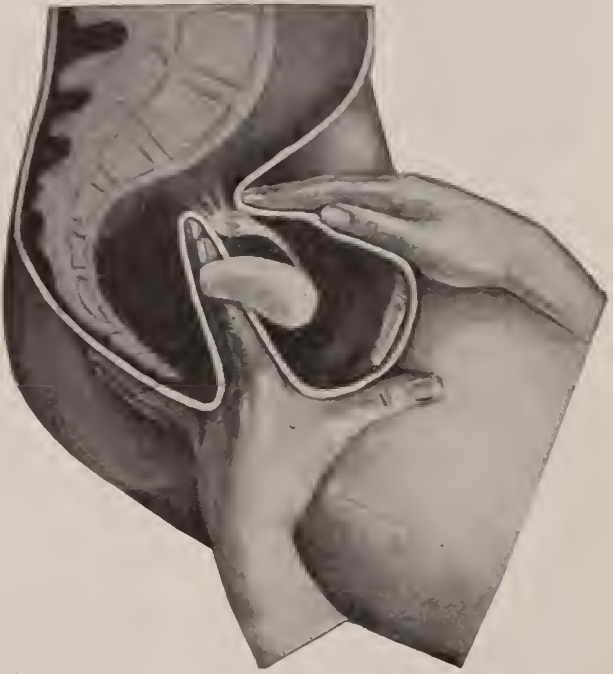

FIG. 1.—The fingers of the physician are sufficiently long to reach behind the ovary. In pressing the outer and inner fingers together, the ovary slips forward and the adhesions become accessible. They can now be stretched or broken, as the case may be, and the patient relieved.

Nothing is more obvious than that success in this important branch of the medical healing art must depend, first of all, on the ability of the physician to get freely to the organs from all sides. If he cannot thoroughly reach them, he, certainly, cannot successfully treat them. Let us assume that the doctor masters his anatomy, that he has sufficient experience and skill in examining women to enable him to outline clearly and definitely the pelvic organs and to make a good diagnosis, that he knows his pathology and the indications and contraindications of pelvic massage, and that he is fully competent to select the proper cases and to reject those not suitable for this kind of treatment. Such a doctor has all the qualifications to be, or to become an excellent gynecologist, or gynecological surgeon, but he will not be successful in pelvic massage if the length of his fingers falls below a certain measure. For a better understanding I refer to figures 1 and 2.

There are many other conditions beside that illustrated with which short fingers are not able to cope. Every sixteenth of an inch more or less means just so much more or less toward success or failure in treating women by massage.

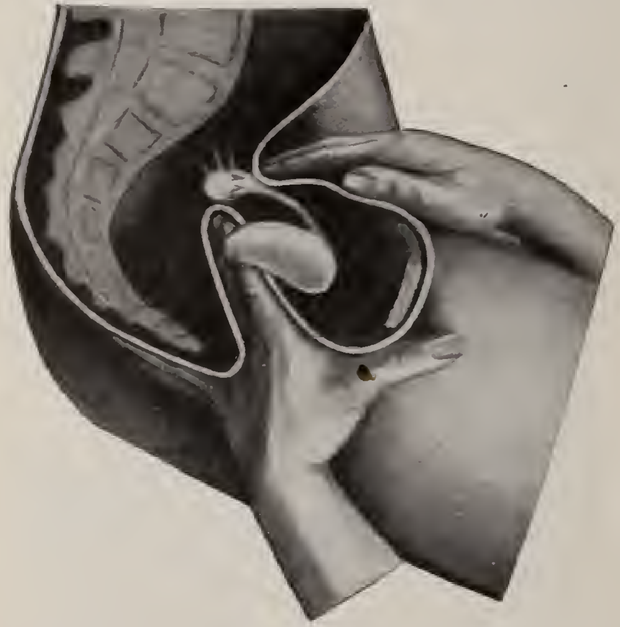

Fig. 2.—The fingers of the physician are not long enough to reach behind the ovary, though he may feel it and ascertain its site, size, contour, tenderness, and all other normal or abnormal conditions. In pressing the outer and inner fingers together the ovary slips backward and the adhesions become inaccessible. They cannot now be treated by massage, and the patient cannot be relieved, in spite of the fact that the physician may make a good diagnosis and knows well what should be done.

The varying length of the fingers of the different physicians will alone explain much of the perplexing difference of opinion apparent in the literature on pelvic massage. Other things being equal, the physician with long fingers will work easily, quickly, and without causing much pain. He is the one who succeeds and recommends massage. The physician with short fingers, however, will work under stress and difficulties and cause much pain. He is the one who fails, loses his patients, and decries massage. An investigation of the comparative length of the fingers of those for and against massage will, I am convinced, fully bear out this statement. My personal observations have been most convincing. Of course, radical surgeons, who have never tried massage, and who give consideration to nothing but surgical methods in the treatment of women, are not included in this estimate.

To provide for some more definite figures as to the length of fingers necessary for pelvic massage, I may state that the available length of my own middle finger is three and fifteen sixteenths inches. This is decidedly more than the average length, as confirmed by my personal observation. In spite of this decided advantage, I have occasionally realized that still longer fingers would give me even quicker and better results. Dr. Robert Ziegenspeck, of Munich, Germany, one of Europe's most ardent and successful advocates of pelvic massage, has fingers slightly longer than mine. He studied under Thure Brandt personally and had ample opportunity to observe the length of the fingers of this master. While I was assistant at his clinic, I heard Ziegenspeck remark a number of times that his—that is, Ziegenspeck's—fingers were midgets compared to those of Thure Brandt. Many times since I wondered how much of Thure Brandt's extraordinary success was due to the extraordinary length of his fingers and how much to his undoubted genius.

These disclosures are of no small moment from a practical standpoint. There is a large percentage of gynecological cases that can be successfully treated in no other way than by massage. I refer here to women with postoperative pelvic adhesions, if a second operation is out of question, and to those far more numerous women who are afflicted with chronic shrinking processes within the ligaments and their many distressing symptoms. Then there is a still larger percentage of cases for which pelvic massage constitutes not the only, yet the best and most successful treatment. If we would do justice to these cases, we must train physicians in pelvic massage in postgraduate schools. But pelvic massage is not easy. To avoid disappointment to physician and public alike, it remains essential to select from the applicants for tuition only those who have the proper physical as well as scientific qualifications, as has been explained.

30 North Michigan Boulevard.

INFLAMMATION WITH REGARD TO ITS STAGE.*

The Necessity of Treating It,

By John F. X. Jones, M. D.,
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I neither hope to revolutionize ideas about a subject so well known as inflammation nor shall I apologize for what may seem a return to first principles. The eagerness with which many in our profession have seized upon dogmatic formulæ in methods of treatment, has influenced me to the belief that pathological conditions are too often disregarded in the treatment of inflammation. I can no longer ignore the fact that, often, both in hospital and in private practice, stitches are removed after a certain number of days, not because their usefulness has ceased, but solely because Doctor So-and-so holds that on the seventh, eighth or what-not day all stitches should be removed. Irritatingly frequent are the instances of drainage tubes being removed from gallbladders, regardless of the bacteriological report on the bile. Why? Because Professor So-and-so states that on a certain day drainage must cease, and if it does not cease upon this sacred day, the drainage is not only harmful to the gallbladder, but personally offensive to Professor So-and-so. In like manner, cold or heat is often applied to an inflamed area regardless of the stage of the process because of the *ipse dixit* of some alleged authority. In other words, some of the members of our profession, when confronted with the problem of treating inflammation, instead of reasoning, What are the pathological changes in this tissue, say to themselves, How would Doctor X. treat this case?

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*Read at Pottsville, Pa., before the Schuylkill County Medical Society, May 2, 1916.

Facts are always facts, eternal and immutable, whether our knowledge of them be obtained in the laboratory or at the bedside. Whether our investigations are conducted upon rabbits and guineapigs or upon men and women, inflammation is always a definite process, consisting of certain stages. Define it as we will, inflammation essentially is, as Adami says, the response of tissue to injury. We may accept the definition of Sir John Burdon-Sanderson, who says that inflammation is "the succession of changes which occur in a living tissue when it is injured, provided that the injury is not of such a degree as at once to destroy its structure and vitality." We may concur in the belief of Adami that inflammation is "the series of changes constituting the local manifestation of the attempt at repair of actual or referred injury, or, briefly, the local attempt at repair of actual or referred injury;" the fact remains that inflammation is a mobilization against an attack on tissue.

Be the attacking force traumatic, chemical, malignant, thermal, actinic, or bacterial, the first act of Nature is to order active hyperemia to the region assaulted. Here capillaries, venules, and arterioles dilate and the blood current becomes more rapid with consequent increase in the quantity of *moving* blood in the inflamed area. We are now considering a real attack, as there may be no vascular dilatation after a trivial aggression, or, a slight irritation may even cause arterial contraction because of nerve stimulation. When, however, the assault on tissue is severe or sustained, active hyperemia is the first line of defense and the locality of the conflict looks red and feels hot. Here the action may terminate by active hyperemia completely driving off the invading irritant, or the battle continues for a variable time, when retardation takes a hand. The blood current now grows slower and slower in the venules, capillaries, and arterioles, the red cells occupying the axial current and the white cells lining the venule walls. The white cells are now seeking an opportunity to migrate into the perivascular tissue. Eventually the liquor sanguinis and the white corpuscles travel through the walls of the veins and capillaries, the red cells congregate in masses within these vessels, and if the affair goes on to stasis there is clotting of the remaining intravascular material. The perivascular tissue cells are phagocytes and, when irritated, enlarge and reproduce while the exuded liquor sanguinis clots. These cells multiply or die, depending upon the gravity of the invasion; or, the centre of a mass of perivascular cells may be killed off, while the periphery is multiplying. The result of connective tissue reproduction is the fibroblast, which forms fibrous tissue and disposes of the leucocyte.

If we now return to an earlier stage of the conflict and follow the fortunes of a valorous leucocyte, we find that, after he has penetrated the vessel wall, he joins the other members of his army corps in an attempt to surround and halt the invader. He may even penetrate into the enemy's lines and engage a bacterium in single combat. He may make a prisoner of a microorganism or pick up a fallen comrade in the shape of tissue débris; in either case he retires to the rear, away from the line of conflict. He may die on the battle field, in which event he quickly decomposes, while from his remains is liberated fibrin ferment which coagulates exudate. Should he escape this latter fate, his country, the tissue, will show its appreciation of his patriotic services by having him eaten up by a fibroblast.

That power which impels the white cells to the scene of the inflammation is called by the pathologist "positive chemotaxis" and, unfortunately, there are a few instances where the invading bacteria are so virulent that "negative chemotaxis" influences the leucocytes to fly from the inflammation. Usually, however, inflammation draws legions upon legions of leucocytes to the affected area, and each leucocyte not only possesses the ability to approach and encompass bacteria, but also furnishes enzymes highly destructive to the poisonous products of these microorganisms. In addition to this local manifestation, many inflammations cause a general leucocytosis.

Inflammation, then, no matter how defined, no matter where located, no matter how caused, is the resistance of Nature to an attack on tissue. Any treatment not based upon a conception of these tissue changes must be haphazard and utterly unworthy of the conscientious practitioner.

It is scarcely necessary to say that the first step to take in the treatment of inflammation is to remove, if possible, the exciting cause. I say "if possible" advisedly, because it might be extremely difficult, if not utterly impossible, to remove the exciting cause—the exciting cause of a black eye, for instance. The exciting cause, whether it be a splinter in the hand, a stone in the bladder, a bullet in the leg, bacteria in the tissue, or any of one thousand and other agents, is, if possible, removed promptly. This cause having been removed the further treatment is local and constitutional.

Two of the most important means of treating acute inflammation are rest and elevation. These means are applicable in all stages of the process. Nature gives us the cue to treat inflammation by rest when she causes muscular rigidity in the neighborhood of inflammation, in order to rest the inflamed part. Rest tranquilizes the circulation, lessens tension, and hence, pain; regulates the quantity of blood to the inflamed area; and prevents the dissemination of infection by allowing the leucocytes to form a circle around the diseased area. There is scarcely any exception to the rule of rest in the treatment of acute inflammation. The surgeon deflects the course of the stomach contents by gastroenterostomy in order to rest a pyloric or duodenal ulcer. Cholecystostomy is performed that the gallbladder, its ducts, or the pancreas, may have rest. A renal calculus is removed in order to rest the kidney; a stone in the bladder is removed to rest this organ. The chest is strapped in pleuritis to limit respiration on that side. An inflamed joint is splinted, extended, and perhaps placed in plaster, in order to secure rest. Splints are applied in fractures until Nature manufactures callus. Colostomy affords rest to the rectum invaded by malignant disease. Catheterization rests the bladder. Herniotomy gives rest to the structures constricted by the ring. Relaxation affords rest to inflamed muscles. Opium rests the inflamed bowel. The partial or complete exclusion of light from the eye is resorted to by the ophthalmologist in order to quiet inflammation.

With elevation we attempt to reestablish normal equilibrium in the circulation. When there is inflammation in the upper or lower extremities we raise the part. Who does not know that a toothache is aggravated by the recumbent position? We have all noticed the relief that elevation of the hand gives to the possessor of a felon.

In the first few hours of inflammation, when there are engorgement, high tension, and beginning effusion, local bleeding and the application of cold are valuable agents. In this stage, it matters little whether we bleed locally by means of puncture, leech, incision, or cut; but cold, except in the first few hours of inflammation, is positively harmful and certainly should never be used in the presence of infection.

Heat is rarely employed in the first stage of inflammation, because an amount of heat sufficient to contract vessels is usually very uncomfortable to the patient, even if it falls short of destroying tissue.

When inflammation is at its height and swelling is greatest because of effusion and proliferating cells, we are obliged to induce absorption, and for this purpose use such agents as astringents, sorbefacients, the douche, gentle massage, heat, and compression. While it is true that astringents may be beneficial in skin inflammations (certainly, lead water and laudanum give relief in erysipelas), it is open to debate whether these agents exert any influence upon deep seated inflammations.

This is as opportune a moment as any to discuss the much abused lead water and laudanum solution. Lead water and laudanum are used in the early state of inflammation as an evaporating solution to produce cold. Then why, when used in this stage to produce cold, is it so frequently covered up with wax paper, oiled silk, or rubber dam? These impervious materials, placed over the lint or gauze saturated with the solution, certainly prevent evaporation, inhibit the production of cold, and therefore defeat the purpose for which this lotion is employed. Again, if lead water and laudanum are used in the stage of stasis wherein cold is contraindicated, the lotion then *should* be covered by waxed paper, oiled silk, or rubber dam. The value of its use in the later stages of inflammation is questionable, but still, if it is used in these stages, it certainly should not be employed to produce cold where cold is contraindicated.

Saturated water solution of magnesium sulphate, especially valuable in orchitis; tincture of iodine, the astringent, sorbefacient, counterirritant, and germicide; nitrate of silver, useful in the treatment of mucous membranes; blue ointment, a splendid application over joints, tendons, glands, and bone inflammations; and the ubiquitous though odoriferous ichthyol—all have their merits and advocates and certainly play important roles in the drama of inflammation. These valuable remedies it would be a waste of time to dwell upon.

There is, however, one agent which we all use in the treatment of inflammation; a simple, mechanical means to which we all resort; an efficient remedy when properly used; a terrible force for evil when ignorantly applied—I refer to compression. When we apply compression to the inflamed part, by means of either the bandage or adhesive plaster, the additional support thus furnished to the bloodvessels and lymphatics causes them more readily to imbibe the effusion and in this manner to hasten absorption. We bandage the extremity afflicted with erysipelas, strap or bandage the leg ulcer, and bandage the joint which is the seat of chronic inflammation. In fracture the bandage controls spasm, reduces swelling, and relieves pain. If, however, the compression is applied with force a simple inflammation may be changed into a hideous gangrene. If we apply a firm bandage to the forearm and arm without including the hand, the latter is liable to become the seat of painful edema; if we compress the leg firmly without including the foot, painful swelling of the foot may result. The ends of fingers and toes, where possible, should be left exposed in order to observe circulatory changes. Fundamental as these rules may be, I have seen them disregarded frequently, and, occasionally, with results disastrous to the patient and embarrassing to the surgeon.

The douche, hot, cold, or alternatingly hot and cold, is frequently used in inflammation. If the inflammation is acute, the douche, unless extremely gentle, may cause great pain. Counterirritants alleviate pain early in inflammation and later hasten absorption. Massage is of great benefit in chronic inflammations, but must be used cautiously and lightly in any acute process. Never use massage where there is infection. Never use massage where there is thrombosis.

Upon the constitutional treatment of inflammation, a skilled therapeutist could speak for hours, but, fortunately, my limited knowledge of drugs will serve me to dispose of this part of the subject quite briefly. First and foremost, unless the bowels are already overacting, a purge should be given. This is a mere matter of plumbing. Before stasis has begun, some arterial sedative, such as aconite, may be administered; if given after stasis has been established, the arterial sedative will, of course, increase the stasis. Diaphoretics, such as Dover's powder, given at the beginning of the process, will remove toxic material and may curtail the inflammation. When the urine is scanty and high in color, diuretics, such as large doses of calomel and black coffee, may be given. Of course, anodynes and hypnotics may be necessary to relieve pain and induce sleep. Later, mercury and the iodides may be used in the removal of the products of inflammation. At any stage of inflammation a stimulant may be required; and, during convalescence, a tonic.

Coaltar derivatives, used solely for the purpose of lowering temperature, are, in my estimation, dangerous. Fever being the state in which the patient is burning up and making toxic elements within him harmless, why discourage his elevated temperature with antipyretics? Unless the high temperature is accompanied with nervous symptoms, it seems to me to be good practice to leave it alone.

There are times in inflammation when the old fashioned treatment of general bloodletting may be employed with great benefit. General bloodletting corrects stasis. If the patient is in his "youth, the glad season of life," if he is vigorous and strong, the inflammation acute, and the location involved vital, he may be bled to advantage during the first stage of the process. If, on the other hand, the patient is aged, feeble, and frail, the inflammation low, and the part affected unimportant, he should not be bled under any circumstances. Bleeding should never be resorted to in the later stages of inflammation or in cases where the face is pallid and the pulse compressible, soft, irregular, small, and slow. We should bleed when the patient's face is flushed and when his pulse is rapid, hard, full, and incompressible. Phlebotomy should never be performed upon a drunkard, a fat patient, a very nervous subject, or a victim of an epidemic, septic, or adynamic disease.

No discussion upon the subject of the treatment of inflammation can be conducted without reference to that extremely valuable method invented by Bier. As we know, Bier considered hyperemia a blessing in that it does away with the irritant causing the inflammation and brings nourishment, phagocytes, and bactericidal liquor sanguinis to the affected part. Stasis, on the contrary, reduces the resistance of tissue and may result in gangrene. By means of the rubber band and cupping glass, Bier induces venous hyperemia, and arterial hyperemia he produces by means of hot air. This method is useful in either acute or chronic inflammation.

These, briefly, are the more important agents used in the treatment of inflammation. In the preparation of this article I have followed, in the main, Dr. J. Chalmers Da Costa's chapter on inflammation in his *Modern Surgery;* for his permission to do so, as well as for his kindly criticism of this paper, I am deeply grateful.

Now the old question arises: "When shall we substitute cold for heat?" It is true that some surgeons employ heat in the earliest stage of inflammation, but, unless it is in the management of an inflamed joint by the hot air apparatus, heat is not to be recommended in the beginning of inflammation. In the first stage of inflammation the indication is to contract the vessels and, as has been stated, any temperature sufficiently high to cause this contraction is bound to be uncomfortable. We use cold, then, in the beginning of an inflammation and continue it certainly not longer than a few hours. We use cold before retardation has begun because we hope, by decreasing the amount of blood to the part, to prevent the process from reaching the stage of stasis. Now, if the process has already arrived at the stage of stasis when we see the patient, what is the sense in using cold? In stasis our purpose is to activate the stagnant or slowly moving blood, cause the exudation to be drunk up, stimulate lymph absorption, decrease tension, bring hordes of leucocytes to the part, and increase the ameboid activity of these leucocytes. All of these indications are met by a moderate degree of heat. Skin inflammations, of course, are not governed by these rules because most cutaneous inflammations are made worse when congestion is increased by heat.

Heat as an agent in the treatment of inflammation is more fool proof than cold. To begin with, cold in the only stage in which it should be used, the stage of active hyperemia, must be used continuously, because, if employed intermittently, there follows a reaction, and every time the cold producing agent is removed, this reaction will increase the hyperemia which we are striving to lessen. Now, if cold is used continuously, even in the active stage of hyperemia, there is danger of gangrene. This danger is particularly imminent if cold is applied to an old or feeble patient.

Why should cold never be used after the stage of retardation has begun? Because, in this stage, we wish all the leucocytes possible to migrate to the inflamed area. Heat brings leucocytes to the part. Cold drives them away. Because we wish to have *active* leucocytes. Heat increases ameboid activity, and cold prevents it. Because, in this stage, cell proliferation is eminently desirable. Heat increases cell proliferation, and cold retards it.

Where there is a bacterial inflammation cold should *never* be used, because, by keeping leucocytes away from the infected part, cold actually spreads the infection. Heat favors the formation of a protective barrier about the infected area, while cold prevents the tissues from defending themselves.

The fact that many surgeons apply ice bags to the abdomen in suspected appendicitis does not make this practice a logical one. In the first few hours of an attack of appendicitis, when the ice bag might be of use, the diagnosis has seldom been made, and the ice bag decreases pain and lessens rigidity almost as effectively as a dose of morphine. Hence the ice bag interferes with the diagnosis. Seldom, however, does the surgeon see appendicitis during the short stage of hyperemia. When the surgeon is called to see the case, there is more or less stasis. The ice bag increases this stasis, prevents the arrival of leucocytes, discourages the production of adhesions; in short, weakens resistance. I am convinced that the ice bag gravely increases the risk of gangrene. I have seen gangrene in the abdominal wall follow the prolonged application of the ice bag in appendicitis.

Inflammation must be treated with due appreciation of its stages, if it is to be treated intelligently. It is better to leave an inflammation alone if we do not handle it with due deference to its stage. Nature, if unhampered, may cure inflammation occasionally, but how can she accomplish anything if interfered with by one who defies pathology and repudiates his own experience.

Inflammation, as a subject for discussion, is old and trite. Thousands upon thousands of guineapigs, rabbits, dogs, frogs, pigeons, and other animals have been immolated upon the altar of the great god, Science, by the zealot who would penetrate into its sacred mysteries. Untold volumes (some unread) have been written throughout the universe by the patient pathologist who would initiate the eager neophyte into its rites. If, then, a plain, ordinary surgeon does not apologize for bringing such an antiquity here, it is because Agnew said that "During the year 1874, in the city of Philadelphia there was a total mortality, exclusive of stillborn children, of 15,424, of which number not less than 11,000 may be fairly attributed directly or indirectly to inflammatory complications"; and, while after forty-two years the number of deaths is naturally greater, the proportion of deaths traceable to inflammatory causes remains about the same.

1815 Spruce Street.

RECTAL OPERATIONS UNDER LOCAL ANESTHESIA.*

By J. F. Saphir, M. D.,
New York,

Assistant Surgeon, Rectal Department, O. P. D., Gouverneur Hospital; Visiting Surgeon, Diseases of the Rectum and Anus, People's Hospital, etc.

It affords me great pleasure to describe a number of patients representing a series of interesting rectal cases operated in at the Gouverneur Hospital under local anesthesia. All of these patients presented either transient cases, such as would ordinarily come into one's office unprepared for operation but requiring one, or individuals who had been sent to the clinic or hospital to be admitted for operation. All of these cases, under the local influence of quinine and urea hydrochloride solution, were relieved of their rectal ailments, feeling no inconvenience either during or after operation, and left the clinic immediately, each one to attend his or her regular duties or occupation the same day or the day after operation.

These cases are interesting for many reasons:

1. It proves that rectal conditions can be cured under the influence of local anesthesia.

2. The patients need not be confined to bed, and can go about their business immediately after the operation or the next day.

3. It proves that rectal operations can be performed in the clinic, or for private patients at the doctor's office.

4. The consent of many patients who require rectal operations, but who fear the word "hospital," and shrink at the idea of being put to sleep under a general anesthetic, can be obtained when they are convinced that they can be operated on under a local anesthetic without pain.

5. Patients suffering with pulmonary tuberculous, nephritic, or cardiac diseases can with safety be operated on under the influence of a local anesthetic.

6. Many patients cannot afford to be confined in a hospital or at home for ten days or two weeks or more, as is customary in operations on the rectum under a general anesthetic.

The business or society man often cannot neglect or give up his business or social duties for two weeks or more, for the sake of having his rectum looked after. Working along the line of least resistance, he falls into the hands of quacks through their skillfully worded advertisements, or resorts to the use of salves, lotions, powders, or suppositories, and often neglects going to his doctor for a rectal examination, for fear that an operation may be necessary.

7. From an economic point of view, especially for the hospital and for the city, rectal operations under local anesthesia prove to be a great saving.

The patients whose histories I present show what has been accomplished during the two months that this clinic has been in operation. Out of sixty-five new patients, fifty were operated on in the clinic under local anesthesia, who ordinarily would have been admitted to the hospital, would have occupied beds, each for a period of ten days or two weeks; this means a saving to the city of about one hundred weeks of food and medication during a period of two months; at the same time it relieves the congestion of the hospital, especially at this busy season of the year and makes room for the admission of more urgent cases.

Rectal cases in a general hospital have always been looked upon as minor surgical cases, of little importance, so much so, that the general surgeon on getting a rectal case, would usually hand it over to one of the house staff for operation. The house surgeon, owing to the inefficient amount of teaching or stress laid upon rectal conditions at the undergraduate school from which he was sent forth to practise the art of medicine and surgery, usually does the best he can; follows the description in his textbook, and discharging the patient after two weeks or more, is much surprised when the patient returns with the same complaint that he had before he was operated upon.

I have come across cases where the surgeon when told by his patient that he had what he termed "bleeding piles," took the patient's word for it, and without bothering about making a rectal examination, removed a few small bits of mucous membrane under a general anesthetic, kept the patient in the hospital for two weeks, and was surprised that that patient still had blood in his stools; and he was more surprised when by means of a proctoscopic examination, he had ample proof that that patient never had "bleeding piles" or any other kind of piles, but was suffering with a coloproctitis with ulceration.

I have had referred to me, a young girl of nineteen years, whose case was diagnosed as "bleeding piles," and which on examination proved to be a small round celled sarcoma of the rectum. I can report rectal abscesses kept in the hospital for two weeks, and all that was done was incision and drainage; when the patients left the hospital, the abscesses were still discharging pus, causing excoriation and itching and making the patient's life unbearable. Either a complete operation could have been done at the time of the first operation, or the patient might have been advised of the necessity of an operation for fistula at a future date.

These patients come to the clinic for relief every day, and I shall describe a number of them, who after having had two sessions and two operations at good institutions, were finally operated on at the clinic under local anesthesia, and were cured.

I do not wish to be misunderstood; I do not condemn hospitals or surgeons, but I wish to emphasize the importance of more frequent rectal examinations by the general practitioner as well as by surgeons and interns at the hospitals. I remember an interesting patient who was operated on for appendicitis at one of our largest hospitals; the complaint was bleeding at stool for the past one and a half year, a loss of twenty-eight pounds during that time, and pain in the lower half of the abdomen; and even in this case no rectal examination was made, although the woman was suffering with a distinct growth in the rectum reaching from one inch above the anal opening and involving the sigmoid, with an annular stricture which would not admit even the tip of the little finger.

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*Presented at the Surgical Conference of the Clinical Society, Gouverneur Hospital, January 21, 1916.

I wish to emphasize the necessity for more extensive teaching of rectal diseases in the undergraduate schools and colleges. I wish to emphasize the importance of sending out graduates of medical colleges who are able to cope with diseases and ailments of every day occurrence as well as with those of rare and infrequent occurrence. I wish to emphasize the importance of the establishment of a rectal department in every hospital and in every dispensary, as well as rectal teaching in every medical school and hospital.

Some of our best doctors still clip off the "sentinel pile" in a case of fissure ani, and feel that they are doing the right thing, and yet are surprised when the patient's sufferings are aggravated instead of relieved. Many physicians still grasp a thrombotic hemorrhoid and either ligate it or remove by Paquelin cautery, when all that is necessary is to incise and turn out the clot. Many are the patients whose ani and whose buttocks are daily painted with twenty-five per cent. or fifty per cent. silver nitrate solution for itching, by doctors who look upon pruritus as a disease rather than a symptom, when the patient is suffering with pin worms, or a proctitis with or without ulceration, or a blind internal fistula, or a polyp or hypertrophied papillæ, or internal or external hemorrhoids, when all that is necessary is the relief of the condition higher up which is causing the moisture or discharge, and hence the pruritus.

How many patients complaining of blood in their stools, and a feeling of fullness and discomfort in the rectum, are treated with salves and suppositories, are either purged with violent cathartics, or "doped" with opiates, are found later to have been suffering with some malignant growth, and neglected only because the doctor either did not insist upon a rectal examination or was afraid to soil his finger, or merely took the patient's word. To the lay mind, any trouble or inconvenience about the rectum, is looked upon as "piles," "open" or "closed" or "bleeding," and often physicians of good repute follow in the tracks of their patients, and make similar diagnoses. They are not to blame, for at the medical school from which they graduated, they were taught to look upon rectal diseases as piles, fistula, fissure, or abscess.

CASE I. Mr. R., aged sixty-seven years, a rabbi, suffering for fifteen years with protrusions from the rectum, and blood with and after stool, a fullness in the rectum and pain after stool, moisture and itching, who had been going the rounds among several doctors, who had given him salves and suppositories without relief, came to the clinic, and was found to be suffering with prolapsed and ulcerated internal hemorrhoids, polyp, and skin tags. Under the influence of quinine and urea hydrochloride 0.5 per cent. solution, as a local anesthetic, he was operated on; the prolapsed and ulcerated internal hemorrhoids and polyp were removed by ligature operation, and the skin tags were snipped off. Pressure was applied by means of a tight sterile dressing and T binder; the patient left the clinic, having had no pain either during or after the operation, attended to his vocation as before the operation, and came back every clinic day for aftertreatment. He felt well subsequently.

CASE II. Mr. L., aged thirty-six years, driver, was operated on twenty months ago at one of the large city hospitals for "piles," was in the hospital ten days, and again noticed the same trouble, also has noticed protrusions and itching. Examination revealed pruritus ani due to pin worms as well as skin tags. With a 0.5 per cent solution of quinine and urea hydrochloride as a local anesthetic, he was operated on at the clinic; his skin tags were removed. Saline irrigations were ordered twice a day for the pin worms. He had no pain during or after the operation, walked home, attended to his work, and came to the clinic every other day for aftertreatment.

CASE III. Mr. K., aged twenty years, noted a swelling about the anus three weeks ago, was operated on at one of our city hospitals, evidently for an abscess, was kept in the hospital for two weeks, and since his discharge, complained of a swelling, discharge of pus, and moisture. Examination revealed a perianal fistula due to a dermoid cyst. Under local anesthesia of quinine and urea hydrochloride, we incised the wound, opened up the fistulous tract, curetted, removed a bunch of encysted hair, and after proper drainage the patient was discharged, cured, after three weeks. He had no pain during or after operation, and was not kept from his work during the entire course of treatment.

CASE IV. Mr. K., aged thirty-nine years, has been complaining of pain, protrusions, and bleeding with stool for the past year, during which time he had been using salves and suppositories without relief. About one week ago, after straining at stool, he noticed a large protrusion, which was hard and painful, and which he could not return. Pain was continuous, and especially severe on sitting and on walking. On examination it was discovered that he was suffering from external and internal hemorrhoids and also a thrombotic hemorrhoid. He also was operated on under quinine and urea hydrochloride solution, felt no pain during or after operation, attended to his work the following day, and called at the clinic for aftertreatment.

CASE V. Mr. S., aged thirty-one years, newspaper man, had an abscess in the rectum about ten weeks ago, when he was operated on at one of our large hospitals, was kept there for ten days, but still had a discharge. About five weeks ago, he again noticed a swelling at the same place, and his doctor opened the swelling and relieved him of the pus. He had been having a discharge ever since. Examination showed that he had a fistula due to an ischiorectal abscess. He was operated on under quinine and urea in the clinic, felt no pain during or after the operation, and felt well afterward.

CASE VI. Mr. G., aged forty-six years, tailor, felt well until two months ago, when he noticed moisture and blood with stool, and itching, but no protrusions. Examination revealed a blind internal fistula, which was operated on in the same way as the previous cases with the same results.

CASE VII. Mr. L., aged sixty-one years, complained of bleeding in the stools for the past eight years. Had diarrhea for six weeks, had fifteen to twenty movements a day with a discharge of mucus, pus, and blood; had protrusions which could not be returned for the past week and which stayed out all the time; he had pain on sitting and on walking, and had lost weight. Upon examination, we discovered external and internal prolapsed and ulcerated hemorrhoids, as well as a coloproctitis with ulceration, also a thrombotic hemorrhoid. He was operated on under local anesthesia for the hemorrhoidal condition. And for coloproctitis, he was given cold starch irrigations in conjunction with irrigations of krameria solution, and internally, strychnine grain one thirtieth three times a day to tone up the muscular coats of the wall of the rectum. He soon felt well, gained in weight, had no blood or pus or mucus discharge from his rectum, had but one movement a day, and was again a fit member of society.

Case VIII. Mr. R., aged thirty-nine years, had been complaining of severe pain and protrusions for the past four years. Since then he had been operated on four times, the first time about four years ago. He now complained of burning, itching, continuous discharge and moisture, and a small protrusion. He passed no blood and was constipated. Examination showed a blind internal fistula, which we operated on under quinine and urea hydrochloride.

Case IX. Mr. DeP., aged twenty-five years, was well until four days ago, when after a difficult movement, he noticed a protrusion which was hard and painful, remained outside, and could not be returned; no blood, but severe pain on sitting and on walking. Examination showed a thrombotic hemorrhoid, which under quinine and urea hydrochloride was incised, the clot turned out. The edges of the wound were trimmed for proper drainage, a strip of moist gauze was inserted, a dressing and T binder applied, and the patient went home without having experienced any pain during or after the operation.

Case X. Mr. H., aged forty-four years, was operated on four years ago and again two years ago at one of our leading hospitals for abscess and fistula, and came to the clinic for the relief of a very annoying discharge about the anus. Examination showed a fistula. This was operated on under local anesthesia, same as the preceding cases, and he was cured of his fistula and had no inconvenience during or since the operation.

Case XI. Mr. C., aged sixty-two years, came to the clinic with external and internal hemorrhoids, from which he had been suffering for the past fifteen years, and without pain during or after the operation, was relieved of his condition under quinine and urea.

Case XII. Mr. K., aged thirty-six years, complained of pain, protrusions, and blood with stool. Was operated on four years ago at one of our city hospitals, where he was kept for two weeks; two years ago, he noticed a swelling at the same spot. He applied salves and hot applications, the swelling opened and discharged a quantity of pus and blood; he felt well except for a discharge until two weeks ago, when another swelling formed, which was painful on sitting, standing, and walking. He again entered the same hospital, where he was operated on and was discharged two days ago, when he came to the clinic for aftertreatment. On examination we found two canals connecting and discharging pus, which would have prevented healing and would in all probability have been the nucleus for a fistula and abscess formation at some future date. Under local anesthesia, we opened up these two tracts, and with proper drainage, effected a cure.

Case XIII. Mrs. T., aged twenty-eight years, felt well until four months ago, when after a hard stool she noticed first a burning then severe pain after stool, lasting almost all day; also noticed occasional blood after stool and a small protrusion. She was constipated and took cathartics. Had felt worse for the past two months. She complained of steady and continuous pain, especially after stool. Examination revealed a fissure ani in the posterior anal margin, with two long sentinel piles or skin tags. Under quinine and urea the sphincter muscle was cut to relieve the spasmodic contractions, the skin tags were removed, and she had comfortable movements afterward. She suffered no pain during or after the operation.

Case XIV. Mrs. F., aged thirty-five years, had been suffering for the past fourteen years with hemorrhoids, since her first baby was born. She now complained of protrusions and severe pain, especially after stool. She was afraid to go to stool for fear of the pain; she also noticed occasional blood on the paper after stool. Examination showed a fissure and a skin tag. This case was operated in like the preceding cases, with equally good results.

Case XV. Mrs. H., aged forty-three years, complained of "piles" for the past eighteen years, had noticed blood after stool, also had a protrusion which remained out all the time; she complained of pain on sitting and on walking, especially severe after stool, lasting about five or six hours. This case also was a case of fissure and skin tag, which was operated in like the previous case.

Case XVI. Mr. B., aged forty-nine years, had been complaining for the past six years of protrusions, moisture, and itching; his clothes were wet all the time, and he noticed blood on his clothes occasionally. Examination revealed prolapsed and ulcerated external and internal hemorrhoids and a polyp, which were operated on under local anesthesia.

Case XVII. Mr. F., aged forty-seven years, noticed bleeding with stools for the past two years; he had occasional itching and was constipated, had to take cathartics; he had protrusions, which returned by themselves after defecation. Examination showed external and internal ulcerated hemorrhoids, which were operated in under local anesthesia.

Case XVIII. Mr. G., aged forty-three years, was operated on at one of our city hospitals about one and a half year ago for "piles"; he felt well until three weeks ago, when he noticed severe pain in the rectum and some protrusions; pain chiefly accompanying defecation, no blood, no pus, no mucus. Examination showed external and internal hemorrhoids, which were operated on as in the previous cases, with equally gratifying results.

Case XIX. Mr. W., aged forty-five years, came to the clinic, holding a towel saturated with blood over his anus; he was stooping over, could hardly walk on account of the mass between his buttocks, and asserted that he was unable to walk or to work. He had been suffering with "piles" for the past five years, but this time they had come out and he could not return them. Examination showed a large mass of prolapsed and ulcerated internal and external hemorrhoids, the external hemorrhoids thrombosed, and the entire mass the size of a man's fist. Under quinine and urea hydrochloride solution 0.5 per cent., as a local anesthetic, he was operated on in the clinic, felt no pain during or after the operation, and went home, walking as comfortably as if he never had had rectal trouble.

I do not wish to be misunderstood, I do not hold that all rectal cases can or should be operated in under local anesthesia. There are some cases that need hospital care and treatment, but I do maintain that about seventy-five per cent. to eighty per cent. of hemorrhoids, external, internal, and thrombotic, rectal polypi, fissure ani, anal ulcers, dermoid cysts, tight or hypertrophied sphincter ani, skin tags, some cases of fistula ani, and some cases of prolapsus ani can and should be operated on under local anesthesia.[1]

237 West Seventy-fourth Street.

TREATMENT OF INEBRIATES.[*]

By Joseph McIver, M. D.,
Philadelphia.

INTRODUCTION.

Men have exhausted their skill, overdrawn on their imagination, and at times almost baffled the forces of nature in effort to find a specific cure for alcoholism. We have records to show that wine was used by the ancients even as far back as 5,000 B.C., and beer was drunk by the Egyptians. It would therefore appear that man has always craved something to drown his sorrows and to give him a sense of well being.

Alcohol has played an important part in the course of civilization. Its abuse has done a great deal of harm, but it is doubtful if its moderate use has injured any one, and as a therapeutic agent it has been of great value. As a political and sociological factor it has been of foremost importance.

Broadly speaking, alcoholism belongs to that great group of diseases known as intoxicants, for alcohol is a bacterial product. At times, alcohol may be used in enormous quantities and for a long period without showing appreciable deleterious effects. We thus know that it may cause death acutely, or it may bring about widespread degeneration through years of excessive indulgence. Pathological, i. e., structural changes extend to all tissues except bone, but its effects are specially marked in the nervous system. Mental manifestations with alcoholism as a factor are numerous and any type of insanity may be simulated.

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[1] During a period of seven months, or since the inception of a rectal department in Gouverneur Hospital, O. P. D., out of 176 rectal cases that presented themselves, 124 were benefited by rectal operation under local anesthesia with quinine and urea hydrochloride.

[*] Read before the Society for Organizing Charity of Philadelphia, April 11, 1916.

In order to consider this subject intelligently a few words about its causation and nature are indispensable.

Etiology. Almost since time began writers have tried to explain the causation of alcoholism. A host of theories have been advanced, but for our purposes the enumeration of the more important factors will suffice. Of these heredity and environment are foremost. It is an old adage that "drunkards beget drunkards," but of course almost anything may be proved by heredity. The influence of environment is so well known that it deserves no further comment. We are also familiar with such factors as the lack of education or improper education, incidental associations, etc. Of course, it must be remembered that one or more of these factors usually play a part in the cause. There are some whose fault may be attributed to one of these. There are others in whom it will require all to explain, and still others that will be difficult to explain on any basis.

The more we delve into this subject of the causation of alcoholism the more entangled we become. The problem is such a complex one and there are so many details to be considered, that a broad classification is necessary.

From the practical standpoint of treatment a few statistics collected from the Philadelphia General Hospital may be of interest.

During the year 1906 there were 12,141 admissions to the hospital, of which 1,061 were male alcoholics and 161 female alcoholics. There was a gradual increase in the total number admitted to the hospital with a corresponding increase in alcoholics, until 1915 there were 19,627 admitted, of which 2,279 were male alcoholics and 403 were female. Of course, these figures do not represent so many people, as many of them were admitted a number of times during the year.

In the past ten years there have been 155,041 admissions to the Philadelphia General Hospital, of which 25,830 were alcoholics, or approximately sixteen per cent. The proportion of male to female alcoholics varies from year to year, and has ranged from four to one to six to one.

Since the records of the male alcoholic ward for 1915 were the most complete, a somewhat detailed account of them is given.

The admissions by months ranged from 124 in February to 234 in December.

The average number of admissions that each patient has been accredited with during his lifetime was 8.1.

Six hundred and seventy-five were admitted for the first time, 225 for the second time, and 180 for the third. Some had been admitted a great many times—fifty-five, fifty-seven, sixty-two, sixty-three, seventy, seventy-six, eighty-eight, ninety-four, and 100 and more times.

The man who held the record with over 100 admissions has unfortunately landed in the insane department, where he will most likely spend the rest of his time. It will be interesting to know who his successor will be and what will become of him.

Of these patients 1,268 were single, 366 widowed, and 639 married.

The average age was forty-four years.

As to nationality, almost every part of the civilized world was represented—the majority, however, were natives of Philadelphia.

Philadelphia was the birthplace of 1,273; Ireland 381; Pennsylvania, outside Philadelphia, 197; New York 69; England 48; New Jersey 35; Maryland 29; Germany 26; Delaware and Virginia each 22; Scotland 18; Massachusetts 17; Canada 15; Connecticut 13; Ohio 12; District of Columbia 9; Illinois 8; Russia and Sweden each 7; Rhode Island 5; Italy, Austria, North Carolina, Arkansas, each 4; Minnesota, Kentucky, South Carolina, France, Cuba, each 3; New Hampshire, Hungary, Norway, Finnland, Poland, each 2; Colorado, Washington, Montana, Iowa, Missouri, Indiana, Texas, Mississippi, Nebraska, West Virginia, Wales, China, Denmark, Isle of Man, High Seas, each one.

The class of patients admitted to the alcoholic wards is variable, ranging from the lowest type of mentality on through the middle class, up to some who were once very bright men and women. Practically all vocations of life are represented, including clergymen, business men, bankers, brokers, druggists, lawyers, and physicians. The lower classes, however, make up the big proportion of the alcoholics.

TREATMENT OF INEBRIATES AT THE PHILADELPHIA GENERAL HOSPITAL.

At the Philadelphia General Hospital, alcoholic patients are admitted in the usual way. Some of them come in voluntarily; some of them are sent in by their friends, and a great many are brought in by the ambulance and police patrol. After admission they are sent to a special ward where they are confined to bed and receive treatment as the individual case demands. This method is continued and the patient remains in bed until he is well free from the acute toxic symptoms of alcohol. Some years ago a special provision was made whereby all alcoholic patients could be detained for thirty days after the first admission. When these patients are free from symptoms they are sent out to work around the institution. In this way they are kept under absolute restraint and control for one month. At the end of this time if the patient desires he may have his discharge. On the other hand, if he desires to stay longer he may do so providing there is room. The hospital authorities have been very lenient in this respect, allowing those who were really desirous of being cured to remain almost indefinitely and giving them every opportunity possible.

There are not a great many, however, who are anxious to stay longer than thirty days. These patients are all anxious to have treatment to aid in the recovery from the acute symptoms of alcoholism, but not many are enthusiastic about remaining in the institution for any considerable time.

The attitude of these people as a class is against all that is necessary to remain free from alcohol. I might say that the living conditions at the hospital are far better than most of them are accustomed to in their every day life. Hence this, I think, could not be given as a reasonable excuse for their leaving; what they really want are liberty and whiskey. The hospital has gained something in the way of labor by holding these people for a month. This has likewise been somewhat beneficial to the patient by keeping him away from rum for a certain time. The community and city have been benefited. Apart from this, little has been accomplished. I do not believe the hospital would even think of laying claim to one single permanent cure out of all these thousands of cases. I have reference here to the chronic alcoholics. From my own personal observations I am sure that I cannot recall one, notwithstanding the fact that many of these cases had remained in the hospital for months or even years and had been brought into the best physical condition. As soon as opportunity presented itself, they became intoxicated. As just said, many of these people had been kept for months and some had been so faithful to their duties that they were placed on the payroll. Some would last for six months or a year, but usually one pay day was all that they could stand. They go on a spree until the money is gone and then back to Blockley to do another thirty days. And so the cycle keeps up until after a while the passageway through which the alcoholic enters and leaves the hospital becomes so smooth he can stay neither in nor out of the institution.

There are a great many who belong to this class who are commonly known as "old timers." The majority have spent the greater part of their lives between the House of Correction and the Philadelphia Hospital. They are working on a stone pile in Holmesburg one month and carrying a stretcher in Blockley the next.

CLASSIFICATION.

Broadly speaking, people who use alcohol may be placed in one of about three classes, namely: 1. The moderate drinker; 2, the excessive drinker; 3, the total inebriate. It is to the care and treatment of the inebriate that I wish to call attention.

PROGNOSIS.

Ordinarily, patients recover from an alcoholic debauch within a few days to a week's time. The various forms of mental disturbance and other complications always delay convalescence and many times render the outcome grave. As to the permanency of the results, a great deal depends upon the individual case. The whole thing is that the majority of these people do not care to stop using alcohol. There are some, however, who are really sincere in their efforts and they should not suffer on account of the insincerity of the greater number.

That there has been for many years a great demand for a rational, workable plan of caring for these perplexing cases every one will admit. That this demand is increasing day after day, and year after year, is evident.

The various so called specific cures have indeed been a great handicap, because they gave people a false sense of security. It was only natural that these so called cures would come out and be lauded by a great many, for the demand was so great. Many fell victims of these fake treatments and many of the promoters made immense sums of money. That many of these people suffered and paid dearly, I am sure, but as for the actual good they derived from the treatment I am somewhat doubtful. My own personal experience at the Philadelphia General Hospital would lead me to be somewhat skeptical regarding the very high percentage of permanent cures reported by some institutions devoted to the care of alcoholics. I am quite sure that there is no drug nor combination of drugs which will relieve the obsession for alcohol or opium.

TREATMENT.

To care for these patients only until the acute symptoms have subsided will only be a temporary aid. To expect to free them of the alcohol habit in a few days or a week's time is absolute folly and involves a useless expenditure of time and money. What they need is institutional care where they can be kept for months and years.

All subjects of inebriety should be removed from their present environment to an institution at least for a time. Here they should be kept under restraint and control until it is considered safe by the physician in charge for them to go.

An institution for the care of these cases should be situated, preferably, in the country. The buildings should be of modern structure with plenty of light and ventilation. The cottage plan is a very good one in order to make it as homelike as possible and at the same time permit proper classification of patients. A farm and industrial plant should be provided to afford employment for the inmates. By this means each inmate could be given work fitted to his or her ability. They should be thoroughly impressed with their weakness and taught that total abstinence from alcohol is the only course for them.

As to how long these patients should remain in the institution, a great deal depends on the individual case. I should say not less than three months for the mildest type, and some will have to be kept for a year or more, and it is doubtful if some would ever be safe in facing the outside world.

When these people leave the institution they should seek new associates and new surroundings. They should start life anew and engage themselves in some active work fitted to their ability, keeping ever in mind their weakness, at the same time remembering that anything short of total abstinence is sure to prove detrimental and will in all probability be the beginning of their downfall.

If we could only impress these people with the seriousness of their weakness and teach them how to live, the problem would be solved. Unfortunately this is extremely difficult and many cases, I am sure, are utterly hopeless.

The benefits to be derived from a plan of treatment such as I have outlined are self evident. The difficulty lies in putting it into effect.

The value to the patient would be inestimable. He would be more than self supporting and become an aid to his family. The procreation of his kind would be largely prevented. From an economic standpoint, the help to the city and country at large would be marvelous.

The alcohol question will never be solved on a moral basis, but the time is coming when it will be solved and economy is going to be the main factor. The time will soon be at hand when industrial concerns will no longer employ alcoholics on account of the increased risk, and the whole thing will simply be a survival of the fittest.

CONCLUSIONS.

The main causative factors of alcoholism are heredity, environment, lack of education, and incidental association. A combination of these enters into most cases. For the past ten years sixteen per cent. of the patients admitted to the Philadelphia General Hospital were for the alcoholic wards. Practically all vocations of life were represented, but the lower classes made up the largest proportion.

The statistics before given would lead one to be somewhat skeptical regarding the very high proportion of permanent cures reported by some institutions devoted to the care and treatment of alcoholics.

I am quite sure that there is no drug nor combination of drugs which will relieve the obsession for alcohol or opium.

Institutional care with absolute restraint and control for an indefinite time seems to be the most rational plan of treating inebriates.

Broad and Arch Streets.

ACUTE MIDDLE EAR SUPPURATION.*

Some of Its Complications.

By John J. O'Brien, M. D.,
Schenectady, N. Y.

Last winter and this, mainly as a complication of grippe, there were many cases of middle ear infection, most of them going on to suppuration. The onset was nearly always ushered in with intense pain, but in some patients this was conspicuous by its absence. It might be well in about all cases of illness, except where the symptoms are definite, to examine the ear drums. For rapid inspection an electric otoscope is excellent. If the examination takes more than a minute or two, it would certainly be neglected by the man who makes a dozen or more calls a day. The information obtained in a few moments will inform and help in diagnosis and a more effective therapeusis. It is well to keep in mind that any ear may have been the seat of prior inflammation resulting in a modification of the anatomical picture; but after repeated use of the otoscope it becomes fairly easy to determine the present from the past. Great stress is laid, by teachers, on the bulging of the tympanic membrane as an indication for incision. There are many cases where there is no apparent bulging with resulting error if a free incision is not made. This too yields to practice, and after a little will seldom be overlooked. A somewhat different case is where the tympanic membrane is bound to the inner wall in one or more places by adhesions. The free part of the membrane may then form one or more pus pockets, each of which should be incised. When pus is suspected in the middle ear, free incision of the drum is imperative, if we are to give efficient service.

This little operation is simple, easily and quickly performed, and for relief of the pain nearly always magical. It can be done leisurely—therefore, well done—without any pain by using ethyl chloride anesthesia. No assistant is needed. Spread a piece of gauze, or napkin over an ordinary chloroform wire mask. Have the patient in a convenient position. Apply the mask and spray the ethyl chloride on it. In a minute or two the patient is unconscious. Do the work, and two or three minutes later he is wide awake. The opening is safest made in the posterior half of the drum and may reach from near the top to the bottom. If a sickle shaped blade is used, when the bottom is reached, if the point of the knife is turned back and up in withdrawing, a V shaped incision is made. This seems to prevent, or rather to retard too rapid healing of the wound and makes for better drainage; and free drainage in nearly all cases leads more or less rapidly to resolution. As an aid to this, frequent irrigation with normal salt solution or a diluted Dobell's solution is well worth using. Follow by filling the canal with a twenty per cent. organic silver solution. This will often be helpful. A copious discharge will sometimes rapidly diminish by using one in 2,000 mercury bichloride solution in place of the silver. If after a couple of weeks progress is not marked, an autogenous vaccine is valuable. When, however, all are of no value, the tympanic cavity should be drained through the mastoid. The latter is always imperative in the cases that indicate by the clinical course, symptoms, or both, mastoid, meningeal, inner ear, cerebral, or cerebellar involvement. Any one or more of these is of the gravest importance. In most cases they are not easy of recognition. They must be diligently sought and combated decisively, or often the patient will perish. Owing to the anatomical structure of the tympanic cavity, pus in the latter easily flows into the mastoid, and perhaps in all cases of middle ear suppuration the mastoid is infected. It is, however, only in the event of nonresolution that operation is indicated. The patent mastoid infection with pain, tenderness, edema, especially over the tip, all can recognize. We should sadly err, however, if we waited for these, for they all may be absent, and at operation the mastoid may be found filled with pus. In these cases judgment is formed on a recent or continued middle ear suppuration combined with the essential fact that the patient is not well, and is not getting well. A leucocytosis is confirmatory. Epidural abscesses seldom give symptoms and are most often diagnosed at operation. When there are symptoms, they are, tenderness over the site of the abscess and localized headache. In otitic suppuration the pulse much more often than the temperature calls attention to the absorption of toxic material. It is usually accelerated while the temperature may be normal, sometimes subnormal. Given a case where there had been earache nearly always with, but sometimes without discharge, increased pulse, a moderate leucocytosis, and the patient ill, the mastoid should be opened and tympanum drained. The rapid recovery such patients make is indeed very gratifying.

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*Read at the February meeting of the Schenectady County Medical Society.

CASE I. Such a condition obtained in a child of four and a half years. A month prior to being first seen she had a severe pain in her left ear. It lasted all one night and part of the following day. From this time she was off edge—did not eat nor play with zest, and lost weight, although she walked a mile and a half to my office. Examination of the eyes, ears, mastoids, and adjacent parts showed nothing abnormal. There was no tenderness anywhere, but there was a leucocytosis of 11,000. The child neither looked well nor acted well, so on her appearance, the story of the earache without discharge, and the increased white cells, a diagnosis of suppurative mastoiditis was made. This was confirmed at operation, but in addition there was a necrosed area the size of a dime on the skull over the posterior fossa with an epidural abscess. The child was well in two weeks.

CASE II. A somewhat different phase of this disease occurred in a young engineer. He had a double otitis with violent onset. Both drums were promptly and freely opened. The discharge was copious. The patient was very ill for a week, when the drainage gradually decreased with all around improvement. Six days later, the ears were dry, and in another five he returned to work, although not quite himself. The feeling of want of snap deepened, he was not gaining in strength, and his appetite decreased. His only complaint was that there was something the matter for he "did not feel right." His temperature and pulse were normal; moreover, there was nothing about either ear or the adjacent tissues that would suggest a lesion. So on the appearance of the man, his failure to come back, and the leucocytosis, the left mastoid was opened and found filled with pus. In two weeks he returned to work, and has been well since.

The most dangerous, most fatal, and most difficult successfully to combat, are the vestibular, meningeal, cerebral, and cerebellar complications of otitic suppuration. The first can be localized with reasonable certainty, the others can be diagnosed—sometimes. To determine accurately the site of an abscess is not an easy matter, at times impossible, unless symptoms arise that point to the impairment or suppression of a known cerebral or cerebellar function or functions. In any of the foregoing there is usually much headache, often violent, nausea, vomiting, and dizziness. The most distressing attacks of the latter are present when the inner ear is invaded. The suppuration in the middle ear sometimes produces a serous labyrinthitis that may subside, leaving the organ undamaged. On the other hand, when pus enters the inner ear, the case becomes desperate. Nystagmus is a constant symptom, which at first is usually toward the affected side. It diminishes with the subsidence of the inflammation in the serous forms: in the other it ends abruptly and with it the hearing. It is always an indication of a grave condition. The symptoms in intracranial abscess run from the mildest to the most violent. If the abscess can be localized and drained, the prognosis is not hopeless as the following case demonstrates:

CASE III. A school girl of fifteen years, never over strong, suffering for years from headaches, had a severe pain in the left ear. After a night and part of the following day, the ear began to discharge, the pain subsided, and she was again comfortable. This frail girl's mental and physical vigor gradually decreased with a continuance of a scanty ear discharge. Her mother gave little care to the latter and casually asked the doctor for a tonic for her daughter. The doctor suggested that the cause of the girl's ill health probably lay in the discharging ear. This was six weeks after the onset. The suggestion was received with surprise, but acted on. Examination revealed no mastoid tenderness, but much creamy pus in the external canal and a small perforation in the lower posterior quadrant of the membrana tympani. Two days later, there was much less discharge, but some swelling and tenderness over the root of the zygoma. A week elapsed; the canal was dry, the perforation closed, and the tenderness and swelling over the zygoma were gone. The ear was apparently normal and so continued. She returned to school, and during the afternoon of the second day in school, while in a dry goods store, she had an attack lasting about five minutes, in which she was alertly conscious of all about her, but could not recall a single object. Two days later, in the schoolroom, she had a similar but more severe prolonged amnesia. She got home at six o'clock and went to bed. The next day she was much prostrated, temperature 102° F., pulse 130; she vomited many times and had severe left temporal pain. Ear and eye examination negative. The symptoms in a few days subsided somewhat and a consulting neurologist saw nothing, at this time, of consequence. The improvement was marked for the next four days; good appetite, freedom from pain and discomfort, and fair bodily vigor. On one of these days, for half an hour, her right arm, leg, and half of her tongue were asleep. Fourteen days after the initial amnesia, in the morning, a headache of steadily increasing intensity developed and the vomiting returned. These continued, with remission, but never wholly ceased for six days. The temperature was 100° to 101° F., pulse 95 to 105. She was now very ill indeed. During these anxious days, her mother noticed that the girl, when she awoke, was completely bewildered and much annoyed, for she could not name the thing or things she wished. The mother presented one thing after another until the desired one was reached, and even then the patient could not recall its name. Twenty-three days from the onset, Doctor Gordinier saw her. She had an intense pain, a little above and somewhat in front of the left ear. When the pain increased, it radiated to the opposite side and she would vomit. The internal and external ocular muscles, optic nerves, retinas, and bloodvessels were negative. All the superficial and deep reflexes were normal, except the patellar, which were absent, and the tendo Achillis was much diminished. Kernig positive each side; MacEwen's sign absent, no vertigo tremor nor nystagmus. Hearing the same as prior to her illness. The jugulars emptied regularly. She read with ease, intelligently, had no motor aphasia, but did have a slight verbal one. She recalled without effort a dozen familiar things, but could not recognize a knife or shoe horn; yet after studying them and hearing their names, she nodded assent. The pulse was 60 and regular, the temperature subnormal mornings and 99.6° evenings. Blood and spinal fluid normal. Von Pirquet negative. The next day the headache was less and the vomiting more, with photophobia and diplopia; but the optic papillæ were not hyperemic. Hearing hyperacute. From the symptoms Doctor Gordinier made a diagnosis of subcortical abscess of the left temperosphenoidal lobe.

On January 31st, Doctor McMullen trephined the skull an inch and a quarter above Reed's base line and an equal distance posterior to the external meatus. The dura bulged somewhat, but did not pulsate. It was opened. But it was only after the cortex was incised that the abscess discovered itself by yielding about four drams of thick yellow pus. Three days after the operation, a double optic neuroretinitis gradually came on. The discs were elevated 1.5 mm. This continued for more than two months, and for a day or two she had a slight ptosis of the left lid and a decided diplopia. Mornings, on awaking, she had a frontal ache that gradually subsided. The amnesia was much greater than before operation and continued even after she was up and about, in all about six or seven weeks. She miscalled figures, and pictures in the fashion books often had no meaning for her at all. Three months after the operation, all the symptoms were gone. The hearing was perfect and with her high hypermetropic astigmatism corrected she had vision of 20/10 in each eye. There was no contraction of the visual fields for form or color, and although the neuroretinitis was severe and of long duration, it has left no discoverable lesion of the retina. During the Christmas holidays the patient had a sudden convulsion with loss of consciousness, two weeks ago she had another, and yet one more Sunday morning.

CASE IV. A less happy ending occurred in the case of a man of forty years. On a Friday afternoon he felt grippe coming on, and remained in bed the greater part of the following day. Sunday evening he had a sudden violent pain in his left ear. He called his doctor. Monday, the ear began to discharge and the pain subsided. He now suffered a severe headache with nausea, vomiting, and marked dizziness. When not in bed he had to hold on to the furniture to keep from falling. This continued all the week, by the end of which he sat up. The following week, he was little improved, except that the headache and nausea had gone. He continued dizzy, but had a fine appetite, and said he was all right but for his head; this felt queer. After dinner, Thursday, he walked outdoors for three quarters of an hour, returning at 3.30 p. m.; he ate a good supper and went to bed at 6.30. He now complained of an intense headache. At 7.30 his wife found him unconscious and he so remained until death, twenty-three hours later and exactly two weeks from the onset of his illness. The writer saw the patient six hours before death. He was comatose, but retained the pupillary reflexes. Examination of the left ear discovered a small opening near the centre of the drum through which pus was coming. There was much pus also in the canal. The right ear drum was somewhat inflamed, especially at the top. It was incised and a considerable quantity of seropus flowed from the middle ear. There was no edema over the mastoids or cranium. The retina, papillæ, and vessels were normal. A diagnosis of intracranial abscess was made, but its location was indeterminable. Eight hours later, at autopsy, an abscess, one inch in length by a half inch in width, was discovered in the right lobe of the cerebellum. The violence of the symptoms in the left probably masked those of the right ear. No notice, therefore, was taken of the inflammatory process in the right ear. This was very likely infected from the onset, for he complained to his wife, the second or third day, that he was deaf in this ear. The course of the infection was probably through the labyrinth along the acoustic nerve to the posterior fossa. The pathological process in the cerebellum gave rise to the headache, nausea, and vomiting, and was looked upon by the patient and family with little concern. It was the same with the girl (Case III).

This is, in a general way, an index of the appreciation of values the public gives to suppurative otitis media. It is only when disaster results that this very common and very dangerous disease assumes its true perspective. These cases suggest at once some of the dangers, perhaps the difficulties of the management of suppurative otitis media. Luckily, out of the great number of these infections, nearly all go on smoothly to resolution. When, however, complications do follow, they are often among the most formidable. Just how and when the disease is extending in any case is not possible to visualize. The onset of the double choked discs, in the case of the girl after what was even more than a decompression, is remarkable, for this is the procedure after the discs choke for their relief. The long continued inflammation of the optic nerves with complete resolution, is also of interest, for such conditions are usually more or less fatal to vision. Then, too, the epileptic seizures eleven months after operation, are not without interest. From a study of these and similar cases but one deduction can be drawn: that all cases of middle ear infection demand the most careful watching.

11 LAFAYETTE STREET.

THE WAKE OF THE WASSERMANN TEST.

By JAMES CABELL MINOR, M. D.,
Hot Springs, Ark.

At steady and increasing speed the Wassermann test plies the waves of the sea, lues venerea. Is this craft a devil's plaything for inquisitive doctors, or is it a boon to humanity? Think of the wretches it leaves in its wake! Should patients with past history of lues venerea be apprised of the findings in all cases of the laboratory when the Wassermann reaction is obtained? I say no.

It is no more necessary to reveal to our patients our laboratory findings than it is to attempt to explain to them the physiological action of the drugs or remedies we employ to treat the malady. We *know* as little of the accuracy of the one as we do of the other. Yet, we all do it.

Laboratory tests are invaluable to the doctor in directing treatment, and soothing and quieting the psychic temper of the patient, but it is for the doctor and the doctor only to reveal to the patient the findings of the laboratory, and it is for him to rate the values of the tests and make the revelation in the most delicate way at the proper time. I do not believe we should announce to patients laboratory findings and by no means permit the uncanny, unintelligible, confounding symbols to be handed them to ponder and brood over, for they do not and cannot fairly interpret such reports.

In the past few years it has pained me to witness in apparently healthful and useful and happy men and women the baleful effects of the laboratory reports bearing the uncanny four plus wireless from the Wassermann. I could cite a hundred patients on whom the Wassermann "wireless" has had disastrous effects according to the personal feelings and belief of the patient.

I will mention here only three distressing cases wherein ignorance was bliss.

A prospective groom comes on the stage in the doctor's office. He weighs 169 pounds; is built like an Apollo, he is athletic, a golfist, rider, social and business leader, of moderate habits, commands an enviable position in a big concern, he is happy and care free. Physical examination reveals no blemish either functional or structural (except that there is inequality in one or more of the reflexes). He carries life insurance in one of the old line companies. His doctor at home has told him if he had a daughter and they wanted to marry they could get his free consent.

Said he to me, "Doctor, I am to be married next month, and I recall that about twenty years ago I had a little sore, and the old doctor told me to be on the safe side and take treatment. I did so. I have never had the slightest trouble or blemish since, but in my State they may require a Wassermann before issuing the license. Will you direct one for me?"

"Sir," I replied, "I have examined you carefully for all signs or symptoms of latent syphilis; I find you in excellent physical condition. Your resisting power to the ravages of any disease is perfect. Why should you be in this splendid trim if there remain in you harmful elements of the disease? Why should it militate against your procreating average children any more than your having had years ago typhoid fever or diphtheria? If you were now in a low state of vitality from past or present syphilitic infection, or from typhoid fever or tuberculosis or alcoholism or any other systemic affection, I would seriously object to your marriage. You can do as you please. I do not approve of your having a Wassermann test." But twenty-four hours afterward, the Wassermann test read four plus. A different human aspect was presented. A few days later, he was pale and dejected, disgusted. His appetite was gone, his nights were sleepless; I was forced to tell him that he should take up the specific treatment.

He lost ten pounds in weight and became a pitiable object physically. He left; "got a telegram, got to go home, things not going right." And indeed they have not gone right with that fine fellow. In despair he is seeking the 606 and spinal puncture artists. No wedding bells! That "glass of fashion," that "mould of form," that "observed of all observers" has become a recluse in a cell of misery.

And here is what happened to a bride-for-the-second-time, who in all candor before the wedding told husband number two what husband number one had done for her fifteen years ago. The two came to the office happy and in high spirits; both were enjoying golf and horseback riding as a daily sport and were on the ballroom floor in the evenings. She was a picture of health. "Doctor," said she, "we are here to enjoy the climate and the baths, but while here at your famous resort à la Aix-la-Chapelle, I should like to make sure that I am perfectly free from that horrid disease of fifteen years ago, so I wish you would direct a Wassermann test. I have always doubted my having it at all." I made a careful examination of the woman. "My dear madam, why chase up something ugly as long as your beauty and splendid physical condition do not at present reveal disease either to you or to me? I have examined you and find no reason for disturbing Nature's admirable work. Why not just go on as you are in your present healthful and happy condition? I object to your having the blood test made." They went, however, to a reliable laboratory, and in eighteen hours received the fateful four plus message. They gave up golf, riding, and dancing. They have quarreled since and separated. She returned to her estates in England. He lives at a club in New York.

An elderly gentleman beaming with the satisfaction begotten of a successful business career, and feeling with just pride that he and his wife and charming grown daughters could now enjoy the fruits of his labors, was prominent on the golf links, the ballroom floor, and equestrian fields. His "foot slipped some thirty years ago," so he told me he wanted to have the satisfaction in his declining years of knowing that he was leaving his wife and daughters above reproach. I declined his invitation to direct a Wassermann, but he found a good laboratory and the real four plus stuff in a few days. When he came to me again he was pitiably dejected, became morose, apathetic, ambitionless, and soon left for his home a sadder but wiser (?) man. There are laboratories in Hot Springs, Ark., reliable perhaps as to findings, but I know of only two chemists who refuse to give the patient the report or discuss it without permission of the doctor.

This article is intended and offered simply as a suggestion to doctors and chemists to be more careful and delicate, hereafter, in giving to the patient the gruesome tidings from the Wassermann.

306-307 Dugan-Stuart Building.

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Contemporary Comment

A Charity Endowed in Lord Kitchener's Name.—An appeal for a National memorial fund to commemorate the late Lord Kitchener was made by the Lord Mayor of London on July 14th and met with an immediate response, a sum of £18,000 ($90,000) being contributed by noon the following day, says the *Canadian Medical Association Journal* for September. The income from the money thus obtained is to be devoted in perpetuity to providing for officers and men of the Royal navy and army who have been disabled and whose pecuniary circumstances preclude them from obtaining such attention and comforts as they need. A portion of the fund will be applied immediately to the equipment of a home for disabled officers for whose assistance nothing of a permanent nature has yet been considered. It has been the desire that the memorial chosen should be permanent and should perpetuate Lord Kitchener's name for all time and that it should be devoted to some object in which Lord Kitchener was known to be particularly interested. No more fitting object could be found than the welfare of the King's forces.

Enormous Loss from Typhoid Fever and Malaria.—The *Pacific Medical Journal* for September, 1916, makes several citations from a recent address by Senator Joseph E. Ransdall, of Louisiana, on Rural Health, America's First Duty: "The estimated economic loss which our nation suffers each year from typhoid fever and malaria alone aggregates $928,234,880, leaving out of entire account the sorrow, the unhappiness, the misery, and the inefficiency which follow in their train. The greatest asset which our country can have is the healthy American citizen, and valuable as it may be to increase the health of live stock and vegetation, it is of far greater importance that we throw every possible safeguard about the health of the man who is responsible for that live stock and vegetation. Over 900 million dollars lost every year! A sum which is sufficient to put our country into a state of preparedness equal to that of any nation in the world, enough money to give us the largest navy afloat and the most efficient army which the world has ever seen, is annually offered up as a sacrifice to two diseases which are entirely preventable. Enough money to pay the annual expenses of every college student in the United States is thrown away every year." Senator Ransdell estimates the total loss from typhoid fever at $271,932,880, and the loss from malaria at $694,904,750 per annum; the total per capita loss from these two diseases being $9.46. By comparative estimates it was shown that the United States Government appropriated $5,016,175 for the investigation and prevention of the diseases of animal and plant life and only $1,917,566 for the investigation and prevention of the diseases of man.

Editorial Notes and Comments

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FOCAL INFECTIONS.

For many years it was thought that we were well acquainted with bacteria and their vagaries, but recently we have discovered that there remains much to be learned. Of the various activities of bacteria the most interesting at present is that of the so called focal infection. By this is meant a small, more or less quiescent point of disease, which although it causes no local disturbance, gives rise to symptoms elsewhere in the body.

Probably the most important of these manifestations is the involvement of the various joints of the body. If we pick up our textbooks to read about arthritis, the chances are that we shall be much discouraged, not only by the unfavorable prognosis, but also by our inability to determine the cause. Since the work of Rosenow and others, however, we are fast realizing that a small collection of bacteria may be responsible for the joint condition, and we also are discovering the fact that the only way to accomplish much good is to attack the primary focus.

At present the capable physician is no longer content to give antipyretics, in expectation of a miraculous cure. If a patient now gives a history of chronic and painful joints, the first thought of his physician should be focal infection. To determine the presence or absence of such a condition is not always an easy task, and outside aid, particularly the Röntgen ray, may have to be called upon. There may be a chronic gonorrhea, the tonsils may be diseased or, what is very common, there may be infection at the roots of the teeth. This last is a frequent condition and may be present without local indications. It is also interesting to note that many inflammatory lesions of the eye are directly referable to dental infections. This has long been recognized by the laity, but the idea was considered to be mere superstition by the medical high priests.

After removal of the focal infection the patient's rapid recovery, in many instances, is little short of marvellous. In most cases no farther treatment seems to be necessary, the joints cease to be painful, and the convalescent goes on his way rejoicing.

That bacteria in the foci cause the distant lesions has been proved so many times that there can now be no doubt as to the causal relation. The isolated organisms, when injected into experimental animals, show a special affinity for tissues similar to those involved in the original instance. A joint will be attacked, an eye become involved, even the appendix will succumb, according to the affinity shown in the first case.

The more thoroughly the matter is investigated, the clearer it becomes that focal infection seems to explain satisfactorily certain of the hitherto unsolved problems of medicine.

HEALTH IN CITY AND COUNTRY.

There can be no question that, at the present time, the sanitary conditions, as we usually understand them to be, of the city are superior to those of the country. Certain infectious diseases, such as malaria, typhoid, whooping cough, and influenza, are more prevalent and the toll of life from these agencies is proportionately greater in the smaller than in the larger communities. This fact is obviously due chiefly to ignorance of the laws of sanitation, or rather to lack of intelligent supervision of water and milk supplies and of drainage. These conditions which war against health are being improved, however, and the disparity in healthfulness from these causes is not likely to continue.

The city has little reason to congratulate itself, even at the present time, upon its superior sanitariness. If it does so it follows the ostrich fashion of tucking its head into the sand of this one item of superiority—its freedom from noxious bacteria.

Sanitation is a much more inclusive term than we commonly conceive it to be, and it should mean much more than the mere prevention of sickness and premature death from typhoid, diphtheria, or malaria; these aside, the suburbanite fares better than his urban cousin. The most evident proof is the fact that the work of the world, transacted largely within city limits, is directed in something like eighty per cent. of cases by men who were born and spent their early days in the country. The heads of great businesses, of great educational and other institutions, come, in large majority, from the rural regions. To say that this depends on the superior mental training received in the country school, or, what is nearer the truth, from the daily experiences of country life, is to admit that the elaborate and apparently superior machinery of city schools has less to do with real education than we commonly suppose. It is alleged that the detail work in business offices and elsewhere in our cities is done with less care than it was two decades ago. Though the opportunity for mental training is not to be despised, it amounts to little if there is a physical basis which neither allows of the full effect of the training at the time it is received, nor its use afterward in the work of life. Capacity for work depends upon two factors, intensity and endurance; the city child shows plenty of intensity, but endurance is lacking.

Another piece of evidence which condemns the salubrity of the city, is that its own population soon dies out and must constantly be renewed from the country. Whether this is due to the more strenuous life led by the city dweller, to the greater expense of supporting a family, or to other more directly physical causes, the conditions producing the deterioration and termination of life are as much insanitary as those which allow typhoid or tuberculosis germs to flourish and destroy mankind. Sanitation must in future mean more in proportion to the degree of vitality it allows than in the number of cases of illness or of death it prevents.

The cities contain now most of the population of the land, and have drained and are still draining the rural districts of their most enterprising, and therefore most robust people. The country may be insanitary on the surface, but the city is insanitary from causes which lie deep but not too deep to be uncovered. It is bad for a few people in a community to die of certain infectious diseases, but it is worse for the many to live lives on a low level of vigor. A study of the causes of the inferior vitality of the human product of the city, that these unhealthful conditions may be, if possible, corrected, is one of the present needs of our national life.

WEIL'S DISEASE.

Infectious jaundice was first described as a disease entity by Weil in Germany, in 1886, but it was probably well known long before that, for in our Civil War over two per cent. of our soldiers suffered from an infectious jaundice. However long the disease may have been known, its cause has remained undiscovered, but the recent investigations of Uhlenhuth and Fromme (*Berliner klinische Wochenschrift,* March 16, 1916) now seem to have led to the discovery of the specific infectious agent.

With the outbreak of the European war there was a considerable prevalence of this infectious jaundice, and with the abundance of material Uhlenhuth and Fromme set out to find the cause of the disease. They were able to reproduce the disease in guinea-pigs by inoculation of fresh blood from human cases. Microscopic study of the tissues of the infected pigs revealed the presence of great numbers of spirochetes in the liver. It was also possible to demonstrate this organism in practically all other tissues of the pig, including the blood, although in relatively small numbers. A few instances were also encountered in which apparently the same organism could be demonstrated in the liver in fatal human cases.

The organism could not be artificially cultivated, but its specific causal relation to Weil's disease was proved by the following facts, in addition to those just mentioned. First, the disease could be transferred from pig to pig, showing the multiplication of the organisms; active immunity was developed against it in man and animals; the removal of the organism by filtration completely deprived the suspensions of infective pig's tissues of their infectiousness, lastly, some degree of passive immunity toward infection could be secured by the use of immune serum from cases which had terminated favorably.

These new studies have not only apparently led to the discovery of the causal organism, but they have added to our knowledge of Weil's disease in two other directions. In the first place they have provided a means for testing the effectiveness of therapeutic agents, showing already that such drugs as neosalvarsan, colloidal silver, collargol, colloidal antimony, mercury atoxyl, silver atoxyl, atoxyl, and optochin were without curative action. Disappointing as this is, however, the way is now open for the elaboration of an effective remedy, and immune rabbit serum is now being tried with some success.

The second contribution these studies have made is that the infectious spirochete may gain access to the body through abrasions of the skin and through certain intact mucous surfaces, such as the conjunctiva. Finally the parasite has proved to be easily destroyed by drying, by heat, and by dilute antiseptic and bactericidal agents. In this day when antivivisectionists are waging active war upon the advance of medical science, we cannot refrain from calling attention to the fact that these initial steps in the conquering of one more disease have been made possible solely through animal experimentation.

THE ACTION OF DRUGS ON THE CIRCULATION IN THE BRAIN.

Recent advances in the study of the intricate functions of the different organs, particularly the ductless glands, disclose a new series of phenomena with regard to the action of drugs, hitherto unsuspected. Our previous conceptions concerning the physiological effects of the better known drugs are crude in the light of later studies. Generally speaking, we have been considering the massive action of drugs, assuming that a certain drug acts on the motor, the sensory, or the sympathetic nervous system, as a whole. The newer studies of the autonomous division of the sympathetic brought to light the fact that a given drug which acts, for instance, on the circulation, may affect one set of organs and not another, depending on whether the organ is supplied with nerves from the autonomous system. Thus, we can understand how adrenaline, which causes a characteristic constriction of the vessels of the liver, produces dilatation of the pulmonary vessels. Difference in action is also observed in the organs of different animals, caused no doubt by the difference in the nerve supply. Thus histamine and barium chloride constrict the peripheral vessels, the veins, and the pulmonary vessels of a rabbit, but have no such action on a frog's liver. Fever and inflammation seem to modify the action of drugs, as evidenced by the fact that adrenaline has no constricting effect when the temperature is elevated, acting then as a vasodilator. Antipyrin has no action on the cerebral vessels of a normal animal, but acts also as a vasodilator in the presence of fever.

The action of drugs on the circulation in the brain has been studied with varying results, some investigators maintaining that cerebral vessels do not possess vasomotor nerves. This view, however, has been shown to be erroneous by a number of physiologists. The sum total of the investigations shows that chloroform, amyl nitrite, strophanthin, caffeine, phenocol, p-aminophenol, pyramidon, cocaine, and chloral hydrate produce dilatation of the cerebral vessels, while adrenaline and salicylic acid act as vasoconstrictors. Alcohol was found by some to have a vasodilator effect, and by others no effect at all. V. I. Berezin (*Roussky Vratch,* May 28, 1916) instituted a number of experiments on the isolated brains of carp and rabbits, the latter being used as controls. He found the following substances to act as vasodilators: Alcohols, hypnotics (amylen hydrate, sulphonal, trional, tetronal, urethane, hedonal, veronal, and chloral hydrate); narcotics (ether, chloroform, and acetone); caffeine, camphor, atropine, antipyrin, quinine, and salicylic acid. On the other hand, nicotine, adrenaline, histamine, morphine, strophanthin, and barium chloride act as vasoconstrictors. His observations showed that not only do the cerebral vessels possess vasomotor nerves, but they differ from the peripheral vessels in greater latitude of action, resembling in this respect the vessels of the internal organs, the liver, the lungs, and the heart. Incidentally, the fact that hypnotics and narcotics dilate the cerebral vessels deserves notice as discrediting the view that their action depends on the production of cerebral anemia.

GASOLINE FOR CLEANING WOUNDS.

M. H. Embree, R. A. M. C., communicates to the *British Medical Journal* for September 2, 1916, some of his experiences with gasoline (petrol) in the cleansing of wounds. It has been in use for twenty years, he says, in the hospitals of Toronto, Ont., to cleanse contused, lacerated wounds with dirt ground into them. As wounds received at the front are contused, lacerated wounds, and come in a very dirty condition, it seemed worth while to try gasoline in cleaning them; the method used in his field ambulance for the first cleansing of wounds is as follows:

The skin, and then the surface of the wound, is cleaned by vigorous rubbing with a swab of absorbent cotton soaked in gasoline. Swabs of cotton are wound round an artery forceps or probe and soaked in gasoline, and with them the wound is cleaned from the surface inward as far as the forceps can be pushed. The forceps is rotated and pushed in all directions, a number of swabs being used, and the process is continued until a couple of swabs come out perfectly clean. If there is much dried blood or gross dirt on the surface of the skin or wound, it is best removed with warm water and soap, and a brush if necessary, before the gasoline is used. The gasoline does not cause any special smarting, and patients did not complain of it when questioned. If gasoline is left wet on the skin and jaconet or adhesive plaster strips close together are applied over the dressing, preventing evaporation, there will be blistering of the skin, but otherwise this does not occur.

Gasoline used in the manner described certainly seems to clean up the surface, and particularly the depths of wounds better than any other method that has been tried. If we are not mistaken, workmen in industrial plants in the United States have long been thoroughly versed in the effective use of gasoline in first aid treatment of dirty cuts and lacerations.

News Items

A Memorial to Doctor Murphy Planned.—It is reported that a $500,000 memorial to the late Dr. John B. Murphy is to be erected in Chicago. It is believed that this memorial will be in the form of an institution for surgical research.

A New Directory of Philadelphia Hospitals.—A new edition, revised to date, has been issued of the *Handbook of Philadelphia Hospitals and Dispensaries.* Copies may be obtained, at fifteen cents each, from the Social Service Department of the Episcopal Hospital, Lehigh Avenue and Front Street, Philadelphia.

Misericordia Hospital Cornerstone Laid.—On Sunday, September 24th, the cornerstone of the new Misericordia Hospital of the Sisters of Mercy, at Fifty-fourth Street and Cedar Avenue, Philadelphia, was laid with elaborate ceremonies. The estimated cost of the new institution is $1,500,000.

A Medical Department for the Boston Police Court.—It is reported that the Boston City Council has passed an ordinance that will give to the city police court a medical department and a psychological laboratory, of which Dr. Victor V. Anderson will have charge. The mental condition of all offenders will be passed upon by this department before sentence is pronounced.

New Offices Created in the District of Columbia Health Department.—The appropriation bill enacted by Congress on September 1st provides for the appointment of a chief medical and sanitary inspector, who will give his whole time to the direction and control of the medical and sanitary conditions of the public schools, at a salary of $2,500. A chief food inspector will also be appointed, to have general supervision and control of food inspection, at a salary of $1,800.

Oregon State Medical Association.—At the Forty-second annual meeting of this association, held in Portland, September 14th and 15th, Dr. R. C. Yenny, of Portland, was elected president, succeeding Dr. W. Kuykendall, of Eugene. Other officers were elected as follows: Dr. H. J. Clemens, of Salem, first vice-president; Dr. Leo Chilton, of Canyon City, second vice-president; Dr. C. J. McCusker, of Portland, secretary; and Dr. Katherine C. Manion, treasurer.

Diagnostic Aids in Medicine and Surgery.—At a stated meeting of the Northern Medical Association of Philadelphia, Friday evening, September 29th, this subject was discussed as follows: Dr. J. Solis-Cohen, the Laryngoscope; Dr. Samuel Wolfe, the Stethoscope; Dr. William H. MacKinney, the Cystoscope; Dr. Samuel Horton Brown, the Ophthalmoscope; Dr. Sidney L. Feldstein, the X Ray; Dr. John A. Kolmer, the Laboratory; Dr. F. A. Faught, Blood Pressure. A general discussion followed.

Dinner to Doctor Aikman.—On Tuesday evening, September 26th, Mr. A. R. Elliott, president of the A. R. Elliott Publishing Company, gave a dinner at the Hotel Brevoort to Dr. John C. Aikman, who has been associated with the subscription and advertising departments of the NEW YORK MEDICAL JOURNAL for the past twenty years, and who has retired to accept a position as secretary, treasurer, and general manager of the National Pathological Laboratory of New York. The guests included the editorial staffs and the department heads of the Elliott publications.

Changes in the Medical Faculty of Tufts College.—Several changes are announced in the faculty of the medical and dental schools of Tufts College, Boston, among them being the following: Dr. Andrew H. Ryan, who has been connected with the faculties of the University of Pittsburgh, Washington University, and the University of Alabama, will take charge of the department of physiology in both schools; Dr. Charles H. Bailey, of Leland Stanford University, has been appointed associate professor of histology; Dr. R. Harman Ashley, of the University of Maine, will take charge of the department of chemistry in the dental and premedical courses; Dr. Arthur L. Chute has been advanced from assistant professor to associate professor of surgery.

American Ambulances for Russia.—Fifteen motor ambulances have been presented by a group of Americans to the field hospital service of Russia and have gone to the front under command of Dr. Philip Newton.

Pharmacy, Old and New.—The Philadelphia College of Pharmacy held an exhibition in their college buildings last week of modern scientific pharmacy contrasted with pharmacy of a century ago. The exhibit included a drug store of 1812, with many interesting historical exhibits; exhibits of modern pharmaceuticals and chemicals; a professional pharmacy fully equipped with scientific laboratories and ready to cooperate with the medical profession in the modern practice of medicine.

Harvard Medical School Establishes Infantile Paralysis Commission.—Dr. Robert W. Lovett, professor of orthopedic surgery at Harvard Medical School, is chairman of a commission established by Harvard University to learn how to combat infantile paralysis successfully. The other members of the commission are Dr. Milton J. Rosenau, professor of hygiene and preventive medicine, Dr. Francis W. Peabody, assistant professor of medicine, and Roger Pierce, secretary.

How Life Begins is the title of a motion picture film exhibited privately by the American School Hygiene Association at the Russell Sage Foundation, Wednesday afternoon, September 27th. This film was produced by Mr. George E. Stone, of Berkeley, California, in collaboration with Dr. J. A. Long, professor of embryology at the University of California. It tells the story of how new plants and animals come into existence, and presents phases of plant and animal activity in the field and under the microscope, which are unique in motion picture production.

Personal.—Dr. I. J. Kligler, who has been in charge of the bacterial collection of the department of public health of the American Museum of Natural History, has resigned to accept a position with the Rockefeller Institute for Medical Research.

Dr. Ross V. Patterson, recently appointed dean of Jefferson Medical College, to succeed Dr. James W. Holland, assumed his new duties at the ninety-second annual session of the board of trustees of the college, on Monday evening, September 25th.

Professor Charles Richet, of the University of Paris, has been awarded the State prize for poetry. His subject was the Glory of Pasteur.

The Second National Exposition of Chemical Industries was held during the week of September 25th at the Grand Central Palace. Nearly two hundred exhibitors, covering all the large chemical industries, participated in the exposition. The fact that the meeting of the American Chemical Society, the American Electrochemical Society, and the Technical Association of the Pulp and Paper Industry were held during the week brought together several thousand chemists. Among the speakers at the opening of the exposition were Dr. Charles H. Herty, president of the American Chemical Society; Dr. Francis A. J. Fitzgerald, president of the Electrochemical Society, and Mr. Thomas J. Keenan, secretary of the Technical Association of the Pulp and Paper Industry.

Motion Pictures Applied to the Teaching of Surgery.—For the first time motion pictures have been applied as an aid to the most difficult operations in surgery. On Monday next, at 1 p. m., Dr. S. William Schapira will lecture at Fordham University on various genitourinary operations, and will illustrate his lecture with motion pictures of actual operations performed by him. These pictures cover thirteen distinct operations, and were made by a Pathé camera man under Doctor Schapira's direction. In the past surgical lectures have been illustrated by still pictures or drawings and much of the detail has been lost; in these motion pictures every movement is clearly shown. Among the operations shown are nephrectomy, nephrotomy, nephrolithotomy, nephrorrhaphy, nephropexy, pyelotomy, ureterotomy, suprapubic cystotomy, suprapubic prostatectomy, external urethrotomy, orchidectomy, varicocele, hydrocele, amputation of penis, and cystoscopic operations.

Examination for Assistant Physician, State Institutions.—Among the positions for which the New York State Civil Service Commission will hold examinations on November 4th, is that of assistant physician for State prisons and reformatories; salary, $2,500 without maintenance. The examination is open to men only who are licensed medical practitioners in New York State and who, since graduation, have had at least one year's experience on the resident medical staff of a general hospital. There is at present one vacancy at Sing Sing.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, October 2d, Wills Hospital Ophthalmic Society, Academy of Surgery, Philadelphia Clinical Association, Blockley Medical Society; Tuesday, October 3d, Aid Association of the Philadelphia County Medical Society (directors), Laryngological Society; Wednesday, October 4th, Physicians' Motor Club (directors), College of Physicians; Thursday, October 5th, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, October 6th, Kensington Branch of the County Medical Society.

Utah State Medical Association.—Dr. S. C. Baldwin, of Salt Lake City, was elected president of this association at the twenty-second annual meeting, held in Salt Lake City on September 12th and 13th, succeeding Dr. E. W. Whitney, and other officers were elected as follows: Dr. J. R. Morrell, of Ogden, first vice-president; Dr. P. M. Kelley, of American Fork, second vice-president; Dr. D. C. Budge, of Logan, third vice-president; Dr. F. A. Flood, of Salt Lake City, treasurer; Dr. H. G. Merrill, of Provo, counsellor for the third district. Dr. W. Brown Ewing, of Salt Lake City, has still two years to serve as secretary.

Jefferson Medical College Alumni Hold Reunion.—The tenth annual reunion of the New England Association of Jefferson Medical College Graduates was held in Hartford, Conn., on Tuesday evening, September 19th. Dr. Eckley R. Storrs, of Hartford, was elected president, Dr. Albert C. Getchell, of Worcester, vice-president, Dr. Wallace P. MacCullum, of Boston, secretary, and Dr. Frank I. Payne, of Westerly, R. I., treasurer. At the banquet which followed the business meeting, Dr. J. W. Felty, of Hartford, acted as toastmaster, and among the speakers was Dr. Edward P. Davis, of Jefferson Medical College.

Social Service School Opens.—The reorganized Pennsylvania School for Social Service was opened on September 25th for the season, with over thirty students enrolled. Mr. Bernard J. Newman, formerly general secretary of the Philadelphia housing commission, is the new director. Among the lecturers will be: Dr. Carol Aronovici, director of the bureau of social research; Dr. Louise Stevens Bryant, chief of the psychological clinic, domestic relations court; Dr. Nathaniel Gildersleeve, professor of bacteriopathology, University of Pennsylvania; Frederick P. Gruenberg, director of the bureau of municipal research, and Dr. Carl Kelsey, professor of sociology, University of Pennsylvania.

The Harvard School for Health Officers.—Sixty courses of study will be given, beginning this autumn, in the School for Health Officers conducted by Harvard University in conjunction with the Massachusetts Institute of Technology. The faculty will be composed of fifty members. The principal object of the school is to prepare young men for public health work, and especially to fit them for the occupancy of administrative and executive positions as health officers or members of boards of health. To this end both institutions will offer lectures, laboratory work, and other forms of instruction, and men from National, State, and local health agencies will speak. The subjects embraced in the course of study have been selected to cover a wide range, including medical, biological, hygienic, and engineering sciences, together with practical health administration. The courses to be given are divided into ten groups dealing with various phases of sanitation problems. The certificate in public health (C. P. H.) will be granted to candidates who have satisfactorily completed the studies in their approved schedule, who have spent not less than one academic year in residence, and who have otherwise complied with all requirements.

Lectures on Mental Health.—The program of public lectures arranged by the Department of Education of the City of New York to be given during the months of October, November, and December, includes six lectures on mental hygiene, as follows: Wednesday, October 11th, Homer Folks, LL. D., Why So Many People Go Insane; October 18th, Mr. George A. Hastings, The Social Cost of Mental Disease; October 25th, Dr. Stewart Paton, Preventable Mental Diseases and How to Prevent Them; November 1st, Dr. Ira S. Wile, Social Hygiene an Aid to Mental Health; November 8th, How the Empire State Cares for 34,000 Insane; Dr. Henry Smith Williams, Importing Insanity. This course of lectures has been arranged in cooperation with the Mental Hygiene Committee of the State Charities Aid Association.

Red Cross Nurses at the Mexican Border.—To reinforce the Army Nurse Corps on the Mexican border the War Department has obtained from the American Red Cross 125 graduate Red Cross enrolled nurses for assignment to camp and base hospitals distributed along the frontier from Nogales, Ariz., to Brownsville, Texas. Fifteen of these 125 are representative of big civil hospitals in which American Red Cross base hospital units have been organized by Colonel Jefferson R. Kean, Medical Corps, United States Army, Director General of Military Relief of the Red Cross. The nurses were selected by Miss Jane A. Delano, chairman of the National Committee on Red Cross Nursing Service, whose department has over 7,000 enrolled graduate nurses. While Colonel Kean has organized twenty-five base hospitals, eight only of these will be represented in this detail of 125 nurses.

Pennsylvania State Medical Society.—The following officers were elected at the sixty-sixth annual meeting of the society, held in Scranton, September 19th, 20th, and 21st, under the presidency of Dr. Charles A. E. Codman, of Philadelphia: President, Dr. Samuel G. Dixon, commissioner of health of Pennsylvania; first vice-president, Dr. J. B. Corser, of Scranton; second vice-president, Dr. W. A. Albright, of Munsey; third vice-president, Dr. George H. Boyer, of Allentown; fourth vice-president, Dr. J. O. Wagner, of Beaver Springs; secretary, Dr. C. L. Stevens, of Athens; assistant secretary, Dr. C. P. Franklin, of Philadelphia; treasurer, Dr. G. W. Wagner, Johnstown. The board of trustees of the society was reorganized by the election of Dr. Theodore B. Appel, of Lancaster, as chairman, and Dr. F. L. Van Sickle, of Olyphant, clerk. Next year's meeting will be held in Pittsburgh.

The American Chemical Society held its fifty-third meeting in New York from Monday, September 25th, to Saturday, September 30th, at the official headquarters, the Chemists' Club, 52 East Forty-first Street. The general meetings were held at Columbia University, the section meetings at the Chemists' Club, Grand Central Palace, and the New York College of Pharmacy. Several thousand chemists were registered, the membership having increased over 1,000 last year and being now above 8,000. A reception was held at the Hotel Astor on Tuesday evening, September 26th, a smoker on Wednesday, and a banquet at the Waldorf-Astoria on Friday evening. The ladies were entertained with luncheons, automobile tours, a theatre party, a view of New York from a yacht, and a shopping tour of the city. The meeting was presided over by Dr. Charles H. Herty, of the University of North Carolina. Among the general addresses were the following: General William Crozier, chief of ordnance, War Department, on Chemistry and the National Welfare; John E. Gardin, vice-president National City Bank, on Chemistry and Banking; Gifford Pinchot, president, National Conservation Association, on Chemistry and Conservation; and Charles H. Herty, president, American Chemical Society, on Expanding Relations of Chemistry in America. The Industrial Chemical Conference was held on Friday and a number of papers in various sections were read which touched on matters of interest in medicine. The Technical Association of the Pulp and Paper Industry and the American Electrochemical Society had concurrent meetings and took part in some of the divisional meetings.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Thirty-eighth Communication.

CATARRHAL INFLAMMATIONS OF THE NOSE, THROAT, AND LARYNX.

Treatment of these affections resolves itself into local and systemic measures, depending on the time when the patient comes under observation. Early in these diseases it sometimes seems possible to so aggravate nature with drugs that the illness is abated incidentally to a general reaction of the system to the more potent toxin. Whether it be rhinitis, pharyngitis, or laryngitis, the early administration of small doses of belladonna seems to cut short what otherwise would apparently have been a debilitating attack. It is well to say "apparently," since in any abortive case it is impossible to know positively whether the drug actually induced the cure or whether nature itself was adequate, despite the drug; this is a fair question, since not infrequently the drug fails to act in orthodox fashion. This very lack of definite demonstrability admits of multitudinous therapeutic claims being foisted upon the ever receptive profession and the always gullible laity. The only wise course is to administer those drugs only whose pharmacological provings show fairly clear indications for present utility, and even then many of these indications are simply symptomatic.

In each of these inflammations of the upper respiratory tract, there is usually marked congestion of the mucous membrane followed by extensive mucous secretion, more in the nose than elsewhere. No drug seems to have so pronounced a repressive effect on this mucous leakage as belladonna; it exerts its influence on the nerve terminations in such a way as to inhibit impulses to the glandular secretory apparatus; without these impulses the glands fail to pour out the excess of secretion characteristic of catarrhal inflammations, and it is a fair assumption that the microbes responsible for these diseases find that a subnormally moist mucous membrane is an unfavorable habitat.

There is no particular evidence that belladonna causes a diminution of the blood supply to these mucosæ, unless indeed the resulting congestion of the cutaneous capillaries relieves to some extent the deeper structures. This rather improbable suggestion is perhaps the sole reason for administering small doses of aconite with the belladonna, as the tacit assumption in the small dose is the obtaining of a peripheral effect without causing depression of the heart at the same time. The older plan of using aconite as a regular treatment for acute catarrhal attacks of the respiratory tract, and still employed in sthenic cases, implied actual cardiac depression as a means of relieving the sharp, general venous congestion; but this plan is no longer regarded with favor.

Another treatment widely recommended is the administration at bedtime of a moderately generous Dover's powder. The clinical consensus as to the merits of Dover's powder in these affections is too general not to merit investigation, yet it is not easy to find adequate pharmacological explanation and justification. A diaphoretic effect is presumed; yet though opium diminishes all the secretions of the body except those of the sweat glands, there is no satisfactory evidence that the drug therefore increases or in any way stimulates the activity of these glands; the only effect ipecacuanha has on perspiration is the reflex incidental to nausea in general. Opium usually produces a relaxation of the peripheral arterioles of the face and neck, and it may possibly favor freer skin activity over the rest of the body. Possibly, too, the lowered consciousness of the patient, another effect of the opium, makes him indifferent to the extra bed covering, which may be the real factor in promoting diaphoresis.

So many of the catarrhs of the upper respiratory tract are due to overeating and alimentary plethora that a good purge, sweeping the entire canal, is almost invariably beneficial as the first step in the treatment. For this purpose, senna, for children, and the compound vegetable pill for adults, serve much better than the more commonly administered calomel.

Other drugs recommended by some writers and practitioners are quinine, camphor, the salicylates, and the coal tars; but unless these drugs are *specifically* indicated by some easily recognized systemic dyscrasia, they should not be used at all in catarrhs of the nose and throat.

Cleansing of the nasal mucosa with mild alkaline solutions is highly desirable; and this cleansing may well be followed by a spray of some bland oil containing 0.1 per cent. of menthol, though in some very sensitive types menthol only adds to the irritation and congestion. This engorgement of the Schneiderian membrane may best be reduced temporarily, at least, by swabbing or spraying with epinephrine solutions. Epinephrine is certainly much safer and better to use than is cocaine, so frequently recommended, as cocaine not infrequently affects the patient unfavorably in a systemic reaction.

Steam inhalations, medicated with the compound tincture of benzoin or with the oil of eucalyptus, is a satisfactory method of local treatment in laryngitis.

Exclusion of the Pylorus.—O. Giovanni (*Gazzetta degli ospedali e delle cliniche*, August 3, 1916) describes a method evolved by him from experiments on animals to exclude the pylorus. He inverts the serous coat of the pyloric tract into the lumen of the bowel, bringing it in contact with the mucosa, which has been denuded in order to form adhesions.

Treatment of Paroxysmal Tachycardia.—M. Villacorta (*Cronica Medica*, July, 1916) recommends compression of the pneumogastric nerve or its electrical stimulation, tickling of the pharynx to provoke vomiting, the swallowing of large mouthfuls of bread to distend the esophagus and the dorsal posture with deep inspirations and retention of the air in the lungs for several moments. Vomititing may be produced by ipecac or other emetics, while pituitary extract has been advocated by Boez and Vaquez. An icebag to the precordium may help and antispasmodics may be required, such as the bromides, valerian, belladonna, and morphine. To prevent the return of the attacks the nervous system shold be soothed by tepid baths, moderate exercise and repose both physical and mental.

Radium Therapy.—Walter B. Chase (*Medical Record*, September 2, 1916) states that the palliative influence of radium is analgesic, it inhibits or arrests malignant or benign growths, it diminishes or destroys offensive odors in local ulceration, it acts as a hemostatic in uterine hemorrhage. Chase cautions against the taking of a section of a cancer growth for diagnosis as it stimulates a more rapid development of the tumor. Epithelioma is more easily overcome than are most forms of cancer, while x ray cancer has been demonstrated to be curable by radium. The possibilities seem great for intravenous injection of radium salts and radium water or emanation in rheumatoid arthritis and in chronic neuritis with faulty metabolism. There is also seen an increase in red blood cells and hemoglobin, while blood pressure can be lowered permanently in many cases. Tuberculous glands and goitre show satisfactory cosmetic results when treated by radium. The use of hollow needles containing the radium effectually screened is applicable to tumors, both benign and malignant, particularly in the tongue, tonsils, and pharynx.

Alveolar Osteomyelitis (Pyorrhœa alveolaris): Its Causes and Treatment with Vaccines.—Leon S. Medalia (*Boston Medical and Surgical Journal*, September 14, 1916) concludes that pyorrhœa alveolaris should be known and treated as a chronic alveolar osteomyelitis. The sockets are enlarged medullary spaces of the maxillary bones, while the peridental membrane is in reality a ligament which keeps the tooth suspended in the alveolar cavity. Mechanical causes are responsible for starting the disease, while pyogenic bacteria, pneumococcus, staphylococcus, and M. catarrhalis, are responsible for keeping is up. It is a specific disease, though not in the sense that it is always due to one and the same organism. Systemic diseases play only a secondary part in starting the disease, but may be caused by it, and in turn become responsible for keeping up the local condition. Many rheumatic diseases, so called, and many gastrointestinal diseases are directly related to Riggs's disease, as this affection is often known. Vaccine treatment, together with proper attention to diet, cures or relieves the systemic diseases, especially the rheumatic affections. Local mechanical treatment and proper attention to the general systemic condition of the patient yield by far the best results in this intractable disease.

Treatment of Ulcerating Carcinoma.—J. Tugendreich (*Berlin. klin. Woch.*, March 6, 1916) states that none of the large number of drugs so far recommended for the treatment of carcinomatous ulceration, has proved of any great value, even solely for the relief of symptoms. The recent exhaustive studies of Morgenroth on the derivatives of quinine have led to the production of several compounds, which combine the properties of producing prolonged anesthesia and marked antiseptic power with low toxicity. On the strength of these researches, the author tried the local application of one of these substances—isoamylhydrocuprein—in a series of cases of ulcerating carcinoma which had proved resistant to other measures. The results were favorable, the drug producing prolonged anesthesia with complete relief of pain, and cleansing the surface so that healing and epithelialization frequently occurred. He used solutions of the base in olive oil varying from one to two per cent., or oily suspensions of the hydrochloride of the same strengths.

Emetine Bismuth Iodide in Entamœba histolytica Infection.—George C. Low and Clifford Dobell (*Lancet*, Aug. 19, 1916), following Dale's favorable experience with this new insoluble emetine salt, tried it in several refractory cases of amebic dysentery and carriers thereof. They report three typical cases. They gave the drug in single daily oral doses of 0.2 gram following the evening meal. In acute cases it proved equally effective with emetine subcutaneously, and in carriers seemed more effective than the soluble salts. One chronic convalescent carrier was apparently cured after the fourth dose, and another normal carrier, not previously ill with clinical dysentery, showed equally prompt disappearance of the cysts. Contrary to Dale's experience the authors found the preparation likely to produce some nausea, vomiting or diarrhea after a few doses, to an extent almost equal in several cases to that caused by the oral use of ipecac, but usually only to a much less degree.

Intravenous Injection of Oxygen Gas.—F. W. Tunnicliffe and G. F. Stebbing (*Lancet*, Aug. 19, 1916) have noted beneficial effects of oxygenated saline solution for intravenous injection and that animal experiments had previously proved the safety of slow injections of oxygen gas directly into a vein, and have been led to try such injections in man for the relief of a number of forms of cyanosis. They found it possible, by means of a needle and a simple supply apparatus, to inject safely pure, washed oxygen gas at the rate of 600 to 1,200 mils an hour. During the injections the heart was auscultated frequently and the one dangerous sign was found to be the appearance of a soft, systolic tricuspid murmur. From time to time the rate of injection had to be slowed temporarily, but the gas was never quite stopped on account of the danger of clotting. The injections were found to be of decided therapeutic value in all forms of cyanosis, except those secondary to severe cardiac disease. The effects were also found to be fairly lasting in most cases, and often were so striking as to proves actually life saving.

Cheiropompholyx.—P. G. Unna (*Berlin. klin. Woch.*, March 6, 1916) considers that this condition is probably infectious in origin. Its cure requires the use of antiseptics, as well as measures to allay the intolerable itching. The parts should be bathed in warm soap solution, after the small vesicles have been pricked or the tops of the large ones have been cut off with a razor. To secure penetration of the disinfectant it should be dissolved in alcohol rather than in water or oil. The following formula provides an excellent application which can be painted over the affected parts:

℞ Argenti nitratis, ...1.5;
Spiritus ætheris nitrosi, ...30.0.
M. Dispense in a brown bottle.

The Causation of Gastric and Duodenal Ulcer by Streptococci.—E. C. Rosenow (*Journal of Infectious Diseases*, September, 1916), in a previous article, has shown that a local hematogenous streptococcal infection is the usual cause of ulcer of the stomach. The present experiments were undertaken to prove that the streptococci isolated from the ulcer wall produce, when injected into animals under otherwise normal conditions, ulcers of the stomach and of the duodenum resembling those in man. His results are reported in this article and they substantiate his statements. The ulcers that were produced by the injection of streptococci resemble those in man in location, in gross and microscopic appearance, and in that they tend to become chronic, to perforate, and to cause severe or fatal hemorrhage.

Use of Emetine.—Alfred C. Reed (*Boston Medical and Surgical Journal*, September 14, 1916) gives a summary of the history, pharmacology, and toxicology of emetine, and discusses its uses. Its predominant use is in the treatment of amebic dysentery, in which it seems to be specific in direct proportion to the acuteness of the attack. Benefit will usually appear early, ordinarily by the third or fourth day, if at all. It must be supported by symptomatic treatment, such as correct diet, catharsis, and rest. Chronic dysentery and carriers are not influenced directly by emetine as a rule. Emetine has very definite use in the presuppurative stage of amebic abscess of the liver, and after actual abscess formation, it may be a valuable adjunct to the surgical treatment, particularly when the abscess has ruptured and spread amebas through the contiguous tissues. It cannot be said that emetine is a specific for pyorrhea, that emetine alone will cure it, or that it cannot be cured without the use of this drug. The same is true of other bony and oral abccesses and infections, but given the pathogenic ameba, emetine is the specific remedy, provided that the infective agent is not walled off in an abscess. In so far as emetine excites a mild nausea, it shares the action of ipecac as an expectorant. It has been lauded as almost a specific for hemorrhage in certain chronic disease, especially for hemoptysis in pulmonary hemorrhage, but there is no experimental evidence that it has the slightest influence on hemorrhage directly, or that under any circumstances it promotes coagulation. Emetine lowers the blood pressure, weakens the heart, and depresses the central nervous system Whatever beneficial action in tuberculosis it has would seem to be due to its expectorant properties, but even so, other preparations are preferable. A beneficial action in hemorrhage may be due to the indirect result of decreasing blood pressure, yet if so, other drugs would be safer and more effective. The use of emetine enemata for constipation does not seem to be well advised. Emetine has proved serviceable in the treatment of certain other diseases caused by animal parasites, especially protozoa, but its main uses are due to its amebicidal action.

Peripheral Neuritis Following Emetine Treatment of Amebic Dysentery.—A. R. Kilgore (*Boston Medical and Surgical Journal*, September 14, 1916) reports several cases of this nature, and goes on to say that peripheral neuritis after emetine is not uncommon. The common symptoms are generally muscular pain and weakness, usually most pronounced in the legs, going on sometimes to paresis. They often appear after the emetine injections have been stopped, and may grow progressively worse for some time, even with no more administration of the drug. The amount of emetine necessary to produce neuritis varies greatly. The prognosis is good. The symptoms clear up gradually, usually over several weeks, and apparently no traces are left.

Alkaloidal Adjuvants in General Anesthesia.—Raymond C. Coburn (*Medical Record*, Sept. 9, 1916) advises the preliminary administration of morphine one sixth to one quarter grain to an adult, with the addition of atropine grain 1/150 if nitrous oxide is to be used. If ether is to be used, atropine is not essential, though advisable. Scopolamine, 1/200 grain, may be combined with one sixth grain morphine one hour before operation, whereas if morphine and atropine alone are used they should be given one half hour prior to operation. Nerve blocking as advised by Crile diminishes shock and consists in infiltration of the skin and the subsequent layers of the incision with twenty-five per cent. solution of novocaine, and then in some cases the deeper layers away from the incision with one sixth per cent. of quinine urea hydrochloride. Nitrous oxide is the best anesthetic to use in conjunction with alkaloidal adjuvants.

Drug Intoxication.—Edward Livingston Hunt (*Western Medical Times*, September, 1916) urges that great care should be exercised in the administration of sedatives for the purpose of producing sleep. If, at the end of two or three days, no improvement results, a complete change of treatment should be inaugurated, all drugs being stopped. All mental conditions showing symptoms of confusion, delusions, fabrications, restlessness, and violence, coincident with a rapid pulse, and such physical signs as a coated tongue, low temperature, and emaciation, should be regarded with suspicion as being possible cases of drug intoxication. In all prolonged illnesses in which the use of many drugs has become a necessity, a sharp outlook should always be kept for symptoms of drug intoxication. Patients who present functional conditions or any physical condition below par should avoid drugs. Physicians should use greater discrimination in the use of bromides. Finally, conditions of drug intoxication should be considered as of more than ordinary occurrence.

Simple Dressing for Fractures Near the Elbow.—Louis C. Rivett (*Brit. Med. Jour.*, Aug. 19, 1916) remarks that the difficulties in keeping the arm in proper position and the practice of smothering the entire chest in dressings are overcome by the following simple technic. The forearm is flexed on the arm and held in this position by a single strip of two inch adhesive plaster, placed near the wrist and at the level of the deltoid insertion. A second strip is attached to the back of the wrist and hand and passed over the shoulder and some distance down the back. No other dressing is applied. Excellent results have followed this form of dressing and it has the great advantage of permitting abduction of the elbow for x ray examination without disturbing the position of the fragments or touching the dressing.

Hemoglobinuric Fever. — William O. Ott (*Jour. A. M. A.*, Sept. 16, 1916) records the case of a patient who had malaria, for which he had been taking quinine by mouth without relief. He then suffered from a severe attack of hemoglobinuria with vomiting, and was thought to be moribund when it was determined to try the effects of quinine intravenously. This was given in the form of the dihydrochloride in a dose of six tenths gram dissolved in 300 mils of saline solution. The first dose was followed in a few hours by some alleviation of symptoms and the drug was therefore repeated. Six doses were given, three on the first, two on the second and one on the third day. All symptoms promptly disappeared and from the fourth day on the patient was given quinine orally. Recovery was complete and the patient was well and free from malarial symptoms when heard from two months after treatment.

Salt Pack Treatment of Infected Wounds.—J. E. H. Roberts and R. S. S. Statham (*Brit. Med. Jour.*, Aug. 26, 1916) find that before the application of this form of treatment it is necessary to be sure that the wound is freely open in its entire extent, and when such is not the case it must be brought about by suitable incisions. A second essential preliminary is the excision of all badly torn and contused tissue, since this does not enter into the healing process, but dies and delays the granulation. The skin is then painted with iodine and the wound cleansed without any antiseptic and mopped dry. Four or five layers of plain gauze are next wrung out of a five per cent. saline solution and used to line the entire surface of the cavity and all of its recesses. The lining must be in the form of a single sheet of gauze, not of several overlapping small pieces, and no spaces must be left between the gauze and the cavity walls. A few two and a half grain tablets of salt are then placed within the gauze, and the cavity is firmly packed with a strip of gauze moistened in five per cent. saline, several more tablets of salt being placed between the layers of the packing. When the packing is flush with the skin it is covered with a few layers of gauze and over all a thick wool dressing is applied to completely encircle the extremity. This is then bandaged with firm pressure to maintain the complete obliteration of all cavities. This dressing can usually be left in place for five or six days, depending upon the patient's general condition and the rate of his pulse, which is the best guide to septic absorption. If the pulse rate rises the dressing should be changed, but the mere saturation of the dressing with serum is no indication for a change even if the secretions become foul. In the latter case the outside of the dressing may be treated with eupad or chloramine T powder. The first dressing is usually quite painful and a dose of sixteen mgm. of morphine should follow its application. Subsequent dressings are progressively less painful. Usually from the tenth to the twentieth day the gauze lining will come away leaving a bright red, healthy granulating surface and the wound can be closed either by suture, or by adhesive strips.

The Fourth Disease.—Edwardo Donetti (*Riforma medica*, August 21, 1916) reports fifteen cases and concluded that Dukes's or Filatow's disease is a definite entity with classical periods of incubation, invasion, eruption and desquamation. The incubation period is from two to eight days, while that of invasion is characterized by an angina which may be simple or follicular with enlargement of the cervical glands, a temperature of not more than 38.5° C. due to the pharyngitis and following the course of the throat condition. The period of eruption appears not more than forty-eight hours later with a superficial reddening of the entire skin, with simultaneous formation of small punctiform papules which remain four to five days. The fever persists only during the first and second days. The desquamation is rapid, branny in character with sheetlike peeling of the hands and especially the fingers, and pruritus is common. There are never complications in the kidneys or respiratory organs, though there may be slow resolution of the cervical and submaxillary glands, late pharyngitis and general depression. The disease has no predilection for seasons and is epidemic and contagious.

Treatment of Ankylostomiasis.—R. D. Keith (*Journal of Tropical Medicine and Hygiene*, June 1, 1916) asserts that at an early stage in hookworm disease any of the anthelmintics ordinarily recommended prove efficient. In later cases, with grave anemia, oil of chenopodium is the best remedy. Keith found it more efficient than any of the others in obstinate cases, giving it in thirty minim doses in an emulsion every hour for three hours on an empty stomach. One hour after the last dose two ounces of black draught are given. In thirty cases the author used a vaccine made from the triturated bodies of adult hookworms placed alive in absolute alcohol, then evaporated almost to dryness and made into an emulsion with saline solution; the method, however, was found devoid of value. In severe cases of a chronic type in which the bone marrow may have become exhausted and atrophic, hypodermic administration of iron and arsenic has been recommended. A good diet assists materially in improving the blood. In native coolies suffering from the effects of the disease Keith found the following daily diet very useful: Bread, one pound; milk, two pints; sugar, two ounces; two eggs, and four bananas.

Auricular Standstill: An Unusual Effect of Digitalis on the Heart, with Especial Reference to the Electrocardiogram.—Paul D. White (*Boston Medical and Surgical Journal,* August 17, 1916) describes three cases in which electrocardiographic evidence of auricular actiyity was abolished by digitalis. As soon as the effects of the digitalis had worn off the auricular deflections reappeared.

Human Sporotrichosis.—E. S. Tyau (*China Medical Journal,* July) reports a case of this nature in which external application of Lugol's solution with administration of increasing doses of potassium iodide produced great improvement in ten days. Cultures from the open sore were then taken and no fungus was found. This course of treatment was followed for eight weeks and resulted in complete recovery.

Restoration of the Nose by Cartilage Transplantation.—Péraire, at a meeting of the Société de médecine de Paris (*Presse médicale,* July 6, 1916), presented a man whose nose had been completely carried away by a shell fragment eighteen months before. Transplantation of the seventh costal cartilage to replace it had yielded an excellent result, and the transplant had undergone no absorption during that prolonged period.

Staphylococcus Spray in Diphtheria Carriers' Throats.—Felice Lanzarini (*Gazzetta degli ospedali e delle cliniche,* August 13, 1916), after extensive experiments, found that the pyogenic organisms inhibited the growth of the diphtheria bacillus, not so much from a true antagonistic action, but rather from a crowding out or starving out process, since these pyogenic organisms grow much faster and under much more unfavorable conditions.

The Bacteriology of the Urine in Lobar Pneumonia.—Mathers (*Journal of Infectious Diseases,* September, 1916), as a result of careful bacteriological examination, found living pneumococci in the urine of ten out of twenty-six patients with lobar pneumonia. In eight others, Gram positive diplococci were present, but the cultures were negative for pneumococci. The organism appeared in the urine usually just before or just after the crisis.

Potassium Permanganate in Cutaneous Infections.—Edmundo Escomel (*Cronica Medica,* of Lima, August, 1916) is enthusiastic concerning the use of moist dressings of saturated solution of permanganate in many varieties of skin infections including boils, erysipelas, and even cellulitis of the hand or foot. Its action is astringent, antimicrobic, and oxidizing, and its toxicity is so weak that it never causes any symptoms from absorption by raw surfaces.

Treatment of Pellagra.—J. Yarbrough (*Medical Record,* September 2d, 1916) insists that the disease is due to fermentation of carbohydrate food and that there should be immediate and complete exclusion of such carbohydrates from the diet. This dietetic measure should be combined with dilute nitric acid—twenty to thirty drops in a glass of water an hour before meals. Of over one hundred cases so treated none required more than four weeks to clear up, in the absence of complications.

Eclampsia, a Preventable Disease.—John W. Winston (*Medical Record,* September 2d, 1916) lays great stress on the importance of the blood pressure test, which he places ahead of uranalysis. A systolic pressure below 125 mm. may be disregarded. One from 125 to 150 mm. needs watching and careful treatment. An increasing pressure of 150 mm. is of more serious portent than one which has been 150 mm. from the start. A pressure above 150 mm. needs active eliminative treatment, and, if it goes steadily higher, may require the induction of premature labor. A rising blood pressure curve is a better index of the toxemia than the albuminuria, and it occurs earlier.

Treatment of Tuberculosis by Ferran's Nontoxic Vaccines.—V. Santini (*Cronica Medica,* July 25th, 1916) asserts that the soluble inflammatory and diffusible toxin, which constitutes the true tuberculosis poison, is capable of producing the reaction of antibodies to the exclusion of the colloid toxin, which is produced only by the bacillus when it has acquired new properties in its symbiotic life. Filtered bouillon cultures, while not free from colloidal toxins, nevertheless of all the tuberculins are the least impregnated with these substances, therefore Ferran's is to be preferred. Over two hundred cases, treated with these atoxic bacterins, stood the treatment well and were uniformly benefited thereby.

Pyorrhœa alveolaris. — Beverley Robinson (*American Medicine,* August, 1916) regards the treatment with emetine of value only in exceptional cases. He advises dental instrumentation and the use of Augustus B. Wadsworth's mouth wash three or four times daily over a period of months. The wash should be kept in the mouth for from three to five minutes. It should be diluted with two to four parts of water. Attention should be paid to the general health and diet. Internally, occasional doses of castor oil should be given and Bacillus bulgaricus in pure culture should be taken regularly for many months. If the origin of the disease is obscure an x ray picture should be taken.

General Principles of Bone Grafting.—C. A. McWilliams (*Medical Record,* Sept. 16, 1916) enumerates the general principles to be observed in this field of surgery. Briefly they include scrupulous asepsis, awaiting the healing of sinuses before operating, the use if possible of autogenous grafts with as much periosteum as possible, greatest possible hemostasis, and absence of drains. Further all foreign nonabsorbable material should be avoided if possible, absolute immobilization is essential, and grafts need fill defects vertically only as the lateral deficiency would be filled out by nature. It is important to prepare the bed for the graft, and then to place the graft therein as quickly as possible and inlay grafts are preferred to the intramedullary splint. The site from which the graft is obtained varies, the tibia being preferred by most surgeons, with the fibula next in order, while in a few cases grafts have been taken from ribs, clavicle, crest of the ilium, scapula, and bones of the hands and feet.

Miscellany from Home and Foreign Journals

Gluteal Fold in Sciatic Neuritis.—Hildred Carlill (*Lancet,* August 19, 1916) has noted a diagnostic sign of considerable importance, which had apparently escaped observation. It consisted of a flattening or disappearance of the normal gluteal fold during full extension of the thigh on the affected side. This was found to occur in cases of sciatic neuritis, when the entire nerve trunk was involved or when the fibres from the fifth lumbar and first and second sacral roots were affected. When taken alone it did not indicate the extent of the sciatic involvement, but when present in association with loss of the ankle jerk it indicated the involvement of the whole sciatic trunk. As yet an insufficient number of cases has been observed for this gluteal sign to define its exact importance.

The Gastrointestinal Tract in Diabetes.—James T. Case (*Jour. A. M. A.,* Sept. 16, 1916) reports seventy-two diabetics subjected to most painstaking and thorough röntgenological examinations of their alimentary canals. The examinations showed that involvement of the gallbladder, especially in lesions producing pericystic adhesions, was common; that the stomach emptied itself with abnormal rapidity, which was to be expected from the low acidity of the gastric juice in diabetes; that, contrary to the opinions of others, duodenal stasis was rare; that ileac stasis was common and bore a striking relation in its severity to the severity of the diabetes; that incompetency of the ileocecal valve was common; and finally, that most patients had a moderate degree of colonic stasis.

Marriage and Cardiac Disease in Women.—A. P. Cabrera (*Revista de Medicina y Cirugia Practicas,* August 7, 1916) reiterates the manifesto of Peter that if a woman with organic heart disease is single she should not marry, that if she marries she should not conceive, and if she bears a child she should not nurse it from the breast. Romberg maintains that such women should be forbidden to marry and Cabrera maintains that the law should interfere to prevent such marriages. Pregnancy almost inevitably destroys compensation in cardiac cases, and when premature labor becomes imperative the slower methods are of no avail and Cæsarean section offers the only hope of saving the child, while the maternal prognosis is extremely grave.

Action of Guanidin on the Circulation.—E. I. Sinelnikova and M. P. Bovshik (*Roussky Vratch,* June 4, 1916) investigated the effect on the circulation of guanidin, an end product of nitrogen metabolism, similar to creatin. In the experiments performed on dogs, cats, and rabbits it was found that 0.005 gram per kilogram weight, injected intravenously, caused a transient fall and then a prolonged rise of blood pressure to the extent of twenty to fifty per cent., and slowing of heart's action forty-seven per cent. The action is apparently due to the stimulation of centres of the pneumogastric in the medulla, as well as the effect of guanidin on the peripheral nerves and muscular elements of the vessel walls.

The Heart in Active Service.—H. J. Seeuwen (*Jour. A. M. A.,* September 9, 1916) found twenty per cent. of the cases to be in wounded men; twenty-five per cent. of the patients were debilitated from infections, such as sore throat, dysentery, typhoid, etc., and in over half of the patients evidence of long standing cardiac weakness was obtainable. Only ten per cent. of the men under observation had been athletes. The role of bad teeth seemed to be important, for only eight of sixty men had healthy, clean dentures. One quarter of the whole number showed evidence of thyroid hypertrophy which was thought to have more or less direct relation to the presence of infection. Alcohol and tobacco seemed to play minor roles. These men were given graded exercise, and faradic current over the heart and thyroid gland; as a result more than one third were able to resume arduous work in about two months and only ten to fifteen per cent. required discharge from all military duty.

New Data on Periodical Activity of the Digestive Tract.—A. I. Nikulin (*Roussky Vratch,* June 4, 1916) by experiments on dogs with artificial fistulas communicating with the salivary glands, stomach, and duodenum, determined the effect of various substances on the periodical activity of these organs. He found that function was inhibited by any acid introduced into the duodenum, by pain, particularly in the small intestines, and by raising the temperature of the body. Occasional inhibition was produced by the introduction into the duodenum of large quantities of such indifferent substances as water, liquid petrolatum, and egg albumin. If the temperature of the liquid was very high or very low inhibition was induced, unless the liquid was thrown into the stomach by an antiperistaltic wave. The inhibition was more marked and was more rapidly produced when the digestive organs were in apathological condition such as acute gastrointestinal catarrh. High body temperature diminished gastric contractions, while low temperature increased them.

Value of Ileosigmoidostomy in Arthritis.—John T. Bottomley (*Jour. A. M. A.,* September 9, 1916) has brought together the results secured by others and those in the author's own series of patients, in order to throw light on the value and limitations of colectomy and ileosigmoidostomy in cases of chronic arthritis. Of a total of twenty-nine cases twelve were cured or greatly improved, four were considerably benefited, eleven were unchanged or were worse, and two were fatal, but not as a direct result of the operation. In nearly all cases there was decided improvement beginning almost immediately after the operation, but in many this was only transitory and the arthritis resumed its progressive character. The operation should be restricted to cases in which colonic stasis and infection seem to be the prime causes of the arthritis, all other sources of infection or toxic absorption having been satisfactorily eliminated. Colectomy would seem to be preferable to ileosigmoidostomy on account of the higher proportion of good results which follow its performance.

Education Through Posture—An Opportunity for the Orthopedist.—Joel E. Goldthwait (*American Journal of Orthopedic Surgery*, August, 1916) makes a plea for preventive medicine by early and proper training in children to prevent poor and faulty postures which might bring on subsequent chronic diseases. He quotes many keen observations, along this line, made by M. André in 1741.

Study of the Boas-Oppler Bacillus.—P. G. Heineman and E. E. Ecker (*Journal of Bacteriology*, July, 1916) as a result of their investigations of gastric juice conclude that the Boas-Oppler bacillus belongs to the group of lactic acid bacilli which occurs frequently in foods, chiefly milk. Its presence in large numbers in the gastric juice is an indication, merely, of a reduction in the normal hydrochloric acid content, whether this is due to gastric ulcer, gastritis, pernicious anemia, or gastric carcinoma, or possibly to other pathological conditions.

Effect of Adding Fresh Human Serum to Artificial Media.—Leonard S. Dudgeon, F. Bawtree, and Dudley Corbett (*Lancet*, August 19, 1916), prompted by the observation that bacterial growth was often apparently stimulated by the presence of human exudates in the media, have conducted a series of observations to determine the effect of normal blood serum. They found that the addition of such serum to fluid or solid media greatly increased the growth of many pathogenic organisms, while nonpathogenic ones were not similarly stimulated. It yielded positive cultures where other methods failed and greatly prolonged the growth of those organisms which tended to die out in artificial culture. It facilitated the growth of diphtheria, meningitic and pneumonic organisms very markedly, and materially altered their morphology in the direction of that normally found in fresh smears. In fluid media it provided an excellent means of securing abundant growths for the preparation of vaccines. The results recorded were secured with unheated serum, the heating having been shown to deprive it of many of its advantages.

Relation of Cecal Stasis to Dementia præcox.—Bayard Holmes and Julius Retinger (*Lancet-Clinic*, August 12, 1916) had previously shown that the toxic amines, especially betaiminazolylethylamine (histamine), produce reactions resembling many of the symptoms of dementia præcox. They now report having found definite evidences of an intoxication with these amines in the blood, urine, and stools of dementia præcox patients. Thus, from 0.0005 to 0.005 gram of histamine in the 100 grams of moist feces was found in each of seven patients, six with dementia præcox and one with the gastric crises of tabes; on the other hand, all normal control subjects were negative as to histamine. Seeking an explanation for the presence of the toxic amines in the dementia præcox cases, the writers were led to study the motor functions of the intestinal tract in these patients by means of the barium meal and serial fluoroscopy. Whereas motility in the stomach and upper intestine was found normal, the tail of the barium residue was in every case still present in the cecum and proximal colon fifty-four hours after the ingestion of the meal. Opportunity for the development of the toxic amines from protein foods through bacterial action or otherwise, is thus afforded by the prolonged stay of the material in the cecum. This, in turn, is ascribed to a spasm of the sphincter which has been shown to exist at the junction of the first and middle thirds of the transverse colon, stagnation resulting in the proximal colon. The colon bacillus, grown under suitable conditions on media containing histidine—a product of protein decomposition—has itself been shown capable of producing the toxic histamine. Further researches are contemplated to elaborate rational therapeutic measures for dementia præcox based on the peculiar observations already made.

Direct and Indirect Hay Fever.—W. Scheppegrell (*Jour. A. M. A.*, Sept. 16, 1916), after an extensive study of pollens and of hay fever victims, would divide hay fever into two forms—direct and indirect. The direct form is due to spiculated pollens, the indirect to smooth or nonspiculated ones. A classification of pollens with reference to the presence or absence of spicules is given, and it shows, in general, that the nonspiculated varieties belong chiefly to the grasses and are the causes of the spring form of hay fever. The spiculated pollens are from the autumnal plants chiefly, among which the ragweeds are the commonest offenders. The spiculated pollens are very low in protein content and are so hard that they probably would not readily yield up what little protein they do contain. The converse is true of the smooth forms, which are rich in protein. The statement is made that the increased susceptibility to pollen is not due to anaphylaxis in the case of spiculated varieties, but is an increased local sensitiveness of the nasal mucosa to irritation by pollens as a whole.

Enteritis of Measles.—K. Secher (*Berlin. klin. Woch.*, March 6, 1916, remarks that several observers have noticed the symptoms of enteritis in measles, but, in general, the condition has been accorded little attention. Secher observed enteritis in thirteen out of thirty-one cases of measles, in two of which it resulted fatally. In every case the enteritic symptoms began nearly simultaneously with the outbreak of the exanthem. In six of the cases the enteritis was mild, with several watery movements daily for three to five days. In four cases mucus was present at times in the stools, and the enteritis persisted for two to three weeks. In one case it lasted for three months, and in two cases death came on the twenty-third and twenty-fourth day, respectively. At autopsy in these cases there were found infiltration of the mucosa of the lower ileum and marked hyperplasia of the solitary lymph follicles and of Peyer's patches. The mesenteric lymph nodes also showed hyperplasia. A few small submucous hemorrhages were found in the lower ileum, but ulceration was absent. This form of enteritis, beginning with or at once following the exanthem, was thought to be due to the measles virus itself, and it must be distinguished from the form which develops later at times and is due probably to secondary infection. The primary form may pass into the secondary by the occurrence of infection in the already damaged tissues.

Wassermann Reaction in Tuberculosis Cases.—W. Ray Jones (*Medical Record,* September 2, 1916) writes that of 251 dispensary cases unselected fourteen per cent. gave a three plus reaction, twenty per cent. a two plus or stronger and twenty-nine per cent. one plus or stronger. History, old scars, nerve signs and symptoms were strangely absent and it is an interesting question whether the weaker reactions were due to syphilis, or to tuberculosis as some hold.

Biological Action of the Röntgen Rays.—M. I. Memenoff (*Roussky Vratch,* July 2, 1916) established experimentally the fact that when the testicles are exposed to the action of the x rays the cells of Sartoli lose their secretory power, as shown by the absence of lipoid substances within the cells. On the other hand, the cells of Leidig assume increased growth, owing to increased nutrition. Contrary to the opinion of Wilms that the röntgenization of the testicles produces atrophy of the prostate, the author found that the latter undergoes hypertrophy. This he explains by the supposition that inasmuch as the cells of Leidig furnish the internal secretion which stimulates sexual activity, the increase of these cells leads to an enlargement of the prostate.

Organic Depression of the Nerve Cell from Prolonged Ether Anesthesia. — E. E. Butler (*Journal of Medical Research,* July, 1916) found that certain definite changes took place in the nerve cells of dogs after prolonged anesthesia. At first there were those indicative of mild activity, but later evidences of depression occurred, the severity depending upon the duration of the anesthesia. It was found that these changes of depression first made their appearance microscopically in about eight hours. A moderate depression resulted from an anesthesia lasting two to six hours—up to eight hours, a marked depression. A longer period caused profound depression with beginning destruction of the cell.

Trichinosis.—W. J. Cummins and G. R. Carson (*Jour. A. M. A.,* September 9, 1916) record observations made in fifteen cases which yielded the following information: The incubation period averaged three weeks; orbital edema was absent from one third of the cases; only one quarter had an eruption; four fifths were free from bronchitis; and not a patient in the series showed enlargement of the spleen. In eleven cases the pulse was slow to an extent out of proportion to the other symptoms. No trichinæ were found in either blood or feces, an embryo was found in the spinal fluid in one case of the twelve thus examined; the urine was free from parasites in all eleven cases in which it was examined, and the muscles showed parasites in eight of nine cases examined. Eosinophilia as high as seventy-five per cent. was encountered, but neither this nor the temperature or total leucocytosis bore any relation to the severity of the attack as indicated by clinical signs. An analysis of the observations suggested that the trichinæ pass through the veins in very small numbers, and in some cases not at all, owing to mechanical interference. The parasites also seemed to undergo partial or complete disintegration in the alimentary canal.

Dilatation of the Hepatic Flexure of the Colon.—W. J. Morrish (*Lancet,* August 19, 1916) reports a case of severe, chronic enterocolitis occurring in a young man on account of the occurrence of gaseous dilatation of the whole hepatic region of the colon. The dilated portion of the colon overlay the normal liver dullness and produced tympany, the coin sound and other physical signs of pneumothorax, subphrenic or hepatic abscess, or hydatid cyst. The correct diagnosis was possible only by radiography with and without bismuth, and was confirmed at a laparotomy and later at post mortem examination.

Ehrmann's Alcohol Test Meal.—A. da Silva Mello (*Berlin. klin. Woch.,* March 13, 1916) observes that this test meal consists of a draught of 300 mils of five per cent. ethyl alcohol containing 0.05 per cent. of sodium salicylate. It was tested in comparison with other test meals in a series of twenty-five cases and the following are the author's conclusions as to its merits: It has the advantage of being a solution of constant composition, readily prepared, palatable and easily taken; being fluid it can be withdrawn after half an hour through a very small tube, thus causing a minimum of discomfort to the patient; it is sterilizable, and is free from both albumin and acid. It stimulates the gastric mucosa independently of appetite. The results of titration which it gives correspond with those of the Ewald-Boas meal, but in contrast with the latter it yields a clear fluid in which macroscopic and microscopic contaminations are readily seen. Blood, bile and mucus from the esophagus can be easily determined quantitatively and, owing to constant stimulation of regurgitation from the duodenum, this meal can be used to measure biliary and pancreatic secretion. Finally, since it is free from bacteria, it is particularly suitable for studying the gastric flora.

Recognition of Gout as the Cause in Chronic Joint Affections.—W. Weinberger (*Archives of Diagnosis,* July, 1916) states that while recognition of gout is easy in cases with typical joint attacks and tophi, there are cases of atypical gout, with vague complaints and a chronic multiple joint involvement suggesting chronic rheumatism in which the bedside diagnosis may be difficult or impossible. The writer's clinical investigations showed that in such cases, among laboratory findings, chief reliance is to be placed in observation of the characteristic curve of uric acid elimination during an attack, whether this attack has occurred spontaneously or been artificially induced by ingestion of a definite amount of purin, e. g., ten grams of sodium nucleinate. The uric acid curve in the urine (Folin-Shaffer method) shows often a preliminary stage of depression—the anacritical depression stage of His; with the development of the attack it rises abruptly—Pfeiffer's uric acid flood—later again descending, this time below the original level—the postcritical depression stage of Umber. Following ingestion of purin an exacerbation of the joint pains takes place. Other laboratory findings in gout, such as high uricemia, low endogenous uric acid output, and delayed elmination of exogenous uric acid, are all too ambiguous or indistinct to be of decisive diagnostic value.

Axillary Temperature Determination.—P. Fürbringer (*Berlin. klin. Woch.,* March 13, 1916) states that almost from the very beginning of the practice of taking the human temperature in the axilla it has been recommended that the axilla should be wiped dry before inserting the thermometer. The basis for this recommendation is not apparent, but the author has carried out a large number of parallel readings in wiped and in moist axillæ and has found that in the great majority of cases, eighty-one per cent., the reading in the moist axilla was the higher. He concludes that this is more nearly a correct measure of the body temperature than the reading from the dried axilla. The use of the unwiped axilla has the further advantage of giving a more effective sealing of the space, of bringing the bulb into closer contact with the skin and of holding the thermometer more securely against slipping. Finally, in many cases the wiping actually accomplishes nothing, for the axilla becomes moist during retention of the thermometer.

Latent Tuberculosis. — Chung Yik Wang (*Lancet,* Sept. 2, 1916) states that lymphatic nodes from a group of patients clinically free from tuberculosis were tested by inoculation into guineapigs for the presence of living tubercle bacilli. The nodes were taken only from patients who had died and who showed no gross evidence of tuberculosis at autopsy. The nodes themselves, in every instance, were examined microscopically and found to be free from evidence of tubercle. A total of thirty-two cases were thus examined and the nodes from three were proved to contain living, pathogenic tubercle bacilli. A careful review of the literature showed that similar findings had been recorded by a few other workers, and when the results of all who had made such studies were included with those of the present series, they indicated that latent tuberculosis probably existed in an average of about twelve per cent. of human beings. It was impossible to determine the duration of such latency in the human being, but some observations which have been made upon guineapigs showed definite latency for as long as 104 days.

Early Diagnosis of Acute Infantile Paralysis.—L. C. Ager (*Archives of Diagnosis,* July, 1916) discusses the symptoms other than paralysis upon which an early tentative diagnosis may be based. The premonitory symptoms indicating an acute general infection vary as widely as in scarlet fever. The impression that has arisen, that catarrhal symptoms are frequent, is erroneous, increased secretions from the mouth, nose, and eyes being practically never present except in the later stages of severe infection. The existence of a large class of cases in which there is definite evidence of invasion of the central nervous system without an appreciable resulting paralysis renders it necessary that a tentative diagnosis be regularly proved or disproved by careful examination of the spinal fluid. The early diagnostic symptoms are divided by Ager into those of the psychic, the motor, and the sensory tracts. Characteristic is a psychic inhibition varying from drowsiness to coma. The latter is distinguished from that of meningitis in that the patient can be aroused to almost normal mentality; the special senses respond readily. Some children, however, exhibit a marked excitability and suspicious watchfulness; in a few instances, a state of delirium is reached. Among the early motor symptoms an anteroposterior cervical stiffness, usually with similar spinal rigidity, is frequent; a tendency to resist motion of any or all extremities may also be noted. Later, particularly in the meningitic type of case, there may be true—not reflex—spastic rigidity, scaphoid abdomen, and convulsions, as in other forms of meningitis. Occasionally increased knee jerk and ankle clonus are noted. The author has seen twitching of affected muscles before the advent of any definite signs of paralysis. The sensory symptoms, in the present epidemic, seem to be present in nearly every case. Pain and hyperesthesia are frequent in the polyneuritic—or better, pseudoneuritic—type of the disease. The pain and tenderness along the nerve trunk is usually such as to necessitate free use of codeine or morphine. Nearly always the skin and muscles of the back are similarly affected early in the disease, this being soon followed by muscular pain and tenderness in the limbs, often leading to treatment for rheumatism by mistake. Special centres are frequently affected in addition. Marked sweating even with a high temperature, is a frequent early symptom. Low temperature of a limb occasionally occurs early in the disease. Circulatory disturbance may be indicated by a tâche, irregular lividity or mottling, or pronounced localized flushing. To facilitate early diagnosis and permit helpful treatment, these symptoms as noted should be sought in all suspected cases.

Diagnosis of Enteric Fevers in Inoculated Persons.—Georges Dreyer and E. W. Ainley Walker (*Lancet,* Sept. 2, 1916) state that the agglutinin reaction is probably the most valuable means for diagnosing the several enteric fevers, but if the opinions of certain writers are to be accepted this test has lost much of its value since the practice of general inoculation was adopted. In the presence of the modifying factor of inoculation the agglutination test is just as trustworthy a diagnostic measure as in the noninoculated, but it must be made accurately quantitative and diagnosis must be based upon the comparative results of two or three successive reactions made at intervals of several days. From their very extensive experience of the reaction, as carried out quantitatively and with a standardized agglutinable culture, the authors found that the maximum agglutination titre of active typhoid or paratyphoid infection occurred between the sixteenth and twenty-fourth days of the disease. If the maximum is found before this time, a careful inquiry as to the exact date of onset is required. A diagnosis of one of the enteric fevers cannot be made from a moderate rise in agglutination titre if the maximum is found to fall certainly outside of the normal time limits, since such a rise may be due to other febrile conditions. Unless the several titrations be taken fairly near together one may miss the maximum and obtain two readings nearly alike in the presence of active infection. If there is a regular rise and later fall in the titre, even of only moderate extent, occurring within the normal limits, the diagnosis of typhoid or paratyphoid fever may be made even in persons with mild or atypical attacks.

Proceedings of National and Local Societies

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Third Annual Meeting, Held at Washington, D. C., May 11 and 12, 1916.

The President, Dr. J. W. Jobling, of Nashville, Tenn., in the Chair.

(Continued from page 619.)

Inadequacy of the Anaphylatoxin Theory of Anaphylaxis (*Continued*).—Dr. Richard Weil said further that in these respects it was perfectly analogous to the anaphylactic reaction. If in place of the visible alteration, expressed as precipitation in the test tube, interaction of the two factors *in vivo* was supposed to produce an alteration of cellular equilibrium, such as would act as a cellular stimulus, all the requirements of the problem were satisfied. In view of the fact that precipitin had been demonstrated to be identical with the sensitizing antibody, this explanation of anaphylaxis seemed almost self evident. This conception rid them of the necessity of postulating an intermediate chemical product, namely, anaphylatoxin; such a postulate was not only superfluous, but was also entirely incompatible with all the characteristic features of the reaction.

The preceding discussion was limited to phenomena ascertained in guineapigs. Anaphylatoxin had been produced only through the incubation of guineapig serum. Yet in the guineapig the conclusion seemed unavoidable that anaphylactic death was due to a cellular reaction, and that the serum changes played no role therein. There was no question, on the other hand, that during the prolonged or delayed shock of the dog, striking alterations occurred in the chemical composition of the blood. These changes were due in the first instance to the freeing of protease, as a result of the reaction of the sensitized cells to the antigen. It still remained to determine whether the changes in the serum produced through the activity of the protease were really the cause of the later symptoms, or mere accompaniments of the shock in this species. Even in the former event, the primary step in the entire reaction, namely, the discharge of protease, would be cellular.

Specific Character of Immunity Reactions.—Dr. E. C. L. Miller, of Richmond, Virginia, believed that ordinary immunity reactions might be considered as a result of training. A horse to produce diphtheria antitoxin must have been injected with diphtheria toxin, a child to be immune to scarlet fever must have had scarlet fever. This immunity was specific. The horse that had been injected with diphtheria toxin produced diphtheria antitoxin and not tetanus antitoxin; the child that had recovered from scarlet fever was immune to scarlet fever and not to measles. All their thinking about immunity was based on the assumption that the relation of antigen to antibody was specific. Medicolegal tests for blood had been worked out and accepted by the courts on the assumption that only one antigen could react with the same antibody. Now, however, there was evidence that this was not true, that two or more antigens might produce the same antibody and that the same antigen might produce two or more antibodies. This had been particularly well demonstrated in the hemolysis of the red blood cells of sheep. It had been shown by a number of workers that a specific sheep hemolysin could be produced in a rabbit, not only by the injection of sheep blood cells, but also by the injection of such entirely unrelated substances as the liver of the guineapig, the gills of a carp, or the kidneys of a turtle. The explanation of this seemed to be that the relation of antigen to antibody did not depend on the entire protein molecule as a whole, but rather on certain groups in the molecule, and it so happened that various unrelated substances contained these groups and so produced a common antibody.

Dr. H. Gideon Wells, of Chicago, stated that in all problems of immunology, specificity was the vital point which could never be overlooked without disaster. Nevertheless, many hypotheses had been developed which entirely disregarded specificity, and, therefore, must obviously be incorrect. In studying the principles of immunology, there had been great difficulties because of the failure to grasp the essential principles, as laid down by Jacques Loeb—that in studying the fundamental principles of biological processes they must reduce the elements involved to the simplest possible, for at the best the reactions were complex and difficult of interpretation. It would be recalled that he reduced the factors in his reactions to the simplest possible, by using the single egg as a living organism and the simple inorganic salts as his agents. In studying the principles of immunology they should follow these principles as far as possible. Unfortunately, they apparently could not get below the whole protein molecule as one end of their reactions, and generally must use the warm blooded mammals for the other side of the equation, although possibly work on cell cultures might help them to simplify their materials.

The best they could do, therefore, was to use pure protein, and, fortunately, there were some proteins that could be obtained in relatively pure condition. Those proteins which differed greatly from the great majority of proteins, were especially favorable materials for purification, such as noncoagulable ovomucoid of egg white or alcohol soluble proteins of the grains. Using such isolated proteins, and others, they had found evidence that, delicate as the specificity of immunological reactions seemed to be, immunological differences did not seem to occur between proteins that could not also be differentiated chemically. The specificity differences of the different proteins seemed to agree with differences in chemical composition, and, as yet, they had not found finer differences, such as stereoisomeric differences with identical chemical composition.

To illustrate: By comparative study of different proteins isolated from hen's egg by anaphylaxis, the speaker had been able to distinguish five proteins definitely distinguishable from one another by this means. Osborne and Harris, working by chemical means, isolated from the hen's egg five different proteins which corresponded exactly to the five antigens differentiated by anaphylaxis. Proteins of the egg that could not be differentiated by chemistry could not be differentiated by anaphylaxis. Doctor Osborne and the speaker had also found in many cases that proteins which were isolated by chemical means could be checked up accurately as to their individuality by anaphylaxis and other immunological reactions, and immunological methods had been found to be of much help in establishing the chemical identity of unknown proteins.

Dr. John A. Kolmer, of Philadelphia, said that it would be difficult to improve upon the excellent summary presented by Doctor Jobling on the relation of lipoids to immunity. He agreed with the essayist that more and more importance was being attached to the role of lipoids in this field. It had been amply proved that a toxic substance might be prepared of various animal and vegetable proteins by the method employed by Doctor Vaughan; likewise toxic substances could be produced in normal and immune serums by the addition of such substances as kaolin and agar capable of producing anaphylacticlike symptoms and lesions in experimental animals, but it was not yet clear what relation these observations bore to the mechanism of anaphylaxis and particularly so in view of the work presented by Doctor Novy within the past few days. He asked Doctor Vaughan if he was prepared to make any further statement in regard to the relation between his protein poison and the mechanism of anaphylaxis. He asked Doctor Miller if he had made careful titrations of the content of antisheep hemolysin in the serums of his rabbits before immunization, as the serums of a large proportion of these animals contained natural antisheep hemolysin. In his opinion, "group reactions" in immunity were best explained at the present time according to the views expressed by Doctor Wells.

Doctor Vaughan had watched Doctor Novy's experiments with the deepest interest. Even before Doctor Novy spoke to him about it, he had observed the appearing and disappearing and reappearing wave of toxicity in serums being incubated with agar and other foreign bodies. He spent much time and sacrificed many animals in trying to measure these waves and catch the rhythm of the toxicity, but without results. He was not yet ready to abandon the idea that a protein poison was formed in anaphylactic shock. No one could tell whether this was due to a chemical or physical process. It was difficult to draw a line between physical and chemical changes. He could conceive that a body so complex as the protein molecule might be dissociated and a poisonous action developed even by high dilution. If so stable a body as sodium chloride could be broken up into its ions by dilution, was it not possible that even more marked alterations might occur in a highly complex molecule? He was convinced of the fact that the blood contained proteins from which a poisonous group was easily detached. Doctor Novy had accumulated many experimental data: He hoped that he would soon publish his protocols and give them all an opportunity to try their hand at theory and explanation.

Dr. James W. Jobling, of Nashville, Tenn., stated that the intoxicating dose in anaphylaxis probably acted first on the cells. In guineapigs it caused a contraction of the muscle cells of the bronchi to such a degree that immediate death ensued from asphyxia. In dogs, however, death did not occur for several hours, and the clinical picture was quite different. In the latter case they had observed definite changes in the blood, and believed that death was probably due to the products of protein cleavage. The ferments, which were greatly increased in amount, were probably liberated as a result of the cell stimulation, and their activity was dependent upon colloidal changes which had taken place when the antigen was brought into contact with the serum. They observed a definite increase in the higher and lower protein cleavage products in the blood. These, they believed, were derived from the serum proteins and not from those introduced.

Dr. Richard Weil, of New York, was not particularly interested in establishing the universal validity of any of the current theories of anaphylaxis. Attempts of this sort had done more in the past to obscure the truth than to advance it. For example, the discovery by Friedberger that anaphylatoxin could be produced in the test tube led at once to the assumption that such a substance was produced *in vivo* and was the actual cause of death in the guineapig; consequently the German school expended a great deal of labor to overthrow the cellular theory of anaphylaxis in the guineapig and to establish the humoral theory in order to vindicate the truth of the primary assumption. Time, however, had completely established the truth of the cellular theory, so that in the guineapig, at all events, it seemed certain that serum changes, with the production of so called anaphylatoxin, could play no role in the typical evolution of shock. It would, however, be just as serious a mistake to assume that the process which took place in the guineapig must necessarily be universally applicable to the anaphylactic phenomenon throughout the animal kingdom. They knew that between the guineapig and the dog, for example, certain striking differences existed. The white cells of the pig contained tryptic ferments, those of the dog contained none. Serum of the guineapig was rich in proteolytic ferment; serum of the dog contained little, if any. Furthermore, it seemed likely that the liver was essential to anaphylactic shock in the dog, whereas it played no role in the guineapig. Possibly, therefore, the mechanism in the two species was entirely different, as was further indicated by the rather striking differences in the anaphylactic symptoms themselves. They knew with certainty that serum changes of chemical nature accompanied anaphylactic shock in the dog. This fact, however, by no means argued that these changes were productive of the anaphylactic symptoms. Those symptoms might result from the gradual development of the cellular response to the antigen, taking place, however, more slowly and more gradually than in the guineapig, just exactly as diphtheria toxin produced its effect slowly and gradually. In other words, as he had already stated, it still remained to determine whether serum changes in the dog, resulting in the production of some unidentified substance described as anaphylatoxin, were simply an accompaniment of anaphylactic shock in that animal, or were actually productive of the symptoms thereof.

Allergic Skin Reactions as an Index of Immunity.—Dr. John A. Kolmer, of Philadelphia, explained that his experiments were undertaken primarily to determine if the serums of persons and animals reacting positively and negatively to various allergic skin tests contained lytic antibodies for the corresponding living microorganisms, and if so, whether or not these antibodies bore a quantitative relationship to the allergic reactions; secondarily, to determine the relationship, if any, among bacteriorlytic, agglutinating, and complement-fixing antibodies in the serums of persons and animals reacting variously to allergic skin tests. The serums of persons reacting positively and negatively to the typhoidin, luetin, and diphtherin tests were studied; also the serums of dogs reacting positively and negatively to the intracutaneous injection of an emulsion of Bacillus bronchisepticus.

Bactericidal tests with Bacillus typhosus, Bacillus diphtheriæ, and Bacillus bronchisepticus were conducted with a modified looped pipette method of Wright; spirocheticidal tests *in vitro* were conducted with a pure culture of Treponema pallidum. The serums of normal persons possessed a marked bactericidal power for Bacillus typhosus; the bacteriolysis for Bacillus typhosus in the serums of normal persons and persons who had typhoid fever or had been immunized with typhoid vaccine, was high, but bore no relation to the typhoidin skin reactions.

The serums of syphilitic persons in the tertiary stages who reacted positively and negatively to the luetin skin test and the serums of normal persons showed no appreciable spirochetical activity for a pure culture of Treponema pallidum. The serums of persons reacting positively and negatively to the intracutaneous injection of a washed polyvalent antigen of diphtheria bacilli showed an absence of bactericidal power for Bacillus diphtheriæ. The serums of dogs suffering with distemper; also the serums of healthy dogs and dogs immunized with Bacillus bronchisepticus and reacting positively and negatively to an intracutaneous allergic reaction, were found to be without appreciable bactericidal power for Bacillus bronchisepticus.

Agglutinins and complement-fixing antibodies in the serums of persons and animals for these various microorganisms bore no relation to the skin reactions. These studies demonstrated that there was no experimental support for the theory that allergic skin reactions might be taken as an index to resistance and immunity in so far as it was possible to determine the presence of antibodies *in vitro*.

Immunity Results Obtained from Diphtheria Toxin—Antitoxin Mixtures and the Schick Test.—Dr. William H. Park and Dr. A. Zingher, of New York, presented a series of over one thousand cases that had been actively immunized with diphtheria toxin-antitoxin. These susceptible individuals were selected by means of the Schick test out of a total of about 10,000 children and adults in ten different institutions. The mixtures of toxin-antitoxin used for immunization were either neutral (sixty-six to seventy per cent. L+ to each unit of antitoxin) or slightly toxic (eighty to ninety per cent. L+ to each unit of antitoxin) to the guineapig. The dose was varied from 0.5 c. c. to one c. c., and the number of injections from one to three. The injections were made subcutaneously at intervals of seven days. The local reactions at the site of injection were generally mild; in the older children and adults, the redness and swelling were more marked. General symptoms, like malaise, and a temperature of 100 to 102° F. were noted in ten to twenty per cent. of the cases; in a few the temperature reached 104° F. The symptoms lasted from twenty-four to forty-eight hours, and then rapidly subsided. Both local and general symptoms were especially evident in those who showed a susceptibility to the protein by giving a combined false and true Schick reaction. No harmful aftereffects were noted in several thousand injections.

The retests with the Schick reaction showed that only thirty to forty per cent. became immune three weeks after the first injection; about fifty per cent. at four weeks, seventy to eighty per cent. at six weeks, and ninety to ninety-five per cent. at eight to twelve weeks. The best results were obtained with the full immunization, consisting of three injections of one c. c. each, given at weekly intervals. The duration of the active immunity was studied in a group of children that were followed up for over one year and six months; these cases showed that the active immunity persisted for at least that length of time. It was possible that the immunity induced by the injections of toxin-antitoxin started a continued cellular production of antitoxin, which would have otherwise appeared much later in life.

From their results Park and Zingher concluded that it was advisable to immunize children soon after the first year of life, so as to afford them a protection against diphtheria at a time when the disease was most dangerous. In addition, such young children, by not having any hypersensitiveness to the bacillus protein, showed very mild local and constitutional symptoms after the injections. An immune child population could thus be developed, with the result that fresh clinical cases would be prevented and the bacillus carrier would probably soon disappear as a hygienic factor in their communities.

Interesting and parallel results were noted in guineapigs and horses. Guineapigs were fairly resistant to active immunization with diphtheria toxin-antitoxin, and in that respect showed an almost complete parallelism to the positive Schick cases among human beings. After injection of toxin-antitoxin, an antitoxic immunity developed slowly from the sixth to the eighth week. Horses, on the other hand, as a rule corresponded in their behavior toward small doses of toxin-antitoxin to human beings, who were naturally immune. Both gave a ready response, even after a single injection of toxin-antitoxin, and showed a distinct increase in the antitoxin content toward the end of the first week. Occasionally, a horse was found that had no antitoxin in the control bleeding; such animals responded slowly to small doses of toxin-antitoxin. It was probable that the tissue cells of the naturally immune human beings and the majority of horses had acquired the property of giving a quick and easy response to the stimulation of diphtheria toxin.

The use of the Schick test in the selection of susceptible children for immunization and in controlling the results of the treatment was justified by the great clinical accuracy which the test had shown during a period of several years in the separation of the susceptible from the immune individuals. The test should be carried out properly with a fresh toxin solution, and the results read daily, for a period of seventy-two to ninety-six hours. The pseudoreactions should be controlled with heated toxin, or recognized by their rapid disappearance after seventy-two hours. It was only these individuals who gave the more marked local reactions after the injections of toxin-antitoxin.

In conclusion, Doctor Park and Doctor Zingher stated that the research laboratory of the New York health department would supply those who were connected with institutions and interested in the work, both the toxin for the Schick test and the toxin-antitoxin for immunization.

Anaphylactic Food Reactions in Skin Diseases, with Special Reference to Eczema.—This paper, by Dr. ALBERT STRICKLER, of Philadelphia, appeared in the JOURNAL for July 29, 1916, page 198.

Localization of a Streptococcus in Animals from a Case of Recurring Neuritis and Myositis.—Dr. EDWARD C. ROSENOW, of Rochester, Minn., announced that a streptococcus having peculiar properties was isolated from the dead pulp of the left upper first molar in the region where the attacks of pain usually began. The streptococcus was also demonstrated in the sections and isolated from the infiltrated deep fascia and muscles of the left side of the neck. A similar streptococcus was isolated from the pharynx and stool. This streptococcus was found to have elective affinity for the pulp of teeth, dental nerves, and muscles of animals. It was repeatedly isolated from and demonstrated in the experimental lesions in animals whose blood was sterile; the lesions were again produced on reinjection and the streptococcus again isolated. Many animals appeared to be in pain and one rabbit had marked pain and tenderness over the left upper jaw. This affinity was proved to be absent in the diphtheroid germs and Bacillus fusiformis also isolated from the pulp of the tooth, and in the streptococcus broth culture filtrate. Streptococci from other sources rarely caused lesions in the pulp of teeth and dental nerves. Following the attack, the phagocytic power of the patient's blood over the strain from the tooth was twice that of comparable normal blood. These results would appear to warrant them in drawing the conclusion that the attacks of pain in the face in this patient were due to a streptococcus infection of the sheaths of the dental nerves, and that the pain, swelling, and tenderness and spasm of the muscles of the neck were due to fibrositis, the result of infection by this streptococcus. The demonstration of living streptococci in the pulp of the tooth and in the fascia and muscle during quiescent periods was significant and might explain the recurrence of the attacks.

(*To be continued.*)

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Treatment of Diabetes Mellitus. With Observations upon the Disease Based upon One Thousand Cases. By ELLIOTT P. JOSLIN, M. D., Assistant Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital, etc. Illustrated. Philadelphia and New York: Lea & Febiger, 1916. Pp. 440. (Price, $4.50.)

Recent years have brought great advances in the knowledge of both the pathogenesis and the treatment of diabetes, but successful care of the diabetic still requires a large measure of that skill which is acquired only through experience. The ideal for a volume on the treatment of diabetes would seem to demand a presentation of a blend of the best of scientific knowledge with wide practical experience. In this new volume Joslin has approached so close to the ideal that it would be extremely difficult to discover wherein he has failed of its attainment. He examines lucidly the older and the newer views as they bear upon the question of treatment and justly weighs the value of each plan advocated. He is an enthusiast in favor of Allen's fasting treatment and justifies his enthusiasm by his own strikingly favorable results. This plan of treatment, like other successful measures, is described clearly and in detail. So nicely balanced has been the author's judgment in the preparation of this volume, that we cannot find one portion which deserves emphasis more than another unless it be to speak with special praise of the section on treatment proper and the section which follows it, setting forth certain aids in practical management. If we were seeking the greatest amount of practical information bearing on the care of diabetics in a readily available form, we could not do better than to turn to Joslin's volume. We have no fear of contradiction when we say that it is one of the best written, sanest, and most practical books on diabetes which has yet been published and that it will prove equally valuable to the scientist studying the disease and to the practitioner trying to help his patients.

Bacteriology, General, Pathological, and Intestinal. By ARTHUR ISAAC KENDALL, B. S., Ph. D., Dr. P. H., Professor of Bacteriology in the Northwestern University Medical School, Chicago, Ill. Illustrated with 98 Engravings and 9 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. x-651. ($4.50.)

The trend of modern medical science is more and more away from the morphological aspects of life and strongly toward the chemical phenomena. Nowhere is this trend better seen than in the study of nutrition and in the newer field of immunology, but modern bacteriology has not failed to be influenced by this newer point of view. It is from this side that Kendall has written, and his book marks a new departure in textbooks on bacteriology. He has given all that is new in the realm of bacteriological morphology, in the cultivation and identification of bacteria, and in the field covered by bacteriology as we used to know it, but more than this he has chosen to present the matter from its chemical side. Thus he gives the most recent knowledge regarding bacterial metabolism, not only from the standpoint of the bacteria, but also from the more important side of the effects of bacterial metabolism upon the human host. It is his chapters on the physiology, the chemistry, and the metabolism of bacteria, together with those on saprophytism, parasitism, and pathogenism, on infection and immunity, and on anaphylaxis which throw the study of bacteriology into a new and clearer light and which make the book something entirely new in its field. These chapters, together with that on the bacteriology of the digestive tract, lift the volume from the narrow realm of purely technical works and truly force it upon the attention of all progressive clinicians who would gain a clearer insight into the phenomena of diseases of bacterial origin. We should be remiss if we failed, in closing, to compliment the author on the clarity of his style and the interest with which he has invested what has usually been regarded as a dry subject.

Milk and Its Hygienic Relations. By JANET E. LANE-CLAYPON, M. D., D. Sc. (Lond.), Assistant Medical Inspector under the Local Government Board. Published under the Direction of the Medical Research Committee (National Health Insurance). With Eight Plates and Diagrams in the Text. London, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1916. Pp. viii-348. (Price, $2.50.)

In this volume will be found practically all that is of scientific or hygienic interest on the subject of milk. There are chapters on the general composition of milk; the organic and inorganic constituents of milk; the so called biological properties of milk; the cellular content of milk; breast feeding; the nutritive value of raw and of boiled milk; dried milk as a food for infants; the alleged production of Barlow's disease and rickets by the use of heated milk; changes occurring in milk as a result of the application of heat; the presence in milk of certain organisms likely to cause disease; the sources of contamination of milk; the production of milk, as far as possible free from contamination; bacteria commonly found in milk, and their thermal death points; the methods commonly used in the heating of milk; and the presence of pathogenic bacteria in milk and cheese. Each chapter is preceded by a summary of its contents, and is followed by a carefully selected list of references to the literature of the subject; and all of the papers referred to (with the exception of one or two, which were inaccessible) have been read by the author. The book is one of unusual merit, and should appeal to a wide circle of readers. It contains, in readily available form, information that is usually only to be found after a prolonged search in various works on bacteriology, chemistry, physiology, hygiene, dietetics, pediatrics, agricultural science, and innumerable technical journals.

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Interclinical Notes

According to *Commerce and Finance* for September 6th, American contributions to the various funds intended for the relief of war sufferers in Europe aggregate $35,000,000, or thirty-five cents per capita. At a low estimate we shall spend $250,000,000, or $2.50 per capita, for jewelry this year. The comparison is not one to be proud of, is it?

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In the *New York American* for September 10, 1916, Dr. Arthur C. Jacobson discussed the physical causes of the death of Christ, coming to the conclusion that the heart ruptured into the pericardium. The thesis is well reasoned out. The premises are far removed, however, from those of Huxley and other scientific writers who have treated of the same death. In George Moore's latest book, *The Brook Kerith,* Christ is supposed to have been rescued from the cross by Joseph of Arimathea before life was extinct, and his faculties having been restored in the cool and quiet tomb, to have spent the rest of his days in a sort of phalanstery, tending the sheep of the brethren. This was also Huxley's theory of the resurrection, although that writer did not speculate on the occurrences of the subsequent forty days.

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The August number of the *Modern Hospital* is devoted to welfare work among the industrial corporations of the country. There are editorial articles by those competent to write on this important subject, a great number of papers written by welfare directors in some of the most important industrial corporations, and an immense amount of statistics and figures and facts showing the huge volume of work that the corporations are doing to protect their employees against sickness, accidents, and discontent. The journal contains many illustrations of first aid stations, emergency hospitals, and welfare departments of industrial plants, and many facts that should be of great help to those interested. Among the topics discussed are those of first aid, industrial nursing, lunches and diets for industrial employees, safety devices in factories, and athletic and social clubs for employees. The editors frankly state that they have been unable to obtain figures as to cost of welfare work in the industries, but a number of writers attempt to make deductions and draw conclusions from their experiences of the past few years.

Meetings of Local Medical Societies

MONDAY, *October 2nd.*—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association (annual); Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

TUESDAY, *October 3rd.*—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Medical Society of the County of Yates; Medical Society of the County of Ulster; Medical Society of the County of Orleans (annual); Medical Society of the County of Cattaraugus.

WEDNESDAY, *October 4th.*—New York Urological Society; Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Schenectady Academy of Medicine.

THURSDAY, *October 5th.*—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

Friday, October 6th.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Manhattan Dermatological Society; Practitioners' Society of New York; Corning Medical Association; Saratoga Springs Medical Society; Society for Serology and Hematology, New York.

SATURDAY, *October 7th.*—Benjamin Rush Medical Society, New York.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 20, 1916:

ANDERSON, T. B. H., Assistant Surgeon. Bureau letter dated September 7, 1916, amended to grant six days' leave of absence from September 7, 1916.

DERIVAUX, R. C., Assistant Surgeon. Ordered to take temporary charge of Marine Hospital at New Orleans, La., and direct work of malaria investigations.

ESKEY, C. R., Assistant Surgeon. Continued on duty at Chicago, Ill.

FOSTER, M. H., Surgeon. Authorized to travel to different points in Pennsylvania and adjacent States to make investigations relative to prevalence of poliomyelitis and direct officers under him to perform the same duty when necessary.

FROST, W. H., Passed Assistant Surgeon. Relieved from duty at New York, N. Y., and directed to rejoin station at Cincinnati, Ohio, stopping en route at Bureau.

IRWIN, FAIRFAX, Senior Surgeon. Ordered to represent the Service at the meeting of the American Hospital Association, Philadelphia, Pa., September 26-29, 1916.

MCCOY, G. W., Surgeon. Granted seven days' leave of absence en route under Bureau orders of August 29, 1916.

RUCKER, W. C., Assistant Surgeon General. Granted seven days' leave of absence from September 14, 1916.

STOUT, JOSEPH D., Assistant Surgeon. Continued on duty at Stapleton, N. Y.

TREADWAY, W. L., Assistant Surgeon. Relieved from duty at Little Rock, Ark., and directed to report at Washington for duty in field investigations of school hygiene.

Waller, C. E., Assistant Surgeon. Directed to proceed to Philadelphia, Pa., for duty on steamer *Murray*, in investigations of pollution of tidal waters.

Waring, C. H., Assistant Surgeon. Relieved from duty at Jackson, Miss., and directed to proceed to Baltimore, Md., for duty in preventing the spread of poliomyelitis.

Watkins, J. A., Passed Assistant Surgeon. Relieved from duty at New York, N. Y., and directed to rejoin station at Pittsburgh, Pa.

White, J. H., Senior Surgeon. Granted six days' leave of absence from September 17, 1916, under paragraph 193, Service Regulations.

Woods, Edwin O., Assistant Surgeon. Continued on duty at Seattle, Wash.

Young, G. B., Surgeon. Granted two days' additional leave of absence, September 8 and 9, 1916.

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the two weeks ending September 23, 1916:

Allen, D. G., Passed Assistant Surgeon. Ordered to the *Chester* for duty.

Biello, J. A., Passed Assistant Surgeon. Detached from the New York Recruiting Station and ordered to duty at the Naval Hospital, Portsmouth, N. H.

Blackwood, N. J., Medical Inspector. Detached from the Navy Yard, Boston, Mass., and ordered to command the *Solace*.

Borden, J. T., Assistant Surgeon. Detached from the Marine Brigade, Port-au-Prince, Haiti, and ordered to duty as inspector in the Haitian Constabulary.

Buckley, John, Passed Assistant Surgeon. Commissioned a passed assistant surgeon from February 4, 1916.

Carson, V. H., Assistant Surgeon. Detached from the Marine Expeditionary Force, San Domingo, and ordered to duty on the *Castine*.

Curl, H. C., Surgeon. Detached from duty as force surgeon, Atlantic Fleet, and ordered to duty at the Marine Barracks, Port Royal, S. C.

Drum, W. M., Assistant Surgeon, Medical Reserve Corps. Appointed an assistant surgeon from August 25, 1916.

Dunn, W. M., Acting Assistant Surgeon. Ordered to duty at the Marine Recruiting Station, Atlanta, Ga.

Francis, C. H., Assistant Surgeon. Commissioned as assistant surgeon from August 10, 1916.

Freeman, G. F., Surgeon. Detached from the *Tacoma* and ordered home to await orders.

Garrison, P. E., Passed Assistant Surgeon. Detached from the *Dolphin* and ordered to duty with Expeditionary Force, San Domingo.

Gatewood, J. D., Medical Director. Detached from command at Naval Medical School, Washington, D. C., and ordered to duty at Bureau of Medicine and Surgery, Navy Department.

Gibson, Gordon, Assistant Surgeon. Commissioned an assistant surgeon from August 10, 1916.

Helm, J. B., Assistant Surgeon. Detached from the *Castine* and ordered to duty as inspector in the Haitian Constabulary.

Kennedy, R. M., Medical Inspector. Detached from the *Solace* and ordered home to await orders; ordered to command Naval Hospital, Washington, D. C.

Koltes, F. X., Surgeon. Detached from the First Brigade of Marines, Port-au-Prince, Haiti, and ordered to duty as director of Haitian Constabulary.

Leys, J. F., Surgeon. Ordered to duty at Navy Yard, Boston, Mass.

May, H. A., Passed Assistant Surgeon. Detached from the Marine Barracks, Port Royal, S. C., and ordered home to await orders.

Ohnesorg, Karl, Surgeon. Detached from duty as assistant naval attaché, Berlin, Germany, and given leave of absence.

Old, E. H. H., Passed Assistant Surgeon. Detached from duty at the Naval Medical School and at the Naval Hospital, Washington, D. C., and ordered to duty on the *Solace*.

Plummer, R. W., Surgeon. Ordered to duty on the *Alabama*.

Pryor, J. C., Surgeon. Detached from the Bureau of Medicine and Surgery, Washington, D. C., and ordered to duty at the Naval Medical School.

Rushmore, J. C., Assistant Surgeon. Commissioned an assistant surgeon from August 10, 1916.

Shepard, G. W., Passed Assistant Surgeon. Ordered to duty on Receiving Ship, Norfolk, Va., September 25, 1916.

Stitt, E. R., Medical Director. Ordered to command Naval Medical School, Washington, D. C., September 25, 1916.

Strine, H. F., Surgeon. Ordered to duty at Naval Hospital and Medical School, Washington, D. C., September 25, 1916.

Stuart, M. A., Passed Assistant Surgeon. Ordered to duty at the Navy Yard, Norfolk, Va.

Sutton, D. G., Passed Assistant Surgeon. Detached from the *Chester* and ordered to duty at the Naval Medical School, Washington, D. C.

Taylor, J. S., Surgeon. Detached from the *Alabama* and ordered to duty as force surgeon, Reserve Force, Atlantic Fleet, on the *Rhode Island*.

Trible, G. B., Passed Assistant Surgeon. Ordered to duty at Naval Academy, Annapolis, Md., September 25, 1916.

The following named assistant surgeons of the Medical Reserve Corps have been ordered to the Naval Medical School, Washington, D. C., September 25, 1916, for a course of instruction: L. H. Williams, F. F. Murdock, O. D. King, A. C. Sinton, C. H. Francis, J. J. Laughlin, J. A. Halpin, T. E. Cox, A. W. Hoagland, A. M. Larson, F. T. Bower, I. W. Jacobs, A. H. Gecha, P. F. Prioleau, J. C. Brentley.

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Births, Marriages, and Deaths

Married.

Boyle-Donaghue.—In Hartford, Conn., on Thursday, September 14th, Dr. Robert J. Boyle and Miss Sarah Donaghue.

Griffin-O'Brennan.—In Bridgeport, Conn., on Thursday, September 14th, Dr. Daniel P. Griffin and Miss Mabel O'Brennan.

Died.

Brown.—In Monticello, Ark., on Wednesday, September 6th, Dr. William A. Brown, aged seventy-four years.

Crump.—In West Point, Miss., on Tuesday, September 5th, Dr. L. L. Crump.

Davis.—In Cincinnati, Ohio, on Friday, September 8th, Dr. Walter L. Davis, aged seventy-two years.

Estes.—In Georgetown, Ky., on Tuesday, September 12th, Dr. John W. Estes, aged seventy-six years.

Hogan.—In Brooklyn, N. Y., on Sunday, September 17th, Dr. Patrick F. Hogan, aged sixty-four years.

Judson.—In New York, on Wednesday, September 20th, Dr. Adoniram Brown Judson, aged eighty years.

King.—In Atlanta, Ga., on Friday, September 8th, Dr. Aaron J. King, aged sixty-eight years.

Keenan.—In Elizabeth, N. J., on Monday, September 18th, Dr. J. Herbert Keenan.

Mackay.—In Peacham, Vermont, on Monday, September 11th, Dr. Albert J. Mackay, aged fifty years.

Mayfield.—In St. Louis, Mo., on Tuesday, September 12th, Dr. William Henderson Mayfield, aged sixty-four years.

Moore.—In Rochester, N. Y., on Wednesday, September 13th, Dr. Richard M. Moore, aged sixty-one years.

Pickard.—In Mikana, Wis., on Sunday, September 10th, Dr. William S. Pickard, of Maywood, Ill., aged fifty-seven years.

Reid.—In Baltimore Md., on Tuesday, September 12th, Dr. E. Miller Reid, aged seventy-two years.

Shannon.—In Saco, Me., on Thursday, September 14th, Dr. James H. Shannon, aged seventy-five years.

Shoemaker.—In Des Moines, Iowa, on Monday, September 11th, Dr. Oliver H. P. Shoemaker, aged sixty-eight years.

Sumner.—In Maysfield Center, Conn., on Wednesday, September 13th, Dr. Edwin G. Sumner, aged eighty-six years.

Van Valzah.—In Springfield, Ore., on Tuesday, September 5th, Dr. Robert G. Van Valzah.

Whiting.—In Baltimore, Md., on Monday, September 11th, Dr. Charles H. Whiting.

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Original Communications

THE THERAPEUTICS OF HAY FEVER.*

An Historical Review,

By A. Parker Hitchens, M. D.,

Glenolden, Pa.

It is hardly possible to arrange a strictly chronological review of all the types of treatment which have been used in hay fever. For although the early period may be said to have been characterized by the purely empirical use of various remedies, both general and local, the later efforts to establish the therapeutics upon a more definite etiology did not result in the rejection of the older methods of treatment. Even in the light of the recent advances in etiology and specific therapeutics, many physicians are still reluctant to discard the most irrelevant remedies, and frequently combine all classes of treatment. The following outline, therefore, is merely an attempt to classify roughly the principal types of treatment without strict regard to chronology.

I. SYSTEMIC TREATMENT.

The earlier writers, lacking a definite hypothesis for the cause of hay fever, resorted to constitutional treatment on general principles. Such hygienic measures as regulated diet, purgatives, plenty of sleep, more or less exercise. baths, etc., were advised by Bostock (1), Gordon (2), Elliottson (3), Cazenave (4), King (5), Phœbus (6), Melville (7), Blackley (8), etc. In addition, certain internal remedies were advised by these authors, all with the purpose of toning up the system. Quinine, iron, strychnine, arsenic, etc., were the drugs most commonly used, and these are still included in the "tonic treatment" so often prescribed at the present day.

During the later decades of the eighteenth century, hypotheses regarding etiology based generally upon current medical thought, began to assume definite shape. Accordingly, systemic treatment, advised in hay fever, was aimed against certain supposed defective elements in the individual constitution.

Nervous diathesis. The nervous diathesis was first suggested by Pirrie (9), in 1867; Beard (10), and Morell Mackenzie (11) were probably the most notable exponents of this theory. To raise the tone of the nervous system was, of course, their chief aim in treatment. Beard lists a large number of remedies "on the basis of what they have accomplished in other affections," and recommends that patients permit themselves to be experimented upon, since "in the light of the suggestions given below, they will, in nearly every case, find something that will give them sufficient relief to more than compensate for all their efforts." Beard's list includes quinine, arsenic, whiskey, galvanic electricity applied centrally and locally, strychnine and iron, phosphorus and codliver oil, Turkish and Russian baths, opiates, cold powder (camphor, ammonium carbonate, and powdered opium) locally, potassium bromide and chloral hydrate, belladonna, iodine, potassium iodide, aconite, digitalis, veratrum viride, gelsemium, guarana, caffeine, ammonium chloride, hydrocyanic acid, amyl nitrite, iodoform ("works admirably as a tonic and in hysteria and allied disorders"), ergot, ipecac, inhalations of ether or chloroform for temporary relief, Apocynum andromifolium, Grindelia robusta.

Arthritic theory. The so called "arthritic" theory, inaugurated by De Mussy (12), in 1868, seems to be essentially French, supported as it was by Herbert (13), Giffo (14), Mollière (15), Leflaive (16), Joal (17), etc.

Uric acid theory. A similar view, however—the "uric acid" theory—has been advocated in England and America. Bishop (18), Tyrrell (19), Floyd (20), Dickie (21), Woodring (22), Gleason (23), Grube (24), Parsons (25), Tobias (26), and others in accord with this view have treated hay fever much as they treated "lithemia"—lithium salts, salicylates, hydrotherapy being the principal measures prescribed.

In addition to the above mentioned attempts to "fortify the system" against hay fever, certain other internal remedies have been administered with the purpose of influencing more or less directly the local symptoms.

Nux vomica (Gream, 27), valerian with senna (Prater, 28), opium and belladonna (Lennox Browne, 30), morphine (hypodermically, Moss, 31), (Moorhead, 32), morphine and atropine (Bishop, 18), (Thornton, 33), thyroidine (Heymann, 34), hydrastis (Imhofer, 35), ergotin and hydrastis (Hoffmann, 36), muriatic acid (Strangways, 37)[1], dionin and atropine (Goetz, 38), suprarenal ex-

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*Read before the American Therapeutic Society, Detroit, June 10, 1916.

[1] In conjunction with the acid treatment, this author prescribes an acid douche for the nose.

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tract (Solis-Cohen, 39), (Parsons, 25), (Douglass, 40), terpin hydrate (for asthmatic symptoms, Loebinger, 41), (Rixa, 42b).

Calcium treatment. Calcium salts (Emmerich and Loew, 43), (Wilson, 44), etc., have received some attention in recent literature, but have not been used very extensively. The benefit, if indeed there is any, is believed by some writers to depend upon a physicochemical change in the body fluids. Wright (45) explains the action in reducing a tendency to urticaria upon the basis of increased coagulability of the blood. Clowes (46b) states that "a nonspecific immunization or rather reduction in sensitiveness, may be effected in certain cases by administering large doses of calcium lactate. It is worthy of note that well nourished individuals appear to respond most readily to treatment with calcium salts."

It is possible that calcium salts may exert the action attributed to their use, but if so, the proper mode of administration has not yet been ascertained in order to make it a trustworthy remedy in hay fever.

II. LOCAL TREATMENT.

From the time of Bostock (1), local palliatives of every variety have been used, usually in combination with other measures.

1. *Medicinal applications:* Inhalations. Chlorinated lime solution (Elliottson, 3), camphor solution (Bradbury, 47), (Parsons, 25), ammoniated steam (Chambers, 48), salicylic acid (W. J. H. Wood, 49), ethyl iodide (Capp, 50), menthol (Immerwahr, 51), (Ruault, 52), (MacBride, 53), chloroform (Thornton, 33), cigarettes (Simes Thompson, 54), (Marsh, 55), (Windle, 56).)

Sprays and nasal douches, on the whole, have been more popular than inhalations. Indeed, so many kinds of sprays—alkaline, acid, mentholated oil, etc.—have been mentioned in the literature, that no attempt can be made to enumerate them here; each physician seems to have advised an individual modification. Dobell's solution has probably been as widely used as any.

Salves and ointments are frequently applied after the spray. The proprietary rhinoculin cream and bormelin have a considerable vogue in Germany. In this country an ointment containing epinephrine is popular.

Insufflations, such as aristol and thymol iodide, have been used by Fink (57) and Schädle (58) respectively.

Cocaine was introduced into hay fever therapeutics about 1885, and on account of the immediate relief following its application it has been more widely experimented with perhaps than any other single palliative. Bosworth (59) asserts that he was the first to use this remedy for asthmatic attacks. It was further recommended by Bishop (18), Watson (60), Schädle (58), Logan (61), Capp (50), Leflaive (16), Douglass (40), Perkins (62), etc. More recent authors, however, warn against cocaine on account of its habit forming tendencies; moreover, it is said gradually to lose its effect with continued use. Cocaine combined with epinephrine, has been used by Van Eden (63), Hobbs (64), Rabé (65), etc. Other palliatives are: Anesthesin (Kuhnt, 66), orthoform (Lichtwitz, 67), (E. W. Wright, 68), menthospirin (Hirschberg, 69).

Suprarenal extract has been used locally by Somers (70a), Sajous (71), J. Payson Clark (72), Persons (73), Jervey (74), Parsons (25), E. W. Wright (68), and others. The suprarenal gland and its active principle, epinephrine, are undoubtedly the safest drugs we have for the immediate relief of symptoms; the chief drawback is the evanescent nature of the relief. Some patients are said to be hypersensitive to the desiccated gland.

2. *Surgical treatment.* The discovery in 1881 of "hyperesthetic" nasal areas by Daly marked a distinct epoch in the treatment of hay fever. The "nasal theory" still has many firm adherents at the present day.

The principal methods of dealing with the sensitive areas in the nose are indicated below, but let it be understood that hardly any physician has used *only* that method under which his name appears—it merely represents in general the method of treatment he apparently preferred.

Removal of abnormalities, before further procedure, has been recommended by practically all the authors cited below. Often such operations as partial turbinectomy (Bardes, 76), (Moulton, 77), (Berbineau, 78) have been considered sufficient.

The galvanocautery has been used (Daly, 75), (Roe, 79), (H. Allen, 80), (J. N. Mackenzie, 8), (Beverly Robinson, 82), (Sajous, 71), (Rumbold, 83), (R. Thomas, 84), (Klingensmith, 85), (Rixa, 42), (Taylor, 86), etc., in America; and in Europe (Hack, 87), (Beschorner, 88), (Ruault, 52), (Moure, 89), (Natier, 90), (Joal, 17), (Baratoux, 91), (Lennox Browne, 30), (Hall, 92), (Williams, 93), very light cauterization (Bonnier, 94).

Chemical cauterization, chiefly with nitric, chromic, and glacial acetic acids has had advocates (Cazenave, 4), (Logan, 61), (Browne, 30), (Taylor, 86), nitric (Crippen, 95), (A. Clark, 96), carbolic acid mixture (Douglass, 40), (Parsons, 25), (Cheatham, 29).

Intraneural injections of alcohol have been recently introduced by Stein (97b).

Resection of the ethmoid was first practised by Yonge (98), in 1907, but no permanent results were reported. Blos (99), in Germany, tried this operation in three cases. Albrecht (100a) considered the method quite unjustifiable.

Massage of the nasal mucous membrane has been tried (Urbantschitsch, 101), (Denker, 102), (E. W. Wright, 68), etc. A "scrubbing" process was used by Hollopeter (103).

Hot air has been applied to the mucous membranes by Lermoyez and Mahu (104).

3. *Mechanical contrivances* for keeping the external irritants from contact with the eyes and nose are still in common use as accessory treatment.

Smoked glasses (light was considered one of the external irritants) have been prescribed (Stowell, 105; Leflaive, 16; Hobbs, 64; Townsend, 106; Rabé 65; Luda, 107, etc.); also nasal filters or plugs by Blackley (8), Thorowgood (108), Mohr (109), Van Eden (63), Thost (110a), Luda (107), Imhofer (35), Rabé (65), O'Connell (111), Hobbs (64), Townsend (106), Ebstein (112), Hoffmann (36);

lady's veil (Sebastian) (113); and a spring clip for the nose and glass tubes for the lacrymal ducts (Hannay, 114).

III. CLIMATIC TREATMENT.

A change of residence during the hay fever season is obviously impracticable for the majority of patients. But, granted the opportunity, it is not always easy to find a region absolutely satisfactory for every patient. In Europe even the much famed Heligoland has proved a disappointment to many patients (Liebermann, 115), (Bachem, 116).

In America, the White Mountains were made popular by Morrill Wyman (117) and Beard (10). More recently, however, many other resorts have been recommended.[2]

Alton (118) described the ideal spot as a camp in a virgin forest on the rocky shores of a mountain lake, etc. But characteristically enough, in the discussion which followed the reading of his paper, scarcely any one agreed with the author. Each patient must learn by experience what type of resort is most suitable for his requirements; and however desirable the location may be, it must not be forgotten that paroxysms are still possible from the unpacking of clothing, high winds, etc.

An ocean voyage seems to be the ideal means for escaping vegetation, but here again there is a chance of failure; for instance, a susceptible person should avoid traveling on a cattle boat.

Where change of residence is impossible, an injunction often given is to remain in a closed room or to avoid the country. A curious "cold storage" treatment was described in 1911 by Porteous (119), who believes that "the climatic relief usually experienced is not to be credited to any pollen-free or bacteria-free atmosphere, but to the general diminution of atmospheric temperature which it provides for an overworked vasodilator mechanism in the upper respiratory field." The author accordingly suggests the possibility of providing refrigeratoriums for hay fever patients.

Another measure which might be considered under climatic treatment is the destruction of ragweed recently advocated enthusiastically by Scheppegrell (120b), of New Orleans.

The three factor theory. By the end of the eighties, all the possible hypotheses regarding a single cause of hay fever had received a hearing. From the standpoint of therapeutics, however, these theories had been far from satisfactory. Many writers had held certain constitutional defects accountable for the disease, but as yet no plan of systemic treatment had succeeded in relieving the symptoms. Blackley (8) had conclusively demonstrated the pollen theory, but his admirable researches had nothing to suggest of therapeutic value. Even the nasal theory did not fulfill its promise so far as permanent results were concerned. There was a large number of patients in whom no pathological lesions nor sensitive areas could be found; the prognosis in such cases was admittedly unfavorable.

It was apparently the inadequacy of existing therapeutic methods in hay fever that led to the formulation of what might be called the "three factor etiology." According to this theory, three elements were necessary to produce hay fever:

1. Some constitutional defect.
2. Pathological conditions in the nose.
3. An external irritant.

The absence of one of these factors was considered sufficient to prevent the appearance of symptoms. The way was thus opened for the application of three different types of treatment. If one factor eluded the efforts of the physician, there was still a chance of successfully attacking the second or third links in the chain of causes. The convenience of a theory so comprehensive in scope naturally attracted the support even of those who still remained adherents of one particular type of treatment. The popularity of the three factor theory has continued down to the present day. A few of its exponents have been Sir Andrew Clark (96), Sajous (71), Hurt (121), Kyle (122), Hall (92), Thornton (33), Williams (93), Perkins (123), Gleason (23), Parsons (25), Floyd (20), Muckey (124), Crane (125), Latchford (126), Rabe (65), Murphy (127), etc.

IV. SPECIFIC TREATMENT: PASSIVE IMMUNIZATION.

As to passive immunization, it is to Dunbar (128) that we owe the first confirmation of the work of Blackley (8) concerning the specific cause of hay fever, and credit must also be given Dunbar (128) for being the first to establish a system of treatment based upon immunological methods. He considered that he and his associates succeeded in isolating from pollen a substance which had the properties of a true toxin when applied to susceptible persons. Upon this hypothesis he prepared an antitoxin by the injection of horses and other animals. After careful treatment over a period of some months the blood serum of the animals was found to have acquired the property of neutralizing the effect of pollen and eventually of the so called toxin, when applied to the skin, nasal mucous membrane, or conjunctiva of susceptible persons. After elaborate experimentation, the so called antitoxin, under the name of "pollantin," was placed upon the market and has been in more or less common use for more than a decade.

The results obtained from the use of pollantin may be seen in the following reports:

	Satisfactory. Per cent.	Partially Satisfactory. Per cent.	Negative. Per cent.
Lübbert (129) (505 cases)..........	59.2	28.3	12.5
Zarniko (130) (492 cases)..........	61.3	23.1.	15.6

In 1906 Knight (131), published the following figures compiled from the report of eighty-one physicians in the United States:

			Per cent.
Effectively benefited..................................	114	or	52
Partially benefited..................................	66	or	30
Not benefited..................................	39	or	18
	219		100

Sixty-eight of these had asthma.

Of these were			Per cent.
Effectively benefited..................................	30	or	44
Partially benefited..................................	26	or	36
Not benefited..................................	13	or	20

Thost (110), Glegg (154), Wolff (155), Kuttner (156), Somers (70b), Albrecht (100b), Hobbs (64), Stein (97), King (158), Rosenberg (159), Joachim (160), give favorable reports of pollantin in the majority of cases, while Mohr (109), Van Eden (63), Leslie (161), MacBride (53), Borrowman (162), Beaudoux (163), Immerwahr (51), report chiefly negative or only partial results.

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[2] The author, in a cursory botanical survey of the country about Percé, P. Q., on the Gaspé peninsula, made recently, found an entire absence of ragweed and a very small amount of goldenrod. Therefore, persons with the common fall type of hay fever would find complete relief from symptoms in this region.

The limitations of pollantin are those which might be expected from a remedy whose period of activity corresponds only with its presence upon the susceptible areas. The best results, therefore, are obtained when it is used before the attacks begin.

Local conditions in the nose have much to do with the efficacy of a local remedy, and it is easy to conceive of certain pathological conditions in which pollantin might not have a fair chance to demonstrate its effect.

A further disadvantage is that a certain proportion of hay fever patients are susceptible to horse proteins or acquire such hypersusceptibility upon the repeated application of this remedy.

Notwithstanding its limitations, however, pollantin does give definite relief in many cases and will probably continue to be used as a standard remedy by those who have experienced benefit from its application.

ACTIVE IMMUNIZATION.

Curtis (132), in 1900, seems to have made the first attempts to immunize actively against hay fever. He used aqueous and alcoholic extracts of ragweed, goldenrod, lily of the valley, etc. Curtis (132) at first administered his liquor ambrosia hypodermically, but he soon abandoned this method and gave the doses entirely by mouth. In over 100 cases reported, about sixty per cent. were said to be immunized against ragweed. Ingals (133), in applying this same treatment, obtained successful results in sixty-seven per cent. of cases. For some reason this method of immunization does not seem to have been continued.

An interesting but different plan of immunization was suggested, in 1908, by Scheppegrell (120a), who thought that if patients sniffed the dried pollen for from two to six weeks before the season, a permanent tolerance might gradually develop. Although this treatment produced good results in a considerable number of cases, the effects were not prolonged beyond the hay fever season, and the treatment was gradually discontinued.

Dunbar (128) tried active immunization, but discontinued his experiments upon noting the severe reactions after injection. Later, he made some observations upon "neutralized mixtures of toxin and antitoxin." In one patient the result was encouraging. Later, after the publication of Noon's work, he treated ten cases with pollen extract. The results were generally favorable.

It remained for Noon (134) and Freeman (135) to establish active immunization in hay fever upon a practical basis. These investigators controlled their doses and standardized their pollen extracts by noting the amount of extract required to produce inflammation when applied to the conjunctiva of susceptible subjects. In this respect they adopted practically the methods worked out by Dunbar (128). In 1914, Freeman (135) published the following results of treatment in eighty-four cases experiencing an aggregate of 113 seasons:

In thirty-four seasons (30.1 per cent.), the hay fever was completely cured or was so slight as to be insignificant.

In thirty-nine seasons (34.5 per cent.), the hay fever was greatly diminished.

In twenty-seven seasons (23.9 per cent.), the hay fever was admittedly diminished, but only to a slight extent.

In thirteen seasons (11.5 per cent.), the hay fever was no better, and of these, two patients reported that they were worse.

Since the publications of Noon (134) and Freeman (135) other writers have reported their experience with vaccine treatment. Lovell (136), in 1912, described five cases treated with pollen vaccine, three of which were markedly benefited. Two years later he reported eleven cases, three of which showed very satisfactory results, and two fair results. Ellern (137), in 1912, used pollen vaccine upon thirteen patients. Although the majority were considerably improved, he did not consider the results conclusive because the symptoms of many other patients were less severe that season.

The first report in this country was published by Clowes (1912). He used two methods of extraction: 1. That previously used by Dunbar (128), consisting of repeated freezing and thawing in five per cent. aqueous suspension; 2, an original method, which consisted of precipitating pollen with acetone and extracting with water. Doses ranged from one c. c. of one in 5,000,000 to one c. c. of one in 500,000. Doses, intervals, etc., were regulated by frequent ophthalmic, cutaneous, and blood tests. The eight cases treated by Clowes all showed marked alleviation of general symptoms.

Alexander (138), in 1914, reported his results with fifteen cases treated with pollen vaccine. Of these eleven were successfully treated, while four showed uncertain results—these four were treated during the hay fever season.

Lowdermilk (139), in 1914, extracted the protein with physiological saline solution. He first ground the pollen with sterile sand, moistening the pollen from time to time with a portion of the salt solution. After grinding for several hours, the remainder of the salt solution was added, the whole mixture transferred to a sterile flask, and shaken frequently during twenty-four hours. After centrifugation the supernatant fluid was used for treatment. The results were satisfactory in sixteen out of nineteen cases.

Ulrich (140), in 1914, made his extract according to Dunbar's method and administered it in very small doses at intervals of one, two, and three days. He treated twelve cases, the majority of which were relieved in from fifteen minutes to two hours. This relief lasted from a few hours to several days.

Koessler (141), in 1914, made three extracts: 1. Saline extract; 2, alcoholic extract; 3, extract by Vaughan's method. Ragweed pollen was used exclusively. Forty-one cases were treated during four years. Four were completely cured, twenty-nine markedly improved, eight unimproved.

Manning (142) in 1915, made his extracts by grinding the pollen with sterile sand and using 10 x physiological saline solution. The extract was afterward diluted to ten times its bulk with distilled water. Of his twenty-one cases, fourteen were definitely relieved.

Cooke (143a), in 1915, ground the pollen in a mortar with sand, using $\frac{N}{200}$ sodium hydroxide and nine per cent. sodium chloride solution. After shaking for twenty-four hours, the preparation was passed, first through sand, and then through a sterile Berkefeld filter. The determination of protein was made by the Kjeldahl method, $\frac{N}{50}$ solutions being used for the titration. The extract was preserved with 0.5 per cent. carbolic acid. Cooke's method of standardization seems to be the most accurate so far.

Of the early type, Cooke (143a) reports sixty-four cases: 60.5 per cent. with marked improvement, 31 per cent. improved, and 8.5 per cent. unimproved. Of the late type, he treated eighty cases: 25 per cent. with marked improvement, 50 per cent. improved, and 25 per cent. unimproved.

Wood (144), in 1915, suspended the pollen in saline solution, sterilized it by heat at 56° C. and the addition of two per cent. phenol. This solution was diluted with saline so that each c. c. would contain about 0.00002 mg. of pollen. Apparently a separation of the proteins from the other portion of the pollen was not made. Wood treated twenty cases, of which only two were failures.

	Hay fever absent or insignificant.	Hay fever greatly diminished.	Hay fever no better or only slightly diminished.	No report.
18 cases with asthma as complicating symptom......	11 61.1 per cent.	3 16.7 per cent.	1 5.5 per cent.	3 16.7 per cent.
44 cases—no asthma..................................	17 38.6 per cent.	18 40.9 per cent.	6 13.6 per cent.	3 6.8 per cent.
Total of 62 cases..................................	28 45.1 per cent.	21 33.9 per cent.	7 11.3 per cent.	6 9.7 per cent.

Goodale (145a), in 1915, considered water sufficient for extraction. He said he prevented deterioration by adding from thirteen to fifteen per cent. alcohol. Of the 123 cases treated, one fourth were undoubtedly benefited. The attempts of Goodale to classify the susceptibility of patients according to natural orders of the plants, and thus to work out this part of the problem systematically, opens up many interesting possibilities, not only in hay fever treatment, but also in botanical classification.

Sormani (146), in 1916, reported the results of vaccine treatment carried out during the season of 1915. He prepared his extract by grinding the pollen with sterile sand and using distilled water for extraction; he sterilized the preparation by adding one tenth of its volume of five per cent. phenol solution, after which salt was added up to 0.85 per cent. Sormani reports the results as follows:

1. Of fourteen patients treated prophylactically, six were competely cured, six greatly benefited, two but little benefited.

2. Of twelve patients treated only prophylactically, four were completely cured, three more or less relieved, five not relieved.

3. Of nineteen patients treated prophylactically by other physicians, all found much relief, while of three treated therapeutically, all found relief.

PREPARATION OF EXTRACT.

It was about four years ago that the author of this paper became interested in the possibilities of vaccine treatment in hay fever. The results of the work in collaboration with C. P. Brown (147) were published a few months ago. The technic of preparing the vaccine was as follows: To obtain the pollen the flowers are gathered just when pollination has started. The flowers are dried and the pollen is collected by fine sieves. The pollen is preserved in the dry state until it is to be extracted.

1. The pollen is mixed with sufficient distilled water to make a fairly thick paste.

2. The paste is transferred to a porcelain ball mill and ground for twenty-four hours, or until microscopic examination shows that the pollen grains are broken.

3. More distilled water is added and the mixture is centrifugated to remove insoluble débris.

4. The extracted protein is purified by precipitation with acetone.

5. The precipitate is dissolved in physiological saline solution. The amount of protein-nitrogen in this solution is determined by the Kjeldahl method.

6. The solution is then diluted so that each c. c. contains certain fractions of one mgm. of protein nitrogen. The lowest dilution (one c. c. of which may be used as the initial dose in treatment) contains 0.0025 mg. protein nitrogen.

7. The final solutions are preserved from contamination by the addition of 0.3 per cent. three cresols and sterilized by filtration. Sterility is determined by careful aerobic and anaerobic cultural tests.

Our spring extracts contain a mixture of the pollens of Agrostis alba (red top), Phleum pratense (timothy), Secale cereale (rye), and Dactylis glomerata (orchard grass; the autumnal type consists only of the two varieties of ragweed, Ambrosia artemisæfolia and A. trifida.

These vaccines have been used by ourselves and by other physicians kindly cooperating with us in the treatment of sixty-two patients.

One patient was apparently cured after treatment continued during both spring and autumn of two consecutive years. In the fourth year, however, the symptoms returned.

Another patient who was only partially relieved, was found to be susceptible to wheat pollen. In the following season three doses of the "spring" vaccine to which wheat pollen extract had been added, effected complete immunity to the end of the season.

Another patient not completely relieved by the spring vaccine was found susceptible to daisy pollen. A special daisy vaccine was prepared and the administration of a single dose brought complete relief.

Our results on the whole did not differ greatly from those obtained by other investigators since Noon's first report. In none of the cases did we consider the possibility of a superadded or even of a primary bacterial infection.

V. PARASPECIFIC TREATMENT; BACTERIAL VACCINES.

Farrington (148), Morrey (149), Lowdermilk (139), and more recently Strouse and Frank (150) have published reports concerning the use of bacterial vaccines in the treatment of hay fever.

Farrington (148) believes that he was the first to use autogenous vaccines in hay fever. After nasal symptoms had developed, a sterile platinum loop was passed up along the middle turbinates, and the film of secretion was transferred to two sterile agar tubes. The combined growths, without regard to identity of the bacteria, were washed off with normal saline solution; the bacteria were then killed by heat and the suspension was standardized. Farrington treated one case, in 1911, with most gratifying results. The next year he applied this treatment in twenty-five cases, with the following results:

Thirteen cured (eight had asthma).
Six markedly improved (five had asthma).
Three slightly improved (all had asthma).
Three failures (all had asthma).

Morrey (149) treated eight cases with bacterial vaccines, in 1911 and 1912, with encouraging results. His theory concerning the action of the vaccines was that they would be followed by a "strengthening of the nasal mucosa, so that the irritants, whatever they are, would be without effect."

Lowdermilk (139) used autogenous vaccines "in all cases complicated by the presence of a bacterial infection." The criteria of infection are not given. "Sometimes the vaccine was alternated with the toxin, and in others it was given afterward."

Strouse and Frank (150) report their experiences with bacterial vaccines used alone as well as in combination with pollen extracts. Astonishingly good results followed in every case.

It is entirely possible that paroxysmal sneezing may be caused by bacterial infection, and in such cases treatment with appropriate vaccines would, of course, be considered specific therapy. In cases, also, where local bacterial infection adds to the severity of the attacks, definite relief should likewise result theoretically from the use of bacterial vaccines. The importance of bacteria in hay fever, however, is probably slight, since in the majority of instances the nasal symptoms either subside or disappear at the end of the season.

How, then, can we explain the beneficial results which have been reported to follow the injection of bacterial suspensions?

Many observations have already accumulated in regard to the use of nonspecific proteins in the treatment of acute infections. The action of these substances is believed to depend upon their activity in mobilizing the antibodies (Jobling and Petersen, 151). Just how this explanation can be applied to the use of nonspecific proteins in hay fever is a question that apparently has not yet been discussed. If, as we believe, hay fever is due to the existence of substances corresponding to antibodies, a treatment which would mobilize the antibodies would increase rather than diminish susceptibility to the symptoms. As a matter of fact, however, definite amelioration of symptoms has followed the use of certain nonspecific protein substances, and these results cannot be ignored.

Rowland (152), in 1904, treated eleven cases of hay fever with diphtheria antitoxin, and relief followed in every case. It will be remembered that about this time the beneficial effects of diphtheria antitoxin in the treatment of asthma began to attract considerable attention. Unfortunately, a certain proportion of persons subject to hay fever and asthma are also hypersusceptible to horse proteins. And since a few patients died of anaphylactic shock within several minutes of the injection of antitoxin, the administration of horse serum to asthmatic persons has come to be considered unsafe.

The writer has had no personal experience with nonspecific proteins in the treatment of hay fever, but an observation with regard to one result of the administration of bacterial vaccines in common colds (153) may explain the beneficial effect exerted upon the symptoms of hay fever. In this paper (153) attention was called to the vasomotor effect of bacterial vaccines on the nasal mucosa. Sometimes within a few minutes of the injection the membranes begin to shrink and within a short time, especially after a severe reaction, the dryness of the nostrils is so marked that there may be considerable discomfort. With an appropriate dose this contraction of the membranes affords a relief which may last for several days.

It may be remarked here that similar relief has been noted after atropine and epinephrine (Sajous, 71, Somers, 70a, etc.), the benefit being coincident with the shrinking of the nasal mucosa and apparently dependent thereupon. The inhalation of menthol has the same effect.

The suggestion forces itself upon us that, whether or not the effect of bacterial vaccines in hay fever is due to a specific response, the result depends upon the local effect upon the mucous membranes. In the light of Goodale's (145b) recent observations, it is possible that only those persons will experience contraction of the nasal mucosa who are specifically sensitized locally. Thus the local astringent effect of the vaccine may not be really nonspecific; it may, on the contrary, be a specific reaction with a nonspecific effect in addition, the latter being a purely physiological effect—a vasomotor stimulation resulting in the contraction of the capillaries, rendering them less permeable and likewise removing most of the secretion in which the pollens are ordinarily digested.

That a specific reaction is necessary is attested by the fact that persons susceptible to pollen of one variety—daisy, for instance—are not benefited by the extract of another variety—ragweed or timothy—to which they are not susceptible.

The explanation offered by the physical chemists is that the changed reactivity on the part of the tissues is due to an alteration in the aggregation of particles. One of the hopes physical chemistry has been holding out to us for several years is that we shall some time be able to control the colloidal state of the body fluids to such an extent that many abnormal physiological processes may be prevented or brought back to normal by very simple means. The administration of calcium lactate in hay fever is a move in this direction. Some of the work upon acidosis seems to be aimed in this direction. It is very depressing, however, to find that so much of the literature sounds like the late "uric acid theory" with merely the titles changed.

GENERAL DISCUSSION.

It is now generally conceded that hay fever is the result of a more or less localized intoxication in persons sensitized to certain proteins. The protein in question is most frequently a constituent of pollen, but any other protein coming in contact with the nasal mucous membrane may be the exciting cause.

We are indebted to the recent investigations upon anaphylactic phenomena for our knowledge, however imperfect, concerning the mechanism of hay fever. But we are still unable to account for the genesis of the anaphylactic state.

The observations reported by Dunbar (128), in 1911, are particularly interesting and suggestive. The theory that the acquisition of hypersusceptibility is due to an abnormal permeability of the mucous membranes and cuticle resulting from some vasomotor lesion was apparently original with Dunbar. He noted:

1. Although the predisposition to hay fever is frequently hereditary, the hypersusceptibility may also be acquired. The pathological condition of the nasal mucosa must indeed be very subtle if certain individuals inherit membranes permeable to ragweed pollen proteins, for instance, while others inherit membranes permeable only to certain grass pollens. The explanation in such cases would seem more plausible if the persons inheriting hay fever were generally subject to both spring and fall types, provided, of course, that they live in places where both types are prevalent.

2. Normal persons injected with pollen or pollen extracts do not acquire hay fever.

3. In the treatment of hay fever with pollantin, a number of patients have acquired not only local but general hypersusceptibility to horse serum; on the other hand, the instillation of horse serum into the eyes or nostrils of normal persons has not resulted even in local sensitization in any case.

In his arguments against the anaphylactic theory, Dunbar (128) in 1913 stated that he had repeatedly observed that persons living in Germany who had never been in America, and thus had never come into contact with the pollen of golden rod or ragweed, acquired hay fever at the first contact with such pollen protein (*Jour. Hyg.*, 1913, p. 124). No details of this observation are given. Presumably it may be taken at its face value, but considering the possibilities of dried pollen carried in clothing, packed in trunks, etc., and the fact that only fourteen days are necessary to establish the hypersensitive state, it is difficult to accept without question the statement that these persons had never had a chance to become sensitized previous to the attack.

I have had occasion personally to observe one hay fever patient in whom no hereditary influence has been found. In consideration of the fact, however, that throughout childhood this person suffered frequently from nosebleed, it appears that either the bloodvessels in the nose were very thinly covered, or the mucous membrane was what Dunbar calls "abnormally permeable." It seems possible that in this case at least, the sensitized state may have been acquired by the penetration of proteins through the mucous membrane. This supposition is strengthened by the fact that the patient in question has hay fever from early spring until frost, and even in the winter she has periods of sneezing which may be traced to particles of protein floating in the air.

Furthermore, this theory of an "abnormally permeable membrane" may explain the apparent benefit of such local treatment as that advocated by Hollopeter (103). It does seem possible that the "scrubbing process" used by this author may render the membrane less permeable, or at least so alter its character that it becomes more like the cutaneous epithelium. Similar treatment in the form of vibratory massage, etc., has been reported by other writers (Urbantschitch 101), (Denker 102), (E. W. Wright 68), and the results appear to be satisfactory in a certain proportion of cases.

SUGGESTED PLAN OF TREATMENT.

Preliminary.—First, a thorough rhinoscopic examination of the nose is made and any condition requiring surgical treatment receives proper attention.

Diagnosis.—In the meantime, a diagnosis is made with regard to the varieties of pollen to which the patient is susceptible. The test material may be a pollen extract or may consist merely of the dried pollen.

A slight abrasion or scarification is made through the external layers of the skin. Upon this is spread a tiny quantity of moistened pollen. It will be found interesting to observe the tests for two or three hours when possible. Frequently, within this time, the reactions will be quite distinct. A light dry dressing is advisable to prevent rubbing by the clothing. Susceptible persons will show an area of redness beginning sometimes within a few minutes. The area may increase to a diameter of several inches. The abraded point when intense resembles a bee sting; that is, it is raised and has a white centre, and is accompanied with more or less intense itching. From four to six different pollens may be placed upon each forearm. Negative reactions may show immediately an area of redness, but this is due to traumatism and soon subsides.

While satisfactory diagnostic tests may result from applications of the pollens to the abraded skin, the intracutaneous injection of a definite amount of sterile extract is probably better technic, especially for studying the degree of sensitization.

In arriving at a diagnosis, the season during which the symptoms occur should receive due consideration. In spring and early summer the common grasses are most likely to produce the pollens responsible; in late summer and fall the symptoms are oftenest caused by the pollen of ragweed.

Although the patient himself may have an opinion regarding the plants with which the disease is associated, his conclusions are not always reliable. Many persons of the "early type," for instance, frequently attribute their symptoms to roses alone. As a matter of fact, the number of persons found to be susceptible to rose pollen is astonishingly small.

Since the number of pollens which have been demonstrated to cause hay fever is considerable, a botanical survey of the patient's habitual surroundings is advised.

As an aid in identifying the pollens inhaled by the patient, the author has suggested a special button consisting of a metal frame in which is held a microscope coverglass coated with the glycerin mixture used by Blackley (8). This button may either be worn by the patient or be left in a properly protected place in the locality where his symptoms are most severe. After about twenty-four hours' exposure the coverglass is sent to the laboratory for microscopic examination and identification of the pollens.

Prophylaxis.—Prophylactic treatment may be begun two or three months before the hay fever season. An initial dose of extract containing 0.0025 mg. nitrogen is sufficient to elicit some immunizing response without producing disagreeable effects. Subsequent injections are given at five to seven day intervals. If the area of redness about the point of the first injection has been only slight, the second dose is increased to twice the original amount (0.005 mg.) No further increase is advised, and subsequent doses are increased to 0.01 mg. and 0.02 mg., except, of course, in the case of very sensitive persons, when the doses are reduced accordingly. Prophylactic injections are not successful in every case, and treatment throughout the season may be found necessary.

Treatment during the season.—Since the period of relief following an injection has been demonstrated to be variable (Ulrich, 140), each patient must be considered individually. If the symptoms can be held in abeyance for seven days after a dose of vaccine, there is no reason for making injections oftener than at seven day intervals. A few persons are relieved for only twenty-four hours; in such cases, daily doses are necessary. A fairly normal period of relief, however, is about five days, and if symptoms have not entirely disappeared for that length of time, either the diagnosis or the dose should be looked into more carefully. If the symptoms persist in spite of an apparently accurate diagnosis and specific treatment, bacterial vaccines are well worth trying. The writer has treated one case in which the administration of a stock vaccine containing the organisms most commonly present in the nose and throat, resulted in perfect relief for for more than three weeks.

IMMUNIZATION AND CURE.

The possibility of prophylaxis and definite cure are questions to which no final answer can be given at present. We do not yet know the exact mode of action involved in the injection of pollen extracts. If hay fever is a typical example of what we understand as the anaphylactic state, a subcutaneous injection of the pollen protein would reasonably result merely in a state of an anaphylaxis or a suspension of the hypersensitive condition until the material injected is eliminated. This assumption may explain the difference experienced by some persons in the duration of relief after an injection.

On the other hand, Noon (134) and Freeman (135), Cooke and Vander Veer (143b), etc., have reported a sufficient number of successful cases to indicate that it is possible to immunize specifically against hay fever. The only comment that seems justified at the present time is that although immunization seems possible in a certain percentage of cases, we have no adequate theory to explain the phenomenon.

Treatment during the season with pollen extracts is not difficult in its application, causes practically no discomfort to the patient, and has proved far more successful than any other method up to the present time.

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ACUTE INTUSSUSCEPTION IN INFANTS.

Some Practical Points in the Diagnosis and Operative Treatment,

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The mortality of operation within twenty-four hours after the onset of acute intussusception in infants should not be materially higher than that of appendicitis operated upon in the same period, viz., practically nil. The fatal results are due almost always to two factors working separately or in conjunction, viz., failure to make the diagnosis early and faulty operative technic. As a matter of fact few acute abdominal conditions are easier to diagnose than intussusception, and its operative relief is in the great majority of the cases most simple. It is wholly unjustifiable that this condition in children should have a mortality in the neighborhood of forty per cent., when early diagnosis and proper operative treatment give such brilliant results.

The diagnosis of intussusception ought to be made in every case which presents the three cardinal symptoms: 1. Acute abdominal pain, shown by a sudden fit of crying or screaming associated with doubling up of the thighs on the abdomen; 2, vomiting which comes on soon after the onset of pain; and, 3, the passage of blood per rectum. The combination of these three symptoms in a child, especially in the first year, ought to suggest at once intussusception and lead to the search for other manifestations somewhat less constant and of less importance. This condition being one of intestinal obstruction, the practitioner may look in vain for certain signs usually associated with interruption of the fecal current, for example, abdominal distention. As a rule, the child's abdomen is normal in size during the first twenty-four hours, and except over the region of the invagination, presents nothing unusual on palpation. A tumor can usually be made out and should always be felt for. Should the child, on account of crying or straining, hold the abdominal muscles rigid, it may be impossible to feel the tumor until a few whiffs of anesthetic have been given. This may be done for the purposes of diagnosis only, or at the time of operation. Bimanual examination, through the rectum, may be an important aid in feeling the tumor. The characteristics of the tumor are its cylindrical shape and its transverse position in the abdomen. It lies usually above the iliac fossa and cannot be displaced laterally. The diagnostic value of a rectal examination lies in the possibility of feeling the apex of the intussusception, in the detection of blood which may not have escaped from the anus, and in facilitating the palpation of the tumor. It is therefore an advisable procedure, although the diagnosis can ordinarily be made before resorting to it.

In some cases the infant cries out with pain at intervals from increased peristalsis above the obstruction. These periodical exacerbations may become more and more frequent during the first twenty-four hours and in themselves suggest acute obstruction of the bowel. At other times, the child is apparently free from pain and may even go to sleep. In such cases the physician may be deceived as to the seriousness of the child's condition, particularly if his first visit is made during the quiescent period. A history, however, of a stormy onset, vomiting, and blood on the diapers should lead him to the right diagnosis, in spite of the child's apparent well being.

Symptoms like fecal vomiting, pale drawn face, cold extremities, distended tympanitic abdomen, exhaustion, etc., belong to the late stages when nothing can be expected from operative treatment. The diagnosis is then only too apparent and the favorable time for relief has gone by.

As regards differential diagnosis, the only condition in infants which practically comes into consideration is acute colitis. Here the onset is not so sudden nor so painful. Furthermore, the passages are more copious and contain bile, while in intussusception the movements are not large and contain only mucus and blood, because the obstruction at the point of invagination does not allow the passage of intestinal contents from above.

OPERATION.

The diagnosis of intussusception should be followed without delay by operation, at which certain fundamental principles must be observed to insure a favorable outcome. In the first place, the incision should be so placed that the surgeon's hand comes directly down to the portion of intestine involved; in other words, the tumor. This means the minimum amount of handling of intestine and traumatism from reaction, both of which are important factors in producing shock. I have found the best incision to be one that splits the rectus at the junction of its middle and inner third, and extends one third above and two thirds below the umbilicus. If possible, the tumor mass should be grasped with two fingers and brought out through the incision, and all further manipulations performed outside the abdomen. This shortens the process of reduction materially, allows temporary closure of the incision, and avoids the handling of other portions of the intestine. Fortunately, reduction of the intussusception is successful in between eighty and ninety per cent. of cases. Any other procedure beside reduction is so extremely unsatisfactory that every effort should be made to complete reduction. The apex of the intussusception should be pushed back and only light traction exerted. Care is required not to rupture the intestinal coat. If reduction fails, resection with end to end anastomosis probably offers the best chance of recovery, but the mortality is excessively high, as the case is usually a neglected one. The formation of an artificial anus is attended with practically one hundred per cent. mortality. When reduction is complete the intestine, if viable, should be promptly returned into the abdomen. Any attempt to prevent recurrence, such as anchoring or shortening the mesentery, means further intraabdominal manipulation and delay in getting the young patient off the table. Furthermore, the efficacy of any such procedure is doubtful. As a matter of experience recurrence takes place very rarely, and attempts to prevent it are based upon theoretical grounds. Closure of the abdominal wound requires special attention; many infants have recovered from the operation, but have acquired later a ventral hernia, on account of the straining from crying, etc. For this reason tension sutures of silkworm gut should be inserted through the skin and aponeurosis, in addition to the layer sutures. To combat the shock, the infant should have some form of external heat, such as an electric light bulb inside the blankets and salt solution per rectum or by hypodermoclysis. The latter is a convenient method in infants. It is important that the mother resume nursing at an early period and without disturbing the infant more than necessary. A dose of castor oil is the best means of carrying off the accumulated fecal contents and blood.

More general attention to these few salient points in the diagnosis and operative treatment of this not uncommon accident in infants will, I am convinced, reduce to a very low figure a mortality which even at the present time is far too high.

14 East Fifty-eighth Street.

ROENTGEN RAY THERAPEUTICS.

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And Will A. Quimby, M. D.,
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The x ray has been used as a therapeutic agent since a short time after its discovery. Its exact status has never been defined sufficiently to class it among specific agents. That it modifies body metabolism, both locally and constitutionally, is recognized. So to control its properties as to produce definite results has been a problem with which the Röntgen therapeutist has wrestled since its introduction. Numerous mechanical and chemical devices have been brought forward as a means of controlling doses and modifying the character of the x rays.

Two methods of controlling the character of x rays in therapeutics have given greater or less success in the hands of different operators. One of these is the use of platinum barium cyanide in the form of a small pastel which is changed in color by the action of the x rays; this color change being the index of dose. Another advance is the introduction of the Coolidge tube, which gives relatively definite control of the uniformity and penetration of the x rays.

For some time, as a result of the observations in the treatment of leucemia and multiple carcinoma, together with certain types of skin lesions, we have been of the opinion that a considerable amount of the therapeutic effect of x rays is brought about through modification of the blood; a definite leucocytosis occurs, both locally and throughout the body, such as naturally results where traumatism or irritation occurs in a portion of the body. The local leucocytosis is also increased by the dilatation of the bloodvessels, which is probably due to the direct action of the x rays on the nerve endings, easily demonstrated by the frequent presence of a modified anesthesia or numbness in an extremity which has been exposed. A general leucocytosis takes place after a relatively small portion of the body has been exposed: this is probably a constitutional manifestation of a local reaction, and is further stimulated by waste products produced in the area treated. These substances are undoubtedly toxic material which are the special end products of the disintegrating diseased tissue, and may be so profuse as to produce alarming constitutional symptoms; this is most marked in the presence of a malignant mass or tuberculous glands While we do not have broken down disease tissue influencing the organism of the normal person, such as an x ray operator, the waste material of his normal tissue is sufficient to stimulate the multiplication of white blood cells.

Several röntgenologists who have watched their blood count have found a decided leucocytosis following undue exposure in connection with their duties. We have witnessed it in connection with the treatment of malignant growths and other types of lesions demanding use of the x ray. It would seem that even where the treatment is limited to a breast or stomach, a general leucocytosis will follow the x rays.

It has been our observation that there is a tendency for local treatment of a malignant mass to modify favorably the development of a secondary growth in a distant part, such as mediastinal metastases; this is no doubt due to the general leucocytosis which increases the body resistance. This same phenomenon occurs after the hypodermic administration of animal and vegetable proteins and other extractives. This fact has encouraged the writers to be somewhat free in the exposure of the body of a patient in connection with the x ray treatment, maintaining thorough protection of the parts surrounding the primary area involved in a portion of the total exposure, and leaving it uncovered in the remainder of the total dose. Experience with the massive dose and the fractional doses of x ray, together with giving large doses within a short period or prolonging the time factor over an hour or more, has encouraged us to make the applications over the longer period of time.

While many theories have been propounded as to the action of x rays upon the organism, we regard the phenomenon as that of a physical bombardment of the atoms composing the molecules of the body cell, which bombardment renders the atom momentarily free, and so disorganizes the chemical constituents of the molecules composing the cell. We may illustrate this by the well known phenomenon of chemical action, which renders an atom nascent or free to combine with other elements or atoms of a like element. Heat will do this, and the result is coagulation of albumin. Electricity, if it does nothing else, can easily produce an electrolysis of the body tissue. That the rays can bring about chemical changes in the molecules of a similar character, is no doubt true, although the process is so slow that we have never been able to make it manifest within a brief period, and so produce absolute proof of chemical action.

Under ordinary conditions, the application of x rays is painless and even without sensation by the patient. If the current which produces the x rays is of very high voltage the patient will experience the same sensations as occur when they are placed near any electric current of high voltage; this is due to an electrostatic field which surrounds the wires and terminals which are charged. Recently our experience with excessively high voltage apparatus has demonstrated this phenomenon, even when the patient was placed some distance from the tube. Frequently the patient experiences the sensation of warmth in the area exposed; this is probably due to a slight hyperemia, which occurs at the time of exposure. The proximity of the body to high tension currents results in its being charged; this charge will increase or decrease the blood pressure. If the blood pressure is increased, frequently there is a sense of exhilaration and warmth throughout the body, which becomes so marked when the voltage is high as to produce free perspiration.

If the voltage used in the x ray tube is relatively low, it is not uncommon to see the patient go to sleep during the exposure; this is accompanied by a drop in blood pressure. The latter phenomenon is most common with the ordinary types of apparatus, which give a relatively low voltage; also the fact that most operators use a comparatively low x ray tube and low voltage current to excite it, results in the drop in pressure and tendency to drowsiness, which is a frequent experience among patients.

For many years it has been our practice to do x ray treatment with tubes of very high resistance, demanding a voltage of 80,000 to 100,000 volts. We have been able to increase this to several thousand volts in a circuit and to use tubes of excessively high vacuum, impossible to excite by ordinary apparatus. This places the patient in an electrostatic field that extends outward from the tube for a distance of several feet. Some peculiar phenomenon apparently occurs under these conditions, the exact character of which has been difficult to explain. One result has been that we have been able to administer tremendous doses of x ray without injuring the skin. In this work no method of filtering the x rays has been used.

Early x ray therapeutics was done with apparatus of very low capacity and tubes of low penetration. Experimenters demonstrated that with x rays so produced, about sixty per cent. of that which reached the skin was absorbed by the skin. Pfahler's introduction of the leather filter greatly reduced the percentage of x rays of low penetration which reached the skin, and enabled us to save it from much injury.

As the method of constructing high tension transformers and induction coils was improved, and the methods of pumping x ray tubes was perfected, it was found that by using a higher voltage, ranging up to 60,000 and 80,000, that a less percentage of x ray was absorbed by the skin and apparently deeper effects of therapeutic value were obtained.

Our first attempts at deep therapeutics were undertaken nine years ago, and consisted in the treatment of secondary metastases from the breast and malignant growths in stomachs. Having in mind the efficiency of high tubes with a sharp focus for the production of good definition in x ray plates, we selected for this work the best high vacuum tubes obtainable, and as the tendency is for tubes to drop in vacuum, always changed them frequently, trying to avoid the use of any given tube more than twice a day, to permit it to cool thoroughly before exposures. Recent experiments of Professor Scherer, of Cornell, have demonstrated that when a current is first introduced into the x ray tube it is not at its maximum penetration, but rises rapidly, then is carried at a maximum penetration until influenced by the heat generated and the gases liberated within it, following which there is a decline in the penetration of the x ray, until the heat is sufficient to lower the tube beyond efficiency; after this has occurred the tube must be set aside until cool, which permits the absorption of the excessive gases in the tube and a resulting rise in vacuum.

When the resistance of an x ray tube is comparatively low, it permits a free flow of secondary current, and an undue proportion of heat is produced more rapidly, dropping the vacuum of the tube. If we start our exposure with a tube already at a high vacuum, it maintains a greater resistance to the flow of current, for a much longer period, and a smaller amount of heat is produced in a given time, enabling us to carry the exposure much further; also the proportion of deep penetrating rays produced is higher, and the amount necessary to absorb by filtering is less. In general, this principle applies to both the gas tube and the Coolidge tube; the latter is composed of the same elements as the gas tube and has the same susceptibility to heat generation and the resulting melting and vaporization of the metals.

The Coolidge tube has recently been accepted as the ideal tube in therapeutics. While its principle is good, its limitations are of the capacity of the elements composing it to resist heat. If we can overcome this, and at the same time maintain the uniformity of delivery, one of our great problems will be solved. In our own experience the delicacy of the metal composing the terminals has been a serious impediment to using any tube and giving prolonged exposures in massive doses. Accidents are quite common as a result of these conditions, and it becomes a factor in the cost of maintaining a therapeutic equipment.

Frequently experimenters have exhibited and used air cooled and water cooled tubes, convincing themselves that these have overcome the impediments referred to above. Our observations have been that the resulting enthusiasm soon wanes and after a comparatively brief period the operators return to the normal standard tube, which, owing to its simplicity when properly handled, ultimately gives the most satisfactory results.

At this point it is well to say that experience is a far better guide to a definite technic which meets the indications of our practice than such superficial knowledge as can be obtained with regard to the management of x ray tubes from a mere description of apparatus or technic. Every röntgenologist who acquires success has his own individual peculiarities and methods of analyzing his cases and results. He must meet waves of optimism and pessimism among his associates, accept a series of one class and do his best with them, and shortly turn to another group. He is beset with the difficulties of acquiring a uniform general electric supply. Numerous manufacturers have brought forth types of apparatus, which are not standardized. Because of these varying factors no method of exact measurements has been presented which is a success; if x rays could be measured out of a bottle, after having met the standard requirements of the U. S. Pharmacopœia, the x ray specialist could be a technician in fact as well as in theory.

The extensive and special apparatus required, and the close application to study of its peculiarities, and the numerous details in connection with röntgenography and röntgenotherapeutics have produced the professional röntgenologist. After prolonged experience in teaching the primitive elements of röntgenology, and after having followed the later development of a number of x ray specialists, we have concluded that to succeed and overcome all of these difficulties has demanded a type of individual within the profession who is primarily a mechanic, and secondarily a clinician; one who can be a machinist in fact, and a therapeutist in theory.

It is interesting to study the personality of the entire group of representative röntgenologists of the profession; they are practically a class by themselves. They are serious minded, yet at the same time they assume the risks in connection with their work light heartedly. Many of the old group have succumbed to injuries from x ray burns. Not a few who have experienced the discomforts of röntgen dermatitis are living, but are exercising the precautions necessary to save them from further injury.

The precautions essential with regard to the care of the operator in protecting himself from the dangerous consequences of exposure to x rays, has led to many methods of limiting the field to that part of the patient's body which it is essential to expose. The introduction of protective devices, such as lead sheets and lead glass and rubber, and their persistent use has been a decided success; however, we have made an effort thoroughly to eliminate the dangers derived from minute exposures. Experiments have convinced us that thorough protection can be derived only from at least two cm. of lead or its equivalent in other metals. The equivalent is easily obtained by comparison of the atomic weight of the element. We have found iron as good a protection as lead, but demanding about twice the thickness, which is compensated for by its relatively low price and greater tensile strength, a factor when constructing heavy partitions.

In experimenting with very high tension currents in the production of x rays, we have been led to believe that the greater portion of the element of danger to the operator and patient is removed by maintaining a field of very high tension surging current around the tube; future developments will prove the value of this method. We have seen some prolonged exposures without protection; exposures continuing day after day for months, without dermatitis. Just how far this can be carried remains to be proved and justifies future study.

Our observation has been that where large doses of x rays are being administered, it is consistent policy to exercise control over the excretory functions, instructing patients to take thorough precautions with regard to managing the bowels, etc.; in addition, we believe that some form of physical therapeutics may be judiciously used, such as high tension electrical applications, massage, or light, or the several methods combined. Several times in our experience, pronounced x ray reactions which manifested dangerous symptoms, have been promptly controlled and rendered harmless by such therapeutic measures.

Recently it has been our practice to instruct the patients to bathe the parts exposed in an alkaline solution, as suggested by Doctor Dodd, of Boston, whenever any signs of reaction were manifested; it is a precaution that is sometimes of benefit. If we can obviate all risks of dangerous dermatitis to the operator and patient in the future, by improvement in devices which will select and control the penetrating rays, we feel that x ray therapeutics will be tremendously broadened. It now exceeds all the expectations of the earlier operators, and if the use of high voltage surging currents, as suggested in this paper, proves to be a step in that direction we shall be gratified.

40 EAST FORTY-FIRST STREET.

OCCUPATIONAL THECITIS.

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In view of the recent widespread adoption of workmen's compensation laws, a condition has presented itself to my attention that merits consideration, namely, thecitis of the flexor and extensor tendons of the thumb and fingers of the right hand, as a result of occupational conditions.

Etiology. I have observed a number of cases in men and women engaged in occupations requiring the use of heavy shears, such as sheet metal workers, tailors, dressmakers, also in workers who require the constant use of these tendons, such as pressers handling heavy sadirons. As predisposing causes, I believe that there is present in all these cases, a focus of infection such as tonsillitis, pyorrhea, sinusitis, gonorrheal urethritis, alveolar abscess, or gastrointestinal putrefaction. In cases where a focus of infection is not apparent, one will be found if looked for.

Pathology. The pathology of this condition is inflammation of the synovial sheath of the tendon with consequent exudate formation. This exudate is either absorbed or is transformed into connective tissue, the disease becoming chronic. In chronic cases the connective tissue contracts and results in interference with the free action of the tendon in its sheath. The pathological condition is due, I believe, to irritation from within, as a result of the focus of infection rendering the part unable to withstand the irritation from without due to constant use of the part. This produces an inflammation of the theca, interfering with the free motion of the tendon in its sheath. If the flexor tendons are affected we find the flexor sublimis digitorum, the flexor profundus digitorum, and the flexor longus pollicis affected simultaneously; since these three tendons lie in the same synovial sheath when they pass under the anterior annular ligament to be distributed to the thumb and fingers respectively. If the extensor tendons are affected, then we find that the extensor ossis metacarpi pollicis and the extensor primi internodi pollicis are affected. The extensors are more frequently affected than the flexors.

Symptoms. This condition may be acute or chronic. In the acute cases the patient complains of pain in the region of the affected tendon; most frequently about the radial side of the wrist (right side) on the extensor surface. This pain is aggravated by abduction and adduction of the thumb, and, if the flexor tendons are affected, by flexion of the wrist; in one case I saw, the wrist could not be flexed and the flexor tendons seemed to be in spasm. This pain is unaffected by time of day or by weather. In the early as well as in the late stage a friction or grating sound can be elicited. Swelling, if present, is slight. The temperature is normal. In nearly all these cases, some focus of infection may be found, the most common being pyorrhea or tonsillitis, although sinusitis plays a greater role than is generally suspected. Other sources of infection may be gonorrheal urethritis, alveolar abscess, gastrointestinal putrefaction, and recurrent furunculosis. The patients are unable to work and therefore must be looked after by their employers. It is here that I want to call the attention of physicians who examine for industrial concerns, to the importance of removing any focus of infection that may be present in any of their employees, present or prospective, thus safeguarding the health of the employees and the pocketbooks of the employers.

Chronic cases present much the same symptoms as acute cases, except that the pain is more of an ache and is aggravated by work. It is not as easily benefited by rest from work and is more severe at night. Some nodular swelling may be present along the course of the tendon sheaths. The general health of the patients as a rule is unaffected, although occasionally we find them poorly nourished and somewhat anemic, owing probably to the underlying cause or infective foci.

Case I. Miss S., age twenty-four years, dressmaker; family history, negative; medical history, frequent attacks of tonsillitis. Had had trouble with her teeth. Present illness: For the past few days patient was compelled to stop work because of pain along the radial surface of the right wrist on the extensor surface. It was a dull boring pain and the patient described it as being more like an ache. She stated that the pain was aggravated when she used her shears in cutting material. Examination revealed tenderness along the radial side of the right wrist on the extensor surface. Pain was increased on adduction or abduction of the thumb; movements of the wrist did not affect the pain. There was no swelling; temperature was normal. Examination of the throat showed the tonsils ragged and the pharynx congested; while the mouth showed several decayed teeth and pyorrhea.

Case II. Mr. L., age thirty-two years, sheet metal worker; was required to cut through heavy metal, necessitating the use of heavy shears. Family history negative. Medical history: Had had an abscess on the cheek several months ago. No history of trouble with nose or throat; no Neisserian infection. Present illness: Complained of pain along the radial side of the right wrist on the extensor surface, aggravated by abduction and adduction of the thumb. Had not been working for several weeks because of pain while using the shears. Examination showed tenderness along the radial side of the wrist (right) on the extensor surface; no swelling. A grating sound was elicited when the thumb was abducted or adducted; pain was also increased by these movements, but was unaffected by movements of the fingers. Examination of the nose and throat was negative; the teeth, however, were in poor condition. (This case I saw at the Polyclinic Hospital and am indebted to Dr. James K. Young for permission to publish it.)

Case III. Mr. W., aged forty-seven years, musician until some months ago; at present, a cutter of aprons. Family history, negative. Medical history: Played a wind instrument until twenty-five years ago, at which time he had a hemorrhage from lung (?) and was advised to give up the instrument. He then played the violin and piano, and was never troubled with pain in his arm except for an occasional tired feeling in his elbow. He was compelled to do something else for a living and he became a cutter of aprons, this requiring the use of heavy shears. Present illness: Complained of pain along the radial side of the right wrist on the extensor surface; also along the flexor surface of the wrist. Had had this pain for about one week. Examination showed tenderness about the flexor surface of the wrist; also on the extensor surface along the radial side. Pain was aggravated by abduction and adduction of the thumb and by movements of the fingers. Nose and throat negative, but teeth were in poor condition and gums showed pyorrhea.

Case IV. Mr. K., aged forty-five years, presser, had had pain along the lower part of the flexor surface of the forearm for the past six months, also sore throat and trouble with teeth. Movements of the wrist and thumb aggravated the pain. He must stop working every once in a while because he was unable to continue at work owing to pain in the lower part of the forearm. He had been a presser a great many years, but never had trouble with his hand previous to his sore throat attack. Examination showed tenderness along the flexor surface of the forearm (lower part). Grating sound could be elicited by having patient move fingers, alternately flexing and extending them. Pain was aggravated by these movements.

Case V. L. G., aged forty years, tailor, had pain in the left wrist on the radial side. Pain worse when working, which consisted chiefly of pressing clothes, although he did a good bit of cutting with scissors. Patient was left handed, being unable to use the right hand in working. Had had this pain for nine weeks and had been unable to work during the greater part of this time. Pain was unaffected by time of day or weather, becoming worse only after use. He had no pain in the right wrist. No history of tonsillitis; teeth decayed and pyorrhea present. Throat negative, except for slight pharyngitis. Examination showed the right wrist normal and unaffected. In the left wrist, pain on motion of thumb and wrist, particularly abduction of the wrist. No swelling nor discoloration. Some crepitation.

These are but a few out of a large number of these cases that I have observed.

Diagnosis. The diagnosis is simple: A history of some focus of infection, particularly pyorrhea; occupation such as dressmaker, tailor, presser; right side if patient is right handed; characteristic pain affected by movements of the thumb if the extensors are affected, and by movements of the wrist and fingers if the flexors are affected. Temperature is normal.

Differential diagnosis. From tuberculous thecitis, by a history of tuberculosis, fever, longer duration, can occur in any occupation or irrespective of occupation. From suppurative thecitis—by fever, swelling, history of digital or palmar abscess. From osteitis, periostitis, or osteoperiostitis, by swelling, fever, history of injury, and x ray. From arthritis by limited or impaired motion of the joint, history, and x ray.

Prognosis is good if treated early and the focus of infection is eradicated. If neglected, a chronic thecitis results, which may terminate in a spasm of the muscle and render the wrist useless. Treated early, these cases get well in two weeks to a month.

Treatment. Prophylaxis involves removal of the focus of infection. Cure demands rest of the part and cessation of work until part is given a chance to recover itself. Locally, I prescribe an ointment containing:

℞ Tincturæ iodi, ...ʒi;
Unguenti ichthyolis, . }
Unguenti belladonnæ, } ....āā ℥ss.
M. fiat unguentum.

Of great benefit locally in addition is baking. Iodine is applied to the part and the part is baked for about ten minutes. I believe the congestion due to the heat brings a larger number of leucocytes to the part, these carrying off the exudate. In the early part of the treatment massage should not be used, but may be tried with benefit later, especially in the chronic cases. Internally I prescribe syrupus ferri iodidi, half a dram, and syrup of hydriodic acid dilute, half a dram, for the benefit of the iodine action on exudates as well as for its tonic effect. When these patients get well, it is of benefit to have them wear some kind of support over the wrist to take the strain off the tendons. This may be a leather wrist band or preferably an elastic sleeve.

CONCLUSIONS.

1. Thecitis is common as a result of occupations such as dressmaking, cutting, and pressing.
2. Always look for and eradicate any focus of infection.
3. Extensors are more frequently affected than flexors, on the whole. Extensors are also more commonly affected in those using shears, while the flexors are more commonly affected in those using sadirons.
4. Symptoms clear up in a short time under proper treatment, while, untreated, they become chronic and result in impaired motion with impaired function.

937 North Eighth Street.

PSYCHOLOGY OF THE FADDIST.

By B. S. Talmey, M. D.,
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The depth of the mental operations of the faddist or the fanatic can be fathomed only by a thorough study in detail of the main principle of the new psychology of the unconscious. The genetic standpoint of this psychology regards the multiplicity of instincts as issuing from a relative unity, the primal libido, or the continuous life impulse, the *élan vital* of Bergson or the *Wille* of Schopenhauer.

The most intelligible articulation of this primal libido is sex attraction. It is the outflow of the immortality implanted in the depth of all organic life. Erotic libido represents the will to live, the continuous life impulse, centred in the preservation of the individual and through it of the race.

The basis of the new psychology of the unconscious is the axiomatic truth that every man loves women, i. e., the female of his species. The majority of men may pass through their allotted three score and ten years of life without ever having loved a woman, a certain woman, but they all love women. In the same way, every woman loves men, i. e., the male of her species. Those who do not are simply degenerates.

The new psychology also accepts the empiric knowledge as a truism that this attraction of the sexes is found already in the very young animal before it is ripe for sexual activity and before it shows other sex manifestations.[1] The new psychology teaches that every child is sexually attached to its parent of the opposite sex. The little boy does not love his mother only as a parent who administers to all his needs, but is attracted to her also for the reason that she is the first female of his species he comes in contact with. The little girl's love for her father is not based on filial love alone, but also upon sex attraction. The father is the first male of her species she came in contact with and with whom she associates daily. This erotic attraction remains intact till the child reaches school age. It then escapes from conscious control and remains dormant till the age of puberty. At this period the old attachment returns to the surface, and this time with the conscious desire for the exercise of the newly acquired sexual powers with the beloved individuals.

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[1] The best way the farmer, who owns a pullet and receives another young fowl in the barnyard, can tell the sex of the newcomer is by the behavior of the two birds. If the two young fowls fight, then the newcomer is also a pullet, i. e., of the same sex. If the newcomer is of the male sex, there will be no fight. The two sexes attract each other already at a time when no other sex manifestations are in sight as yet. The human infant makes no exception to this rule.

During the intervening period from infancy to puberty, however, the child has learned that incest is the greatest abomination in the sight of God and man. Nothing, not even murder, shocks our moral sense more than an incestuous occurrence in the community. Hence, as puberty is attained, a typical conflict arises in the moral nature of the adolescent child between the social cultural demands and the infantile tendencies. The child is puzzled in the midst of conflicting impulses and ideas. The desires are hence diverted from the sexual territory into associated functions. If this operation succeeds without injury to the adaptation of the individual, it is called sublimation. By sublimation the infantile tendencies are disguised and concealed and pass recognition.

Such diversion of the sexual libido from the erotic territory into other functions is found when religious fanaticism is analyzed. The transference of sexuality into religiosity serves to soothe the individual's conscience. There is a certain affinity between eroticism and religion. Religious worship is an emanation of sex worship. All early creeds consisted in the worship of the generative principle (See *Love*, p. 2). Libido harbors a metaphysical element and is hence akin to the metaphysics of religion. This relationship between libido and religion has the effect that the psychological projection of the sexual is often directed toward the religious. The diverted erotic desires create compensations in the form of religious activity. Religious fanaticism is thus, as a rule, an extreme expression of exaggerated eroticism. All strong emotions, however, nonsexual, represent the displacement of the erotic into other channels.

Where the attempts of the psychological projection do not entirely succeed, if there is a certain failure of adaptation, the individual takes his refuge in repression. By repression, the desires are, in a way, stored away, incapsulated into subconsciousness. Repression is thus the normal mechanism by which nature protects the individual from painful feelings and helps him overcome the wounds and conflicts taking place in his soul.

By repression the isolated idea forms a point of crystallization around which all other corresponding ideas gather and form psychic groups or "complexes." Thus in the realm of the erotic it has been found that every boy harbors in his subconsciousness the "Œdipus complex" (Œdipus married his mother), or a certain erotic attachment to his mother, and every girl harbors in the subconscious strata of her soul the "Electra complex" (Electra, out of love to her father, Agamemnon, incited her brother, Orestes, to avenge her father's death by assassinating their mother Clytemnestra), or an erotic love for her father. The complex, or the important group of ideas with the feelings and emotions clustered around them, remains submerged in the unconscious below the threshold of consciousness, and the repressed desires never rise again to disturb the individual's composure.

But nature does not always effect a perfect adaptation of the psyche to society's mandates. It sometimes only succeeds in isolating the emotions psychically to repress them incompletely into the unconscious. A "symbolical reminiscence" is retained. Certain memory pictures irradiate from the subconscious into the conscious strata of the psyche. If no free outlet is given to the symbolical reminiscence, a struggle between the wish to forget and the striving of the idea to come to the surface results in a compromise, in the transformation into a hysterical symptom. The symptom represents the deviation of the wish fulfillment into other channels. It is the individual's "defense" against the reminiscence, gleaming through from the complexes. Behind the symptom the psychanalyst often discovers in the son the erotic love to the mother, or the Œdipus complex, and in the daughter the erotic love to the father, or the Electra complex. The symptom is the defense action against the symbolical reminiscence of the infantile erotic attachments. The repressed contents are set forth into seeming objectivity.

By the study of the abnormal—and the best way to gain an adequate knowledge in these spheres is by the study of the abnormal—it has been found that hysterical symptoms represent the defense against tendencies with which the individual feels unable to cope. The basis and origin of the various symptoms of hysterical individuals are the unfulfilled desires and wishes. The symptoms are developed in order to conceal and overcompensate for the impossible situation. The gravity of the symptom is determined by the individual's reactions toward the tendencies of his own constitution.

From the psychological point of view the most frequent hysterical symptom is fanaticism, which also represents the defense against some complex. The general activities and reactions of man can thus be easily understood. The expresions or manifestations of the psyche are not lawless or unmotivated. The unfulfilled wishes and desires are the determinants at the root of human conduct. They explain the phenomena of conduct in human life. Objectionable desires and wishes are deflected into other channels and are then expressed in prejudices and attitudes of conduct. The unconscious tendencies are the underlying motives and determinants of the individual's attitude. When the attitude of conduct reaches its climax, it becomes fanaticism.[2] When an individual exhibits an exaggerated interest or places an overemphasis upon an idea or situation, he is concealing his weaknesses.

The faddist is almost invariably defending himself against a complex that stands in inverse relation to his eccentricity. The normal individual, without exaggerated desires and with a sane, healthy education, does not harbor complexes and never becomes a real fanatic. The defense symptom is the basis for the life conduct of the fanatic or the crank.

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[2] It may be laid down as a rule that every faddist harbors in his subconsciousness a comolex in direct opposition to his fad. "He who befouls others befouls by his own foulness," *"Kol haposul bemumo posul,"* says the *Talmud* (Kidushin, 70a). We insinuate those faults in others which we ourselves possess. We pretend to and really think that we detest things whch in our subconsciousness we greatly desire. Love may turn into hatred but never into indifference. The man, whose wife has left hm to go to live with her mother, remains indifferent if he does not love her any longer. If he still desires her, this sensual love may turn into hatred, and he goes to her mother's house and kills her. His hatred attests his still overwhelming desires.

Behind every kind of fanaticism lies a conflict between natural tendencies and early teachings. The conflict leads to repression and hence to the formation of a complex. The symbolical reminiscence of this complex leads then to a fanatic expression. Behind the exaggerated defense reactions in fanaticism can almost invariably be detected the controlling power of unconscious desires over thoughts and acts.

A look at the purist will show that, as a rule, he harbors in his subconsciousness the purity or obscenity complex. If parents did not so scrupulously hide their nudity before their children, if the mother took her little boy into the bath room every time she took a bath, or the father his little daughter each time he took a bath, beginning these practices before the children had any adequate idea of the meaning of sex, the children would grow up without finding anything obscene in the nude body, nude picture, or nude statue.

But from our early infancy we have been taught the indecency of the nude. We have been taught that everything connected with sex is unclean and obscene, that erotic thoughts are unholy and sinful, that erotic emotions are vile and wicked, that erotic activities are low and vulgar, and that sex is altogether the work of Satan. As puberty, with the germinating eroticism, is attained, a conflict is developed between nature and culture, between an essential biological necessity for the fulfillment of the ego and the authority of the early precepts which can see only shame in sex and denies what the ego cannot accord. The individual is aware of the inadequacy in the association of the primal emotions with those mental powers which have been developed because of the moral teachings, and a struggle begins between his weakness and his feelings of idealism. If the individual is able to overcome the obstacle in his life path which arose through the early perverted injunctions, then he develops normally. But if he either possesses exaggerated desires or too great an emphasis was laid upon his early lessons in purity, then he shrinks from the magnitude of the obstacle, and strives to repress the emotions and to eliminate them from consciousness. In this way the obscenity complex is created.

The fanatic purist who clamors the loudest against obscenity and who would entirely eradicate nudity from this world is in his nature a sensualist. Beneath the pretensions, or rather beneath the honest desire for purity and sinlessness lie very ordinary elements. His early faulty instruction and the injunctions he received against all things sensual come in conflict with his natural tendencies. He represses his desires and tendencies and thus forms the obscenity complex. The symbolical reminiscence requires then a defense, and this the individual seeks in his fad. The mania to look for obscenity where the normal individual would see none was produced as a defense against sensual wishes and desires. The thwarted impulse for matters sensual, such as obscene books, or pictures and statues of the nude takes another outlet. He seeks freedom from the obscenity wish by losing himself in what he considers social service. The pseudovirtuous indignation over the nude or obscene is only an outlet for his natural ardor for the obscene and nude. In his eagerness to find a defense against his unconscious tendencies, his fantasy becomes twisted and distorted. Everything in life bears an obscene stamp. His fanaticism in the detection and persecution of the nude and obscene has its origin and significance in his obscenity complex. His loud clamor against the sacrilegious evil of the representation of the obscene in literature and art is only the defensive fence he has built around himself against his unconscious desires for the very things he is clamoring against.

Persons strongly dowered with sexuality, experiencing in the highest degree the great force of sexual needs, spontaneously exhibit more shame and purity than others. They are not necessarily hypocrites. They merely wish to defend themselves against the craving for wish fulfillment.

The complexes and the defenses are artificial products created through the conflicts between the faulty early teachings and the later emotions. They are not found in primitive man or in the child. If the child received a sane conception of sex, if it learned that sex activity is no more shameful than the activity of eating or drinking, that if the sight of sexual activity is unesthetic, it is no more unesthetic than the act of micturition or defecation of which nobody is ashamed, then the conflicts of puberty would never appear even in highly sensual natures, and without a conflict there is no repression, complex, or defense action. But every mention of sex being tabooed in the majority of refined families, a certain conflict in highly emotional natures is unavoidable, and a variety of complexes, based upon sexual emotions, is the result.

The turbulent zealot, the perverted morality hunter, who is shocked and hurt over the sins of the scarlet woman and plumes herself upon her self placed halo and prides herself upon her superiority, has in her makeup certain traits of her she hates so relentlessly. She is by nature a varietist. Under different circumstances she herself would have become a priestess of Venus vulgivaga. But being brought up in surroundings where everything sexual was religiously proscribed at the time of puberty, a conflict arose between her appetite for variety and the early impressions. The desires were then repressed and the prostitution complex was formed. The symbolical reminiscence of the cravings toward variety determines her sanctimonious behavior. The prosecuting zeal of the reformer represents nothing but the defense action against the symbolic reminiscence.

Another complex based on sex hunger is feminism. The sexual varietist does not always turn to low vice hunting in the defense of the symbolical reminiscence. If she was brought up as the clinging vine variety, and at the time of full maturity does not find the right support to cling to, the thwarted exaggerated eroticism is repressed, and the militantism conflict is created. As a defense against the reminiscence of this complex, the woman turns to sex antagonism or militantism. Behind the desire for political equality dwells the desire for sexual equality, whereby the ungratified primitive instincts can find a natural outlet.

All strong emotions, however nonsexual, tend to overflow into sexual channels, and strong sexual emotions often turn to nonsexual social activities. Exaggerated settlement work or sick nursing often represents the transmutation of sexual energy into channels which act as sexual equivalents. Not only in the realm of sex, but every exaggeration in conduct has as its basis another exaggeration, either of the natural desires or of the early inculcations. The greater the exaggeration, the more pronounced is the conflict and the more salient the adaptation.

The rabid prohibitionist is defending himself against the drink complex. In his youth he received strict injunctions against the saloon. If by inheritance an exaggerated desire appears later on, the early injunctions come in conflict with his exaggerated cravings for liquor. The desires are then subjected to repression, and a drink complex ensues. Against the symbolical reminiscence of this complex prohibition is seized as a defense action. A person endowed with an irresistible desire for drink becomes either a confirmed drunkard or a screeching prohibitionist. There is a reason for the existence of a Carrie Nation.

The fanatic antivivisectionist harbors in his nature certain features of the sadist. He is by nature cruel. But early in his youth he received the mandates of parents and teachers to be kind to animals. These teachings come in conflict with the cruel tendencies in his character. The cruel emotions are repressed, and a cruelty complex is formed. The defense against the symbolical reminiscence of the cruelty complex determines his fanatic raving against vivisection. He is cruel enough to sacrifice millions of sick children if only his beloved rabbits are safe.

The rabid antisemite—any Gentile of normal constitution may like, dislike, or be indifferent toward the Jew, but he is never a fanatic antisemite—is harboring in his subconsciousness the "Shylock complex." In his youth he was taught that every Jew was a mean, sordid, avaricious, stingy, covetous, grasping creature always hungry for the Gentile's pound of flesh, a veritable Shylock who ought to be despised, hated, and shunned. When the future antisemite reaches adult age he finds that he himself is afflicted with an inordinate desire for worldly possessions. These desires clash with his early precepts to hate and despise the person dominated by such desires. The tendencies are thereupon repressed, and the repression creates the "Shylock complex." The symbolic reminiscence of this complex requires a certain defense action, and the subject screens himself behind his raging antisemitism, which does not always entirely cover the complex. Under favorable conditions the rabid antisemite outshylocks Shylock.

Even the fanatic socialist shelters in his subconsciousness a certain complex which may be called the "individualistic complex." His early lessons of conduct, just as the lessons of any other child in Christian countries, were based upon the Biblical precepts of social justice. When he grows up to manhood he finds that he is by nature an egotistic individualist who cares for nobody but himself. This pronounced egotism comes in collision with his early precepts to consider society first and himself second. Thereupon the egotistic tendencies are repressed, and the repression creates the "individualism complex." The symbolic reminiscence of this complex demands a certain defense, and the individual hides behind socialism. When the fanatic socialist becomes himself a capitalist he betrays his complex by being more exacting toward labor than the born capitalist.

The anarchist shelters in his unconscious psyche the "oppression complex." Generally he was brought up in a country ruled by tyrannical laws and is himself by nature a tyrant. But he was reared in a home atmosphere of silent rebellion against tyranny. The love of liberty and freedom was sung and preached to him on every occasion. When he reaches adolescence he finds that the traits of the tyrant dwell in his character, that he is intolerant toward the acts and opinions of others, and that if he had the power he would be a little czar in disguise. This love of power clashes with the inculcations of sweet liberty for everybody. The inordinate desires for power are thereupon repressed, and the "oppression complex" is formed. The symbolical reminiscence of this complex leads to the seizure upon anarchy as a defense. The anarchistic doctrines hide from the individual himself his deep seated tyrannical inclinations, which appear at the surface when the anarchist himself is invested with authority in any office or occupation.

The course of development of every kind of fanaticism, just as the development of the hysterical symptom with which fanaticism has certain resemblances, is thus as follows: First, certain exaggerated inculcations of conduct are a condition *sine qua non*. Second, there must exist certain natural inherited desires or traits of character, antagonistic to the inculcations. The third step is the conflict between nature and nurture, between the desires and the lessons. The fourth step is the repression of the desires. The fifth step is the formation of the complex. The sixth step is the defense against a symbolical reminiscence of the complex. The defense actions manifest themselves either in hysterical symptoms or in fads. Two things are of absolute necessity for the development of the fanatic or the faddist, exaggerated precepts and exaggerated desires. Without either, there is no conflict, no repression, no complex, no reminiscences, no defense, and hence no fad.

All these psychic traits of the faddist are manifested by the study of the abnormal manifestations of erotic libido. Libido, in general, is the life principle permeating entire nature and upholding the same. All strong emotions take their rise from this libido and are uncovered and disclosed by a close study of this creative principle in the universe.

12 WEST 123D STREET.

Practical Notes on Blood Pressure.—George Van Ness Dearborn (*Medical Record*, Sept. 16, 1916) gives the results of 4,800 blood pressure measurements which justify his statement that readings must be taken every one or two minutes for a half hour or thereabouts and on several successive days in order to be accurate. Anxiety, excitement, emotion, or fright may cause high pressure readings.

IRITIS AND THE GENERAL PRACTITIONER.

By William L. Rhodes, M. D.,
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That many cases of iritis exist that are not diagnosed as such, and consequently receive little treatment or none at all, is undoubtedly true, especially in the practice of physicians away from the medical centres where there is abundant opportunity for the study of this condition.

Recently a case was referred to me which I will cite as an example.

Case. To a girl, ten years of age, giving a history of pain in the left eye, photophobia, excessive lacrymation, and a congestion of the sclera, the family doctor was called, and diagnosed the case as being "pink eye." He prescribed a mild wash, probably a boric acid solution, and told the child's parents to continue the medicine for a few days and the patient would be all right.

The inflammatory condition subsided in a few weeks, but the child couldn't see as well as formerly. Upon examining the eye with oblique illumination, and by means of the ophthalmoscope, I found that she had an annular posterior synechia, with an opacity of the crystalline lens; vision consisted in being able to count fingers at four feet in a strong light.

This case had been mistreated by the physician, who in all other lines of work is a very capable man; he failed to make the proper diagnosis, with the result that the patient has a permanent loss of vision in one eye. This, however, can be remedied by doing an iridotomy, thereby giving the patient some degree of vision through the artificial pupil made in the iris, but to date I have not been able to prevail upon the parents to allow this to be done.

We frequently observe this type of case in our charity hospitals, some being the result of improper treatment, some being neglected through lack of funds to pay a doctor, and still others who put more faith in patent eye medicines than they do in the medical profession, and who, after the damage is done, come to the hospital and expect the ophthalmologist to give them perfect vision.

I have just concluded the treatment of one of this type of patient, who, five weeks previously, had had an attack ot iritis and for three weeks had used patent medicines in the hope that they would suffice and the patient would thereby save a doctor's bill. At the end of the third week she went to a local general practitioner, who treated her a few times and referred her to me. The inflammation has subsided after four weeks' treatment, with the result that she has a complete posterior synechia and an opacity of the crystalline lens, with a vision that consists of finger reading at one foot in a strong light.

This is a deplorable condition, but one over which neither the specialist nor the general practitioner has any control, the patient having lost her eye before she consulted a doctor, and having only herself to blame for loss of vision. It is possible to recover fairly good vision by doing an iridotomy as suggested in the case cited, but ordinarily the person who experiments with his own eye has not the intelligence to take advantage of his opportunity and consent to an operation.

Iritis may easily be confounded with a simple conjunctivitis, and a faulty diagnosis made, which later may bring both patient and physician to grief.

ETIOLOGY.

The causes of iritis may be either primary, as from a local gonorrheal ophthalmia, from traumatism, or frequently from infection of the iris from a corneal ulcer, or it may be secondary to constitutional disorders, as from a syphilitic infection, from a "rheumatic" source, or from a tuberculous condition. The rheumatic type has as its foci of infection diseased tonsils, diseased gums and teeth, and possibly a diseased prostate.

DIAGNOSIS.

The symptoms of iritis are typical. The color of the iris changes; it has a dull muddied appearance, the lustre is lost, as is also the characteristic striated appearance found in the healthy iris, while another frequent symptom is a fine meshwork of minute bloodvessels forming a halo around the cornea and perceptibly diminishing, the farther away from the cornea they are situated. This is nature's effort to furnish nourishment to the cornea and to carry off infectious matter, and should cause the physician no undue alarm. Miosis is in evidence, due partially to inflammation of the peripheral nerve filaments, and partially to hyperemia and spasm of the sphincter. The reaction of the pupil to light and to mydriatics is either diminished or lost, depending upon the severity of the infection and the length of time it has been in existence.

Posterior synechia, or an adhesion between the layer of pigment covering the posterior surface of the iris and the anterior surface of the lens capsule, soon makes itself manifest, provided that a mydriatic has not been used early in the course of the disease and kept up regularly. However, even with early treatment we frequently get an adhesion of at least a part of the iris and the anterior lens capsule.

The diagnosis of posterior synechia can be demonstrated by instilling a mydriatic into the affected eye, thereby producing an irregularity of the pupillary margin of the iris, showing the attachments quite plainly between the iris and the anterior lens capsule, provided, of course, that there is not an annular posterior synechia, in which case there will be no change in the pupil, as it adheres to the lens at all points of the pupillary margin.

The adhesions vary in size, some being broad and dense, while others are threadlike. The surface of the iris usually shows irregularities due to deposits of fibrin and the accumulation of exudative materials, while in some cases the formation of nodules is noticeable. In cases having annular posterior synechia we often find a false membrane, which varies in density, and completely occludes the region of the pupillary area.

In all cases of iritis a haziness of the cornea exists, due to the deposits on the posterior surface of Descemet's membrane. Changes also occur in the aqueous humor, due either to an exudate, blood, pus, or to a mild turbidity of the aqueous.

The subjective symptoms comprise pain, beginning in the eyeball and then spreading to the brow and temple. Photophobia is constant, while a decrease in visual power is a prominent symptom. The pain is intense in some cases, especially in the region of the supraorbital nerve, and is always worse at night. In some cases pain is noticeable in the teeth, and in the infraorbital and nasal regions, and causes additional discomfort to the patient.

The disturbance in vision is in direct proportion to the cloudiness of the media, and the extent of involvement of the posterior surface of Descemet's membrane. Later, should a posterior synechia occur, vision is decreased in proportion to the extent of the adhesions, and to the coexisting cloudiness of the lens capsule. In acute iritis, when the vision is considerably decreased, we may expect to find an extension of the disease to the ciliary body and the deeper structures, it being practically impossible in a great many cases to determine whether the iris alone is affected, or whether both iris and ciliary body are involved.

Transient myopia and astigmatism are noticeable in all cases of iritis, and are especially pronounced in the plastic type of the disease, even when thorough dilatation of the pupil has been obtained. According to some recent investigators, the corneal curvature is due chiefly to a perversion of the lens action from spastic accommodation as the result of ciliary irritation.

A tenderness of the globe is usually present in iritis, and is especially pronounced in the rheumatic type. Where tenderness is extremely severe, we may expect to find involvement of the ciliary body as well as of the iris.

Photophobia varies in degree in different cases; in some it is slight, while in others it is severe. In the rheumatic type the photophobia is usually less severe than in the syphilitic type, and clears up more quickly under treatment.

A "rheumatic" type of iritis usually attacks but one eye, while in a syphilitic iritis first one eye is involved, closely followed by the other, so that we can say with reasonable certainty that a double iritis is of syphilitic origin and treat accordingly. However, it is a good plan to have the diagnosis confirmed by a Wassermann or a colloidal gold test.

The pain in a rheumatic iritis is more severe than in the syphilitic type, but the photophobia is usually much greater in the latter, which responds more slowly to treatment.

TREATMENT.

The treatment of the rheumatic type of iritis consists in the early and frequent local use of atropine and dionin, together with hot, moist applications, while internally we give sodium salicylate in five to ten grain doses. Where the focus of infection is found to be in diseased tonsils, prompt improvement usually follows a tonsillectomy, the same being true where infection comes from diseased gums. After proper treatment has been instituted, the iritis subsides as the diseased condition of the gums improves.

The various ointments do very little good; in my opinion they are a disadvantage in that they keep the cornea gummed up with an oily coating which lessens the effect of the atropine.

The treatment of the syphilitic type of iritis is systematically the same as of a syphilitic manifestation in any other part of the body. Salvarsan intravenously, or neosalvarsan intraspinally, is of distinct advantage, while internally potassium iodide in increasing doses, combined with mercury in the form of an inunction, is the best treatment. Locally the use of atropine and dionin, and of hot moist applications is indicated.

It is a grave mistake to use the yellow oxide of mercury locally, and at the same time potassium iodide internally, on account of the precipitation of mercuric iodide, which occurs when the potassium iodide bearing tears comes in contact with the yellow oxide of mercury ointment. This will cause a flare up of all the symptoms and the patient will complain of increased distress.

Sodium salicylate in five grain doses, every three hours, will relieve the pain in most cases of iritis, and is of special benefit in the rheumatic type of the disease. Hot moist packs frequently used often give marked relief, and are indicated in all cases.

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LABYRINTHINE INFLAMMATION.*

Secondary to Chronic Purulent Otitis Media,

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A study of the anatomy of the middle ear and of the structures in intimate relation to it, will convince us of the dangers incident to a chronic discharging ear. The tympanum is in direct contact with the cerebrum, the labyrinth, the jugular bulb, and the mastoid cells, and indirectly with the endocranial sinuses and the cerebellum.

An inflammation of the middle ear may readily involve a contiguous structure, especially if the condition is chronic or if drainage is interfered with, or if the infecting organism is of a virulent nature. In the cases reported, destruction of the labyrinth had followed a long standing purulent condition of the middle ear.

Case I. N. S., twenty-seven years of age, was admitted to my service at the People's Hospital on March 5, 1916, with a history of an intermittent discharge from both ears from youth. Hearing had always been poor; had suffered from occasional attacks of vertigo and tinnitus. For three weeks before entering the hospital, the discharge from the right ear became more abundant, with pain in the back of the ear and frontal and parietal headaches. In fact, the severity of the headaches induced him to seek relief. On admission, temperature was 101° F., pulse 120. The right external canal was filled with a quantity of fetid smelling pus, upon the removal of which no evidence of drum membrane was seen. There was complete deafness in the right ear, with a total absence of vestibular reaction. No response to high and low tuning forks, and Schwabach was heard in the opposite ear. No spontaneous nystagmus. Neither air compression nor aspiration in the right external auditory canal caused nystagmus. The blood count showed a leucocytosis of 20,000, polynuclear eighty-five per cent. Tenderness over the entire mastoid, with slight edema of the soft tissues. No disturbance of equilibrium. The left ear showed impaired hearing, but the labyrinth reacted to the physiological tests. Diagnosed as chronic purulent otitis media, with mastoiditis and latent suppurative labyrinthitis.

A radical mastoid operation was done. The mastoid was filled with pus and granulations, the necrosis and softening extending to the sigmoid sinus and to the dura of the middle fossa. The dura over the tegmen antri was covered with granulations. The diseased cells were removed and the region between the semicircular canals was cleaned out and examined. No fistula was found. A portion of the stapes was seen in the recess of the oval window. A remnant of the malleus and part of the incus were found and removed. The promontory and round window were inspected. The granulations were removed from the tympanic cavity, the tube was curetted, and the posterior wound completely sewed up. Healing was normal. The complete deafness of the diseased ear, with the lack of response of the vestibular apparatus to stimulation, and the absence of labyrinthine symptoms of irritation indicated a chronic latent labyrinthine inflammation.

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*Read before the Clinical Society of the People's Hospital, May 10, 1916.

Case II. Mrs. M., aged forty years, admitted to People's Hospital, April 15, 1916, with a history of a discharging right ear since childhood. Had occasionally had pain on right side of head and over right mastoid, and occasional attacks of vertigo. Three weeks ago, she experienced severe pain in the diseased ear, with soreness over the mastoid, and bad headaches, particularly at night. The discharge became profuse from the external canal. Examination of the labyrinth showed complete destruction, as elicited by the total loss of hearing, with absence of caloric reaction and great shortening of the rotation after nystagmus toward the diseased side. There was no spontaneous nystagmus. Right ear inspection revealed absence of drum membrane, with the handle of the malleus isolated and loosely suspended. Abundant granulations sprung from the inner wall of the tympanum. Discharge profuse and fetid. Mastoid sensitive to pressure at the tip and antrum. The left ear had good hearing, with a normal response to the thermic and turning reactions. Blood examination showed a moderate increase of leucocytes. Pupils equal and reacted promptly. Diagnosed as latent labyrinthitis, chronic purulent otitis media, with mastoiditis.

A radical mastoid operation was done. The mastoid was pneumatic, containing many granulations. The antrum and tympanum were filled with detritus and pus. The sinus was exposed. All the semicircular canals were visible, but no fistula was found. The stapes was found loose in the opening of the oval window and was removed. There was no exposure of dura. All diseased bone was removed, the tympanum curetted, a flap made, and the incision sewed up.

Case III. J. S., twenty-two years old, was admitted to the hospital, December 19, 1915, with the symptoms of total deafness in the right ear, persistent nausea and vomiting, severe vertigo, and inability to stand without falling, coming on suddenly a few hours previously. The patient gave a history of a discharge from the right ear for the last ten years. On entering the hospital, temperature was 101° F., pulse 110. Examination of the right ear showed a canal filled with thick, foul smelling pus, with destruction of lower half of drum membrane, the upper portion with short process of malleus and part of hammer handle were intact. A polyp attached to the inner wall of the tympanum protruded into the canal. Mastoid region not sensitive. Blood count, 12,000 white, with eighty per cent. polynuclear. Smear showed a mixed infection. No Kernig or Babinski. The eye grounds were normal. Total deafness in the right ear, elicited by words and numbers spoken in loud voice, the function of the other ear being excluded by means of the Barany noise apparatus. Tuning forks not heard through the air. In the left ear there was slight impairment of hearing, with an intact and functioning labyrinth. Examination of the eyes showed a spontaneous rotary nystagmus to the left or sound side, the nystagmus being increased in intensity when the eyes were directed to the left, and diminished when turned in the opposite direction. Irrigation of the right ear with hot water had no effect on the nystagmus. The turning test failed to show an active right labyrinth. The fistula test gave a negative result, which was to be expected with a destroyed labyrinth and consequent loss of vestibular irritability, and did not rule out the presence of a fistula. Patient was unable to stand without help, and preferred to lie quietly in bed on the left side. On sitting up, he would fall to the right and complained of the objects about him rotating. The typical character of the symptoms pointed to an acute suppurative inflammation of the right labyrinth, involving all its component parts, cochlea, vestibule, and semicircular canals.

Under cocaine anesthesia, the polyp and a few granulations were removed from the middle ear, and frequent saline irrigations were ordered. December 16th, three days after admission, the temperature, pulse, and respiration were normal, the nausea and vomiting had ceased, the vertigo was slight, and the spontaneous rotary nystagmus was less marked. The Weber sign was lateralized to the left. The right ear was still deaf to tuning forks and voice, and showed no reaction after irrigation with hot water. December 20th, temperature, pulse, and respiration were normal. Vertigo was present only on sitting up, spontaneous nystagmus was present when the gaze was directed to the left, and very slight when the patient looked to the right. There was a profuse discharge from the right ear. On December 27th, there was slight rotary nystagmus only when the gaze was directed to the healthy side. There was vertigo on sitting up. With the exclusion test, the right ear showed profound deafness. On January 3rd, the patient was comfortable and out of bed. He showed some disturbance in equilibrium. On walking with the eyes closed, there was slight deviation and a tendency to fall to the right, and the patient experienced difficulty in turning around. Occasionally there was slight vertigo. There was rotary nystagmus only when the patient looked to the left. The vertigo was decidedly less. There was a slight disturbance in equilibrium. The temperature, pulse, and respiration were normal. The discharge from the right ear was moderate and less fetid in character. The patient was fairly comfortable; there was no spontaneous nystagmus, only occasional vertigo, and slight disturbance of equilibrium due to destruction of his right labyrinth and consequent defective orientation. There was total deafness of the right ear, and no caloric reaction after prolonged syringing. Discharge from the right ear was scant and nonfetid in character.

This case is of interest in showing the spread of an otitis media to the labyrinth without involvement of the mastoid and with complete destruction of the cochlea and vestibule, also the limitation of the disease to the labyrinth without involvement of the vital intracranial structures. The extension of the inflammation from the middle ear to the labyrinth may have been due to the impaction of the polyp in the perforation of the drum membrane, with the subsequent forcing back of the discharge into the inner ear through one of the various openings communicating with the oval or round window or through a necrotic area in the promontory or through a fistula of the external semicircular canal.

Case IV. Mrs. G., seventy years old, had discharge from both ears since childhood, with defective hearing, especially in the right ear. Frequent attacks of pain on the right side of the head in the parietal and mastoid regions for past two weeks, pain in the ear and mastoid more marked. On admission to the hospital, October 10, 1915, temperature was 103° F.; the right external canal was filled with abundant pus, and there was absence of drum membrane. No ossicles seen. Posterior superior wall of external canal bulging. There was complete deafness on the right side and lack of response to hot and cold water. Swelling and tenderness over right mastoid. The left ear was filled with pus and drum membrane destroyed. Slight hearing present and vestibule reacted. Weber to the left. Tuning forks not heard in right ear through the air or bone. No compression or aspiration response. No ataxia. Spontaneous nystagmus absent. Diagnosis was latent labyrinthitis with mastoiditis secondary to otitis media purulenta chronica.

A radical operation was performed, disclosing extensive destruction of cells, the necrosis extending far forward into the zygoma beneath the posterior and middle fossæ and back behind and around the sinus with exposure of the soft sinus wall. No ossicles were found. The oval window was exposed and the margins were found filled with granulations. The facial nerve was seen exposed for a distance of one quarter of an inch below the external semicircular canal. There was twitching of the face when the tympanic cavity was scraped. The mastoid cavity and the middle ear were completely cleaned out, the granulations removed from the oval window and the wound was partly closed.

A few days after the operation there was severe headache, high temperature and slight stiffness of the neck; the symptoms indicating a possible meningitis. However, with Kernig not present and Babinski negative, normal patellar reflex, pupils equal in size and reacting to light and accommodation, and mentality normal, the diagnosis was uncertain.

On the fifth day an erysipelatous edema appeared on the right side of the face and relieved anxiety. The erysipelas spread over the entire face and then subsided. The temperature now dropped to normal and the remaining course of the convalescence was uneventful.

The cases presented are of interest as showing one of the dangers incident to a chronic discharging ear. The infection may reach the labyrinth by way of the oval or round window through a fistula of one of the semicircular canals or a fistula of the promontory. In the cases presented the suppuration, after destroying the labyrinth, had become localized and subsided into a latent stage. Repeated tests of hearing and reactions confirmed the diagnosis of latent suppurative labyrinthitis. Often a more serious outcome is the result of purulent labyrinthitis. With the numerous avenues of infection to the endocranium from the inner ear, cerebral or cerebellar abscess, meningitis, or thrombosis of the sinuses may complicate the condition. The labyrinth was not opened in any of these cases because there was no indication for the procedure. One of the cases enumerated was an acute purulent labyrinthitis with rapid destruction of function, but the temperature subsided within four days, and there was no evidence of spread of infection. Expectant treatment was therefore resorted to.

In the other cases the labyrinthitis at time of examination was of a chronic and latent nature secondary to a long standing otitis media with a complicating mastoiditis. Exenteration of the mastoid cells with curettement of the tympanum sufficed for the condition. Opening of the labyrinth, with no labyrinthogenous intracranial complication and no permanent symptoms of irritation of the labyrinth, such as nystagmus, vertigo, and disturbed orientation, would have been meddlesome and uncalled for.

221 Second Avenue.

THE EPILEPTIC SYNDROME AND GLANDULAR THERAPY.

Grand and Petit Mal Treated with Cessation of the Attacks,

By James L. Joughin, M. D., D. P. H.,
New York,
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The study of the normal and pathological physiology of the endocrine glands is at the present time assuming vast importance in the realm of medicine. The very obvious relation of these glands to metabolic disturbances and the profound influence which they undoubtedly exert over the entire human economy, is continuously becoming more and more impressed upon us. The clinical expressions translating their disordered function are slowly evolving, so that through the mist of uncertainty which today envelops us vague forms may be distinguished, which at some future time we hope to see materialize to reveal to us diagnostic and therapeutic possibilities of striking potency.

We are as yet far distant from this goal which we so ardently desire to reach, but we are decidedly progressing toward it. The recognition of the fact that a uniglandular symptomatology does not exist, that a pluriglandular symptomatology, dominated if you will by the preponderating disorganization of one or more glands, always exists, is a great step in the right direction. The intricate and little understood relations existing between all these structures is now everywhere recognized, and the cautious physician will certainly not dogmatize too positively as to the landmarks in this *terra incognita*.

Every contribution to this subject has at this time a decided value, especially if it is of the nature of clinical data or other objective phenomena observed by the physician. This variety of contribution will ultimately give to us a solid foundation of fact on which we may subsequently erect a satisfactory and stable superstructure to replace those rickety hypothetical fabrications which every individual investigator apparently deems it his duty incontinently to rear. The following case is reported as one of an epileptic syndrome associated with certain somatic findings considered to be indicative of pituitary disorder which presumably has been completely cured by glandular therapy.

Case. The patient, E. T., complaining of convulsions, presented herself at the dispensary of the Neurological Institute in May, 1914. At that time she was sixteen years old, a stout, well developed girl of more than average intelligence. Family history: Mother died at thirty-eight years from "spinal meningitis," father at fifty-four years from "cancer of the throat." There were three brothers older than the patient, two in good health, and one afflicted with Pott's disease. One sister younger than the patient was in normal health, another sister when eighteen years old had two convulsive attacks at a two weeks' interval of unknown nature. According to the patient, after the first attack her sister was paralyzed on the left side, after the second attack death ensued within a few hours. I doubted, however, the accuracy of these statements, as her knowledge was not first hand. There was no other history of any nervous disease in the ascendants. Personal history: The account of her personal history and the evolution of her present illness were extremely interesting in detail Of her birth and early life it was impossible to speak with accuracy, as from the age of eight years she had been the inmate of an orphanage. She contracted measles before entering the institution, but there was no knowledge of her having suffered from any other disease incidental to childhood. In 1912 she experienced some febrile disturbance of considerable severity and prolonged duration, the nature of which could not be definitely determined. She had always been intellectually above par, winning medals for proficiency in her studies. Noteworthy was her decidedly sweet tooth, apparently more marked than usual in adolescent girls.

The first symptoms of the present illness occurred in January, 1913. At that time she began to suffer from severe paroxysmal headaches accompanied by vertigo and vomiting, usually bitemporal, but occasionally extending to the vertex. When asked to indicate where these headaches were situated, of her own volition she placed her index fingers on her temples. In February, 1913, one month later, menstruation first occurred, at which time she was fourteen years and eight months old. The flow was scanty, the duration one to two days, but it occurred at the physiological intervals during March, April, and May, and then abruptly ceased to reappear in October. From that time until she entered the institute, it was irregular.

In April and May, 1913, her hair, previously so abundant that she could not wear it up without a headache, began to fall out in large quantities, so that (so the patient stated) she lost fully two thirds of it. During this same eventful spring she became stouter and this continued throughout the year, so that on entering the hospital twelve months later her weight had increased from 100 to 150 pounds and she was still becoming heavier. With the development of this general adiposity, her hands became broader and plumper and the fingers "pointed." She noticed also that during the spring and summer of this year, drowsiness frequently overwhelmed her, she yawned a great deal, and volunteered the information that this sense of fatigue accompanied by a profound muscular asthenia ultimately forced her to abandon the physical setting up exercises which for years she had regularly performed at the convent.

By far the most interesting phenomenon of this period was the orderly development of a complete epileptic syndrome, which rapidly evolved through the stage of petit to that of grand mal. In February, 1913, coincident with the first menstruation, occurred an attack of momentary unconsciousness, "a dark spell" as she described it, which recurred at fairly frequent intervals. During these "spells" she would let fall scissors, spools and other objects which she held in her hand, and a few seconds later, on recovering consciousness, would find them where they had fallen. Being alone on several such occasions, she was astonished on recovering consciousness to find, standing alongside of her, one of the sisters, who had in the meantime entered the room. These "spells" evidently constituted the first of her petit mal attacks. About this same time she was told by the sister on night duty in the dormitory that she was acquiring a habit of grinding her teeth during sleep, and on more than one occasion she awoke in the morning with a bitten tongue, and at least once with a severe contusion of the head. She never fell in these earlier attacks, but later often did, bruising and cutting herself.

Convulsive attacks supervened with "twitching of the face, rolling of the eyes, and jerking of the limbs," and accompanied by loss of consciousness. Each month she had from two to four of these major attacks and numerous minor attacks. There has never been any sphincteric incontinence. In addition to these epileptiform seizures, she had several nocturnal fugues, the nature of which could not be determined accurately. In November, 1913, subsequent to a convulsion she went to bed at her usual retiring hour, 6.30 p. m., and knew no more until she awoke some time later and found herself in the barn of the institution. She had unbarred doors, etc., to get there, but had put no slippers on or otherwise clothed herself.

As previously stated, during February, March, April, and May, 1913, she menstruated scantily. In June, at a date approximating twenty-eight days after her last period, while alone in a room, sitting at a sewing machine, she felt her lower extremities becoming numb (sensory aura). This feeling, ascending, gradually diffused over the entire body, and she finally fell unconscious from her chair to the floor. There she was found, so she was later informed, with blood flowing from the nose, mouth, and eyes (subconjunctival hemorrhage?) and with her face twitching. She did not recover consciousness for many hours, and on so doing was amazed to find herself in bed, wearing a blood stained nightdress and with a nurse in attendance. This phenomenon, evidently one of vicarious menstruation plus an epileptoid seizure, recurred at successive menstrual epochs until October, 1913, when menstruation *per vaginam* recommenced and she experienced no such attack. The convulsions occurring at other times were also less frequent and less severe if she menstruated regularly. Owing to the severity and frequency of these attacks, the patient was obliged to abandon her project of becoming a sister in the institution. All these symptoms and incidents persisted with little change until she entered the hospital in May, 1914.[1]

Examination at the time of her entrance into the hospital showed nothing of interest from a strictly neurological standpoint. Her station, gait, and reflexes were all normal. There was no motor or sensory disturbance. The special senses, sphincters, and speech were unaffected. The pupils reacted promptly to light and accommodation, and the fields of vision were normal. Fundus findings were negative. All the cranial nerves were intact. The most noticeable thing about her was the generally distributed adiposity. Figure, *typus femininus*. The hair on the head was of normal distribution, very fine, fairly abundant, but easily pulled out. There was no pubic or axillary hair. The skin was dry and a little scaly. She perspired nocturnally, something she did not do previous to the occurrence of the febrile illness earlier referred to. Her hands were rather broad and plump, but with definitely tapering fingers. The crescents of the nails could be seen. On viewing the facial profile, there was possibly some maxillary prognathism. Her teeth were excellent, large, and not spaced. I have no record of her height at this time, but she was of average stature. Blood pressure systolic 105, diastolic 90. Pulse ranged between 64 and 90. Temperature normal. She entered the hospital and received while there a daily dose of about 250 grams of glucose without producing glycosuria. Any effort to increase this dose resulted in emesis. A nasopharyngeal examination was not made. The x ray showed no enlargement of the sella turcica, atrophy of the clinoid processes or absorption of the dorsum sellæ. Unfortunately we did not take radiographic plates of the hands, so we did not learn whether the epiphyseal lines were persistent or not.

CONCLUSIONS.

This patient I considered to be suffering from the effect of disordered pituitary function and I was led to this conclusion owing to the close analogy which hers presents to similar cases described by Cushing and classified by him under the caption "primary adolescent hypopituitarism." Strongly suggesting this diagnosis were the severe bitemporal headaches, the fineness of the hair and its marked tendency to fall out, the tapering fingers of the hypopituitary type of hand, the adiposity, the late development of the secondary sexual characteristics, and the increased carbohydrate tolerance. That epileptoid convulsions may occur in these cases and that administration of the gland thus apparently indicated, may benefit the patient, has been shown by Cushing.[2] I therefore instituted pituitary feeding with what I think may conservatively be called remarkable therapeutic results.

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[1] In addition to these undoubtedly epileptoid seizures, the patient gives a history of an attack occurring the day she left the convent which is very strongly suggestive of hysteria. Her emotional stress on leaving the institution and taking up a new life may have accounted for this. The attack was witnessed by her aunt and was not of the same nature as the episodes already described.

On leaving the hospital in May, 1914, she began to take daily doses of eight to ten grains of pituitary extract. Two weeks later she menstruated for the first time in three months and did so regularly during the months immediately subsequent. Her weight decreased within three months from 150 to 126 pounds, a loss of twenty-four pounds. Her temporal headaches almost immediately disappeared, her hair gradually ceased to fall out, and her general health rapidly improved. A very definite and marked benefit thus resulted from this glandular feeding, but the most striking indication of the efficacy of the treatment was manifest in the cessation of the petit and grand mal attacks. So far as I can ascertain, she has never had an attack of either variety since beginning this treatment, though of course there always remains the possibility that the petit mal may have occurred at times and passed off unobserved. This could have been, however, only very exceptionally or it would have been noted and reported by those in the patient's immediate environment. The major convulsive seizures have never recurred and she has remained free from all manifestations of epilepsy until this date (May, 1916), two years after the administration of the first dose of pituitary extract.

Treatment has been intermittent. The patient does not take medication when she feels well, and in this way two or three months will elapse without therapy. Sooner or later, however, the menstrual flow ceases, at which times "dizzy headaches" recur, "right where they always come," indicating the temples. She becomes sleepy and fatigued and excessively irritable and restless, whereupon I immediately resume treatment with invariably gratifying results. Of late I have combined with the pituitary a small dose (one half grain daily) of ovarian extract, and the response from the standpoint of the catamenia has been more satisfactory than when the former extract was administered alone.

Unfortunately the patient is decidedly temperamental. If she has a dispute with those with whom she is living she will refuse to take her tablet in order to vex them. If at any time she experiences what she considers sufficient improvement, she discontinues medication of her own volition. When she finds as a result that a few months later no menses appear, she does not report at once to the physician, but waits another month or two until she is so uncomfortable she is obliged to present herself for further investigation. Temperamentally unreliable, given to prevarication and falsification, I am unable to say whether these foibles are another expression of her infirmity or a result of the unfavorable environment of the large institution in which she passed her formative years. Possibly both factors are to be considered.

It may not be amiss, in closing, to emphasize that here we have a patient who should not be treated by bromides or other sedative medication. We are treating her not symptomatically, but by removing the etiological factor, something unfortunately we are not always able to do. Physiological deviations of the endocrine glands are coming more and more into prominence as causative factors in the production of the syndrome of epilepsy and the number of cases which we are thus able to treat satisfactorily is slowly increasing. Let us not, however, again commit an error as we did in the early days of bromide therapy and neglect the hygienic and dietetic management of the patient. Even in these days of organotherapy its importance as an adjuvant method of treatment can hardly be overestimated.

60 WEST FIFTY-SIXTH STREET.

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[2] Harvey Cushing, *The Pituitary Body and Its Disorders:* Philadelphia: J. B Lippincott Co., 1912, p. 272.

CHRONIC GONORRHEA.*

By WILLIAM S. BARNES, M. D.,
New Haven, Conn.

In attempting to write a paper on this threadbare subject, I feel that we might be placing our time to better advantage by considering other more valuable subjects for discussion. Perhaps it may be worth while, however, to relate my experiences with this disease, thereby adding my mite to what has gone on before. I do not wish to adopt the usual textbook procedure, but rather discuss the disease from the practical standpoint of one who treats it as it comes to one after it has been under the care of others; by others I mean the druggist, confidential friends, who may or may not have been infected at some previous time, and the general practitioner.

The most prominent and distressing objective symptom of a case of chronic gonorrhea is the presence of a discharge at the meatus. The patient may or may not have many serious lesions in his genital organs (though of course he may be unaware of this), but what concerns him most is the evidence at his meatus of a discharge. If we will only stop this everlasting discharge, he will impress upon us the fact that we will have one more grateful patient.

Let us rule out at the outset the sexual neurasthenic. Many cases of gonorrhea reach this class. I believe, though, that if they did not have this disease to occupy their nervous minds, they would find equal solace in some other malady. Many of these cases are pitiful, and we can spot them readily after making a thorough examination of their symptoms. These cases should go to the neurologist.

It is my practice to take a thorough history of every patient. I find a comprehensive history blank very valuable. It helps us remember many important points that we should otherwise overlook. A perfunctory examination is never of much value; we should get as many facts as possible, in order to make a complete diagnosis.

In the consideration of a case of chronic gonorrhea, should there be present a urethral discharge, it is my practice to investigate this evidence of the disease. I examine a smear for the usual organism before any effort is made to proceed further. Many men regard the morning drop to be free from gonococci, and therefore feel that they are justified in passing sounds or other instruments into the urethra with the hope of bringing about a cure. It has been my experience to find cases that have had all kinds of urethral treatment, even to the passing of the posterior urethroscope, show gonococci in the urethral discharge. I am firmly convinced that it is bad practice to pass sounds or other instruments into a urethra unless the discharge is free from gonococci. Should the passage of instruments cause the organisms to reappear in the discharge, we should immediately return to the treatment usually given in the acute condition. I wish to emphasize this point very strongly, as many cases have been brought to a serious condition by neglecting to keep a sharp lookout for gonococci. I find it possible for a chronic case to present acute symptoms, even though it has not been reinfected.

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*Read before the New Haven Medical Association, June 21, 1916.

I have in mind a patient with chronic gonorrhea of three years' duration, referred to me by a physician in this city. I saw him shortly after he had left the physician's office, where he had had several sounds passed into his bladder. At the time I saw him he had his usual discharge; a smear showed many gonococci. I presume that the physician believed that because this patient had had a discharge for that number of years, and because he was without other symptoms, sounds would be an effective aid to a cure. Unfortunately for the patient, that had been the opinion of several other men who had seen him. It is needless to say this patient should have had other treatment.

After satisfying myself that the urethral discharge is free from gonococci, it is my practice to investigate the urethra in order to determine whether there is any narrowing of the urethral canal. I do this with the urethral bougie à boule, beginning with a very small size, gradually increasing until I pass the largest one that will enter the meatus. Any obstruction to the passage of these instruments is carefully noted, by measuring on the instrument the distance from the meatus. Very often, on withdrawal of the instrument, discharge is noted on its shoulder. A very small meatus would require a meatotomy in order to give this information. With the foregoing facts concerning the case, we are in a position to proceed.

As a general rule the patient is asked to empty his bladder into two glasses after a smear of the discharge has been taken. The bladder is then filled with a weak permanganate solution. This fulfills two purposes, one as a bulwark upon which to make pressure during the massage of the prostate and vesicles, secondly to wash out any material that may be expressed during the act. A thorough massage is made in accordance with the conditions affecting the case at that time. The secretion obtained from the discharge is very important: it is my practice always to look for gonococci in this expressed material. The material is also examined for different epithelial cells which are usually present. I have followed the teachings of Heitzman in this procedure, and I must say with considerable satisfaction. It is possible by this method to differentiate the cells that are given off during the massage. If we follow this method we should be able to note cells from the urethra, ejaculatory ducts, prostate, and seminal vesicles, should any be present. This observation should make it possible to tell where the sickness is, and predominance of any one of these cells would point to the organ principally involved.

Should the results of my examination point to disease in the urethra and with the idea of investigating disease in the posterior urethra, I proceed to examine the patient with the posterior endoscope. With this instrument we are able to see the verumontanum and the floor of the posterior urethra, also to apply treatment to this part of the urethra and along the anterior urethra. Most often a combination of endoscopic treatment and dilatation with the Kollman dilator will bring about favorable results in a large percentage of obstinate urethral affections due to gonorrhea. An interesting case which came under my care some time ago will illustrate many points regarding the treatment of chronic gonorrhea:

CASE. Man, aged twenty-four years, clerk, single, German parentage. Family history good. Had contracted gonorrhea three years previously. At the time I saw him he had a urethral discharge with no gonococci. There was no pain; the discharge was yellow and white at different times. Patient had a double stream. His previous treatment had been injections. His meatus took a No. 29 bougie à boule. Obstruction was felt at the fossa navicularis and at the bulbous urethra. His first urine was hazy with long and small shreds. Second urine was hazy. The inguinal glands could not be felt; the scrotum was long and lax, testicles normal, epididymes normal, spermatic cords normal. Prepuce lax, in folds partly covering glans. Microscopic examination of discharge showed pus cells, urethral cells, and diplococci. Both vesicles were hard and enlarged. The prostate was soft and flabby, with areas of hard infiltration. The expressed material contained cells from the vesicles, ejaculatory ducts, prostate, also spermatozoa and a predominance of urethral cells. Posterior endoscopy showed the posterior urethra to contain areas of infiltration; the verumontanum was enlarged and also infiltrated; some areas of denuded mucous membrane were seen. The anterior urethra also had denuded areas, also many follicular enlargements. There was a thickened area at the bulbous urethra.

This patient had seventy-five treatments in about two years and a half. Sounds, the largest of which was No. 29 French, were passed sixteen times. Massage was performed twenty-eight times. The Kollman dilator was passed twenty-five times, going as high as No. 37. Anterior and posterior endoscopy was performed twelve times, using ten to twenty-five per cent. silver nitrate solution. Irrigations of one to 4,000 permanganate or silver solution always followed sounds, except in sixteen instances, when deep instillations of silver nitrate from one to five per cent. were made through the Bangs tunnel sound, size No. 18. This patient acquired a slight epididymitis one year and five months after treatment was instituted.

This patient shows a perfectly clear urethra by means of endoscopic examination. His first urine is clear and sparkling, but contains the very finest shreds. His second urine is clear and clean. There is absolutely no discharge. A complement fixation test gives a negative reaction. The patient is able to drink beer and other alcoholic beverages without ill effects on the urethra.

In conclusion, I will state that the treatment of chronic gonorrhea should be based on accurate diagnosis of the organs affected. The microscope and cultures of the discharge give valuable information. Proper instrumentation with application of counterirritation by means of solutions of silver nitrate offer the most satisfactory means of bringing about a cure.

VERIFY YOUR REFERENCES.

A Word to Medical Writers,

By Frank Place, Jr.,
New York,
Assistant, Library of the New York Academy of Medicine.

Dean Burgon (1), in his life of Doctor Routh, tells the story from which I take my text. Mr. Burgon, then a recent graduate of Oxford, called one day upon the venerable president of Magdalen College, Doctor Routh. His account proceeds: "I believe it was then that I ventured to address him somewhat as follows: 'Mr. President, give me leave to ask you a question I have sometimes asked of aged persons, but never of any so aged or so learned as yourself.' He looked so kindly at me that I thought I might go on. 'Every studious man, in the course of a long and thoughtful life, has had occasion to experience the special value of some axiom or precept. Would you mind giving me the benefit of such a word of advice?' He bade me explain—evidently to gain time. I quoted an instance. He nodded and looked thoughtful. Presently he brightened up and said, 'I think, sir, since you care for the advice of an old man, sir, you will find it a very good practice (here he looked me archly in the face) *always to verify your references,* sir.' "

Verify your references. That is my text, and in the present instance I wish to direct this text particularly to the medical man who would venture into print. It is to be assumed that he has fulfilled Billings's (2) four rules for the preparation of a medical paper. 1. "Have something to say. 2. Say it. 3. Stop as soon as you have said it. 4. Give the paper a proper title." It is in the revision, the polishing off process, that he should, among other things, go over his list of references and verify them. To direct attention to this phase of authorship is the purpose for which this paper is written.

The science and art of medicine is so dependent upon its literature that reference to authorities is a recognized part of medical composition. The quantity of such printed matter is very great and quotation of sources is as necessary in medical literature as in any other field of literary endeavor. Such is the indifference on the part of writers, however, to the place and importance of the bibliographical reference that some attention should be directed to it.

What underlies that admonition, Verify your references, that makes it the only advice offered to a studious soul seeking help? It is of the spirit of the scientific method. Substantiate your statement by proof, either of your own or by the work that others have done before you. We work with the tools that others have made and placed in our hands, and we hope to make tools to place in the hands of others who follow us. If our predecessors have experimented and have left no record in material objects or written description, their works profit us nothing. For the purpose of storing up medical advance in deed and thought medical books and journals exist, and in them we shall find description of the processes of work that others have employed. To find these papers in the great mass of literature, indexes and catalogues were invented. In addition, most writers, in reporting their work or ideas, read and gather the publications that relate to their particular task; and then, to help others in the same line, to record their own research, and to have a line of defense against criticism, they print with their report a list of the papers they have consulted. Should not the scientist be as truthful and as accurate in recording his help as in giving his own work? One says "yes" without hesitation. How, then, can the author permit references to be printed which are not only false as to the fact, but which also seem to be intentionally so? Some so far forget science as to quote articles that it is plain they have never seen, but have lifted bodily from some other list. Certainly there should be some distinction between the article read and the one known only by hearsay. If an author would but put himself in the place of one of the audience whom he is addressing; if he would but read the paper and verify the references as if he had never heard of the subject before, then he would begin to realize some of the deficiencies of his paper and to appreciate the need for fullness and accuracy of statement in his bibliography; he would perceive the reasons for including data whose usefulness he had never before recognized.

It is hard to understand the point of view of the writer who is preparing a paper and who says: "No one will ever take the trouble to look up these references. They are near enough correct now. Let them look 'em up as I had to." The obvious reply is, "Why print your references at all then? If you are so little interested in your work as that, if you have so little purpose to help others, why do you even print your paper? There are plenty of papers waiting to be published that are just as good or better." The time an author spends in verifying his references is more than saved for every one of his readers. "Rong References" are frequently so very wild that it is hardly worth while to continue the search for them (3). The author, who knows the material, can more easily verify and correct his references before publication than any reader, "each in his separate sphere," can spend hours or days in finding them afterward. Nothing in science is too insignificant to notice. Therefore, verify your references.

The experience of writers and bibliographers has shown that the efficient bibliographical reference is the one containing the complete and correct answer to the questions, "Who wrote it?, What is it about?, When and where was it published?" Answering these questions the citation should stand as it does in the *Index Medicus* and in the *Index-Catalogue of the Library of the Surgeon-General's Office.* In referring to a book the details are these: 1. Author's name with initials. 2. Title of book. 3. Edition, other than the first. 4. Place, publisher and date (the imprint). 5. Volume, and page therein if a particular statement is to be quoted. On the other hand, a quotation from a classic, like Hippocrates, may be more readily accessible if the reference is to book, chapter, and paragraph. In the reference to a periodical article the details are nearly the same: 1. Author's name with initials. 2. Title of article. 3. Title of periodical. 4. Place and date of publication. 5. Volume, or series and volume. 6. Page, or inclusive paging. When space is not at a premium the unabbreviated form of words of titles is a desirable precaution against error. Printing the title of the journal in *italic* or UPPER CASE TYPE further serves to distinguish it from the title of the article. Some examples follow, each of which has a good list of references.

Harrower, H. R. The Hypophysis or Pituitary Body. In his Practical Hormone Therapy. London: Baillière, 1914. 287-319.

Janeway, T. C. Nephritic Hypertension. *Harvey Lectures, 1912-1913.* Phil., 1913. Ser. VIII, 208-251.

Cotton, F. J., and Boothby, W. M. Intratracheal Insufflation Anæsthesia. *Annals of Surgery.* Phil., 1913. LVII, 43-63.

In such stenographic material, unlike reading matter, both grammar and context, clues to the correctness thereof, are absent, and the necessity for careful revision is apparent. However much verification be done in the course of composition, and that may well be considerable, the bibliography should be gone over *in toto* in the proof. Really, the best way is to free one's self from the suggestion of copy, take the proof alone and consult the sources themselves, making the necessary corrections on the proof. Each detail of figure, letter, and mark of punctuation should be carefully scrutinized; spelling, date, volume number, page number, each should receive its own instant of attention. It is astonishing how many errors can be detected in a supposedly correct proof. Even then the influence of familiarity with the subject and with the articles consulted will slightly obscure the author's watchfulness. Some one unfamiliar with either will be more trustworthy in correcting the references.

"But why," some one asks, "is it not permissible, with all the catalogues and indexes we have, to say simply that Jones in 1900 did thus and so, or Jones, *Journal of Medicine,* 1900, said this and that?"

In the first instance, while you are saving space for yourself, you are probably wasting time for every reader of your article; in the second place, you are not saving enough to counterbalance its lack of efficiency; and in both cases the reference is of little worth in its collateral uses. In addition, you are mistaken in thinking that indexes are going to point out the article sought for at once, if at all. The indexes in magazines are themselves arguments for complete and correct reference. Indexes range all the way from the full and carefully made, like those in the *Journal of the American Medical Association* and the *Journal of Experimental Medicine,* through the slovenly and incomplete with elaborate but useless "table of contents," down to total absence of both "contents" and index. Atrophy and complete absence of index are too common in both journals and books; too common to speak well for medical journalism, and too common to trust medical literature to its mercy. The index may be lacking either from failure of the editors to have one made by a competent person, or from failure on their part to make the index an integral part of the magazine as published. Either cause is inexcusable and is decidedly bad for both journal and reader. These considerations lend emphasis to the demand for complete and correct references in bibliographies and to the slogan, Verify your references.

To the uninitiated all the details for a complete reference seem like redundance of information. To such the necessary points would be only the author, the journal, the year, the volume, and the page. In certain conditions, to save space, this brevity may be imposed upon one, but let it be only at command of the editor and when he brings forward proof of its necessity. For it must not be forgotten that the bibliography has uses beyond its connection with the article to which it is appended. A good bibliography is often used as a source of references without regard to the point of view of the paper itself. Frequently it is used by the student of the subject as a starting point for research rather than some of the more inclusive bibliographies like the *Index-Catalogue.* Such a list is also called upon to locate papers that other reference books do not include. The more thoroughly the work on the bibliography is done, the greater is the service that it performs. As a finishing touch to the paper then, verify your references.

Though I have elsewhere (4) in greater detail taken up reasons for the inclusion of the several data in a reference, I wish to list some of them briefly here.

The author's name identifies the workman. The bibliography is an author index of the material referred to; it helps in this way in finding articles that indexes have omitted or that are too recent for any other index.

The title identifies the paper itself, especially when the author has written much on the subject. The title defines the scope of the paper without further search.

The place of publication (and in the case of a book, the name of the publisher) is of aid in identifying the publication.

The date of a book, journal, pamphlet, or other printed thing is, next to name of the author, the most important fact in scientific bibliography. It establishes the worth of the work as to its timeliness and its position in questions of priority. The date is a point of departure for finding other articles, later or earlier; it furnishes a clue to the scope of the paper.

The volume number reduces the quest to a single book; in most cases to a single sequence of pages. This is no small item in the case of a journal that publishes several volumes a year. The *Biochemische Zeitschrift* issues almost an even dozen volumes during the twelve months.

The page number directs the reader immediately to the point sought; while inclusive paging gives him in advance an idea as to the length of the article. When given, the page reference obviates the use of the index, which may be absent, or useless, or omit the entry one seeks.

For one reason or another the searcher is sometimes unable to find the original article that he needs; all that is available is an abstract. Let him give a reference to the original as fully as possible from the information that he has, and then give also the citation of the abstract; something like this:

Murri, A., L'atassia nel cammino e nel nuoto. *Riforma medica.* Naples, Sept. 11, 1915, XXXI, No. 37. (Abstract in *Journal A. M. A.*, Chic., 1915, LXV, 1496.) From this it is seen that he has derived his reference from the *Journal A. M. A.* while the original article is to be found, so far as he can say, in *Riforma medica.* This method has its uses in quoting papers in other languages than English and in giving other sources in order that at least one may be available to the reader.

Give the title of the journal from which you quote. This seems as self evident as an axiom, but it is not as foolish a request as it appears to be. This detail is omitted in references often enough to call for a few words. Instead of doing this simple thing, writers sometimes give only the name of the society before which the paper was read, an item of some meaning perhaps, but of little direct value in locating the paper. "Society of neurology," or *Société de neurologie,* does not suggest to every one to look in the *Revue neurologique* rather than another neurological magazine.

This leads me to another point. Give authorities as they are printed, not as you would like to have them printed. If the title is in French, give it in French. A seeker who cannot read French will not then spend time in digging up papers he cannot read. No one can object if, in addition to the title, a translation into English is given, especially if the other language is one that is generally unfamiliar, as Russian or Danish. In quoting other languages, however, great care must be exercised in transcribing names and titles of papers. To get the force of this take up a list of references in some foreign journal and observe those to English or American literature. Hilarity is likely to ensue. Parker Syms appears as Darker Syms; "Diseases of the Pituitary Gland, by E. G. Fearnsides, M. A., M. D., B. C. Cantab., . ." is given in a *Jahrbuch* as by "E. G. Feamsider & B. C. Cantch." Verification is vexation, but it is the price of safety.

A common fault lies in taking a reference from another's bibliography as though it were thereby Gospel truth itself. Faith may remove mountains, but in science ye are known by your works. "If the great Schmidt gives this reference, it is good enough for me." That is where trouble begins—or is continued; for the possibilities—nay, the probabilities—are that Professor Dr. Geh. Schmidt allowed an inexperienced assistant to round up the references; that another, equally untried, omitted to verify them in any way and in copying altered this one unconsciously; while a third let the printer still further maltreat it. The result, fair without but false within, may mean nothing even to Fetlock Jones or Doctor Swatson. Take no reference for granted. Verify the reference that your best friend gives you. Verify the reference that your revered chief gives you. Verify, most of all, the reference that you yourself found and jotted down. To err is human, to verify is necessary.

Unless references are verified from the originals, marvelous are the results that are sometimes attained. Articles that mean nothing are ascribed to mythical authors; journals are quoted that never will be published, and dates are indicated that none of us will ever live to see. A classic example of bibliographic cacogenics is shown in the descent of the reference to a report of a case of urticaria by J. V. Hjelmman, published in a Finnish journal in 1899. This was abstracted in *Progrès médical,* Paris, Jan. 27, 1900, 3. ser., XI, 60, but with no indication of its source in the Finnish journal. This French abstract was translated into English and printed in the *Medical Bulletin,* Phil., May, 1900, XXII, 175, but credited to "J. V. Hieleman, *Progrès médical*" and without date, volume, or page. This translation was transferred bodily to the *St. Louis Medical and Surgical Journal,* August, 1900, LXXIX, 96, credited to the same Hieleman, but now as originating in the "*Bull. Med. and Surg.*" "J. C. J." transplanted this hardy annual to the October number, 1900, of the *Journal of Cutaneous and Genito-Urinary Diseases,* N. Y., 1900, XVIII, 470, again deriving it from "*Bull. Med. and Surg.,* 1900," but also giving due credit to the St. Louis journal. Probably from the *Journal of Cutaneous and G.-U. Diseases* as his authority Hans Hübner added "Hielemann, *Bull. Med. and Surg.,* 1900," to his bibliography which appeared with his article in the *Archiv für Dermatologie,* Wien, 1906, LXXXI, on page 219. Seeing one of these latter references, who would turn for the original to *Finska Läkaresällskapets Handlingar,* Helsingfors, 1899, XLI, 1236-1241? And echo answers, "Who-who."

Verifying references means work, sometimes a good deal of work; but if your article and bibliography are to be worth anything they should be worth the work to make them so. Why not have the best? If they are not worth the work, they are not worth printing. While the directions herein enumerated are many and seem to make a counsel of perfection, the fact that these ideas have been acted upon by some writers shows that they are feasible. And yet these arguments for correct and complete references are not all that might be adduced. Every day, it seems to me, some newcomer turns up which reveals a new outlook on the uses of the bibliography. In every case the correct reference becomes a time saver, a short cut through the hills of print. Wherefore I say again, Verify your references!

REFERENCES.

1. J. W. BURGON: *Lives of Twelve Good Men,* second edition, London, Macmillan, 1888, i, p. 73. 2. J. S. BILLINGS: Our Medical Literature, *Transactions of the Seventh International Medical Congress,* London, 1881, i, 54-70. Also: *Boston Medical and Surgical Journal,* 1881, cv, 217-222. See also his Medical Bibliography, *Transactions of the Medical and Chirurgical Faculty of the State of Maryland,* Baltimore, 1883, 58-80. 3. F. PLACE: Bibliographic Bones, *Medical Pickwick,* Saranac Lake, 1915, i, 82-84. 4. IDEM: Bibliographic Style in Medical Literature, *Medical Record,* N. Y., 1913, lxxxiii, 157-160.

Primary Carcinoma of the Lungs.—Jonathan Forman (*Medical Record,* Sept. 9, 1916) shows from statistics that this condition is more frequent than is usually supposed. Adler was able to collect only 374 authentic cases from the literature up to 1912, therefore as 120 cases have been reported since that time it is apparent that earlier statistics were defective. The majority of the so called cases of primary carcinoma of the lungs are really of bronchial origin, while a casual microscopic examination may lead to a diagnosis of sarcoma in certain cases of lung carcinoma. Four cases are reported by Forman, all in males aged from forty-eight to sixty years in all of whom the lifetime diagnosis was that of tuberculosis and the true pathological condition discovered only at autopsy.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

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All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXIV.—How do you treat ivy poisoning? (*Closed.*)

CLXXV.—How do you treat furunculosis? (*Answers due not later than October 16th.*)

CLXXVI.—How do you treat Colles's fracture of the radius? (*Answers due not later than November 15th.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXIII has been awarded to Dr. A. W. Nelson, of Cincinnati, Ohio, whose paper appears below.

PRIZE QUESTION NO. CLXXIII.

THE TECHNIC OF CIRCUMCISION.

By A. W. NELSON, M. D.,

Cincinnati.

The technic of circumcision depends upon the age of the patient and the anomaly to be corrected. For convenience the technic may be made to correspond with three periods of life, namely, 1, infancy; 2, childhood; 3, adolescence and adult age.

Preparation.—The parts to be operated on should be rendered sterile by washing, first with soap and water, and then with a solution of bichloride of mercury one in 4,000. If the preputial opening is too small to permit retraction of the prepuce, the preputial cavity should be irrigated with the antiseptic solution alone. Should the penis be affected with an infectious and autoinoculable disease, for instance, chancroid, impetigo contagiosa, etc., the operation should be postponed until the infection has disappeared. The same may be said of constitutional diseases in which any operation is contraindicated.

Next pass the penis through a small opening in a sterilized towel, which is then spread out, giving a sterile field to work in. Now examine carefully the conformation of the parts, to determine how much to remove. Retract the prepuce, if possible, to observe the size, shape, and relations of the frenum, etc., also notice whether the rhaphe runs directly in the median line. If the prepuce cannot be retracted, pass a fairly stout probe into the preputial cul-de-sac to see if there are adhesions; if they are present, we may attempt to break them up.

Operation.—The aim, whenever possible, is to operate under local anesthesia, to use few instruments and a simple form of dressing.

As a rule no anesthetic or sutures are required in young infants. Occasionally a catgut suture is applied at the frenum. The prepuce is grasped at the mucocutaneous junction, drawn forward, circumcision forceps applied in an oblique direction, following the oblique line of the glans, and the redundant prepuce is cut away with a sharp pair of scissors, preferably curved on the flat. The forceps is now removed and the skin allowed to slip back. With scissors the mucous membrane is slit down to the corona by means of a dorsal incision, and the flaps are trimmed away on each side, aiming to avoid the frenum, and leaving about a sixth of an inch of mucous membrane to approximate with the cutaneous layer.

If the frenum is cut and there is spurting from a bloodvessel, either catch the bleeding point in the suture or ligate it with catgut. The mucous layer is now turned backward to meet the cut edge of the skin, the parts are wiped and dressed with a five per cent. clean boric acid ointment and bandaged lightly.

If there are adhesions between the glans and prepuce, first try gently to separate them with a probe, and if not successful, after making the dorsal slit, partially or totally, separate the parts by stripping with pieces of gauze wound around the fingers. The raw parts are dressed freely with the boric acid ointment.

The dressings are changed about once in twenty-four hours, oftener if they are saturated with feces. Saturation with urine is no indication for change of dressings, which are continued until the wound has healed completely.

In childhood, patient and operating field are prepared as described above. The best results are obtained under general anesthesia. Nitrous oxide-oxygen, alone, or supplemented by ether, is excellent. Have a good anesthetist. We prefer usually the open operation, dorsal incision, and trimming of the flaps. With two pairs of hemostats the prepuce is grasped laterally, one on each side, and gently drawn forward, while a dorsal incision cutting through the mucous membrane and the skin at the same time is made with a Mayo scissors. The cut is made to about a quarter of an inch of the point where the mucous membrane is reflected on the glans. The prepuce now has the appearance of two dog's ears, which are trimmed off by following the oblique line of the glans, leaving about a quarter of an inch of flap. If possible, the frenum should always be left intact. If this cannot be done, there should be no hesitation—divide it and tie the bleeding vessels. Now see that the parts are symmetrical, the edges of the wound even, and that bleeding is controlled. The cut edges of the skin and mucous membrane are approximated so that the rhaphe and frenum are in distinct anatomical continuation, and interrupted sutures of catgut are introduced; the first suture at the frenum, the second in the middorsal region. The sutures should be placed about a sixth of an inch from the margin of the cut edges, and should not be tied too tightly, so as to avoid inversion of the flaps, excessive swelling of the parts, unnecessary pain to the patient, and cutting through of the sutures.

Adhesions and other complications are handled in the same way. As a rule the dressings do not require to be changed as often as in young infants. Usually the older the child, the less frequent the change of dressings. In older boys it may be advisable to prescribe a mixture of potassium bromide and potassium nitrate to allay nervousness and prevent erections after the operation. The patient may be permitted to be up and about from twelve to twenty-four hours after the operation.

Adult and adolescent cases present the greatest possibility for variation in technic and anesthesia. Local anesthesia with 0.5 per cent. novocaine is preferred. General anesthesia is not often required, but when necessary nitrous oxide-oxygen, with or without a little ether, as the occasion may require. is excellent. The sterilization and preparation are as already described. A small piece of rubber tubing or a soft rubber catheter is tied around the shaft of the penis. If the prepuce can be retracted the anesthetic is injected into the skin in a circle at the proposed line of incision. The prepuce is next drawn back and the mucous membrane is infiltrated in a circle close to the corona. Where the prepuce cannot be retracted, the anesthetic is injected as follows: Place the rubber tubing around the shaft of the penis, near the root, and inject the novocaine into the body of the penis, in front of the band, by making four stabs with the needle, in a circle, each time depositing seven or eight drops of the anesthetic in a quarter of the penile circumference. Avoid puncturing the urethra. Now wait from five to ten minutes and proceed with the dorsal incision as described above. The rubber band should be removed before introducing the sutures, in order to see if there is free bleeding, also as a prophylactic measure against secondary hemorrhage, and as an aid to thorough approximation of the parts. The rest of the technic is the same as described in performing the operation under general anesthesia on children. In the adult silk sutures are preferable, and are to be removed from five to seven days after the operation. The parts are either dressed with the boric acid ointment or kept moist with boroglyceride, and bandaged. If possible, avoid erections by giving either a bromide mixture, or camphor monobromate in two grain doses. Usually patients are able to resume work within twenty-four hours of the operation.

Dr. Oswald Joerg, of Brooklyn-New York, writes:

In infants and boys up to about twelve years of age I try to avoid circumcision and, if necessary, I dilate the foreskin by pushing it back with my fingers and slipping it above the glans penis, at the same time loosening the adhesions existing between the two. Sometimes this procedure is difficult, but is made easier by causing an erection.

In preparing for the circumcision I wash the parts thoroughly with hot soapsuds and clean the preputial sac by injections of one in 2,000 solution of mercury cyanide. The penis is passed through a small opening made in the centre of a sterilized towel and the latter is spread out and fixed to the patient's clothing.

I use only local anesthesia by injecting with a hypodermic syringe a solution of novocaine *into,* not beneath the skin and mucous membrane at the place where the incisions have to be made, i. e., around the whole foreskin at the height of the sulcus and near the opening. I insert two drops at each puncture which I keep about one eighth inch distant. The solution consists of:

℞ Novocaini, ...grain ⅓;
Sodii chloridi, ...grains ii;
Solutionis adrenalini (1:1,000), ...♏viij;
Aquæ, ...ʒij.
M. Ft. solutio.

The injections cause a very light swelling, but never so much as to interfere with the operation.

Then I pull the foreskin forward more, if it is very long, less, if it is shorter, with the fingers of one hand or with a pair of forceps. With the other hand I apply a circumcision clamp obliquely parallel to the corona glandis between my fingers or the forceps and the glans penis, taking care that the latter is not caught. When I have an assistant I let him hold the penis and use gentle traction on the hinder part of the foreskin. With a very sharp scalpel I cut off the end of the prepuce which is in front of the clamp. If the hemorrhage does not stop of itself, I apply pressure with gauze dipped into the solution of mercury cyanide.

In most cases the outer membrane (the skin) retracts more than the inner layer (the mucosa). If possible I turn the latter up to adapt it to the former. Sometimes if the mucosa cannot be moved upward it is necessary to make one or two short incisions into it at the dorsum or near the frenulum with bistoury or scissors, or, if there are adhesions to the glans, to loosen them with a probe. If there should be any redundant mucous membrane near the preputial orifice, it has to be clipped away. When the prepuce is stripped off the glans, the coronal sulcus is often found covered with smegma.

There may be four bleeding points, a dorsal, two lateral, and a frenal. Any such artery is to be clamped or tied with fine catgut. If the bleeding is stopped I introduce as many silk sutures as necessary, sometimes only two, sometimes as many as five, about an eighth of an inch from the surface of incision. In some cases the adaptation is so good that no sutures are needed. As a dressing I use sterile gauze with the unguentum acidi borici U. S. Ph., and a small wound bandage, leaving free the orificium urethræ. The penis is held up by a sterile T bandage or a suspensory bandage to which a piece of cloth is fastened on both sides. The patient is allowed to go about.

The sutures are taken out about the fifth day and the bandage is removed after a week.

Dr. David Lazarus, of New York, observes:

The modus operandi depends upon the age of the patient and the condition requiring the operation. From a hygienic and sanitary viewpoint, every newborn male child should be circumcised, and the best method is cutting the foreskin with one movement of the scalpel, first drawing the foreskin well forward, away from the head of the penis. In fact, the incision should be about one quarter to one half inch forward from the glans, thus not only avoiding injury, but also allowing for normal contraction of the tissues. Should the artery of the frenum be accidentally cut or bleed profusely it may be necessary to insert one stitch of No. 00 catgut—otherwise a simple sterile dressing is all that is required, as the parts usually heal in a few days.

Before proceeding with the operation, the foreskin should be drawn back well upon the glans penis, thoroughly cleansed, and all adhesions, if any exist, broken up and separated. Previous sterilization of the operator's hands and of the part to be operated upon, as well as strict attention to all rules of asepsis during and after the operation should be observed. Stitches, as a rule, are superfluous except for hemorrhage from the frenum artery; otherwise the little bleeding can well be controlled by a fairly snug dressing and bandage.

This operation can safely be performed without an anesthetic upon children less than two years old. In children above the age of two years a general anesthetic will be required and also the insertion of a few catgut stitches, so as to bring into good and close contact the skin and the mucous membrane; one stitch on the dorsum of the penis, one stitch on each side, and one, if necessary, at the site of the frenum artery. A simple dry sterile dressing, or one of sterile boric acid ointment applied snugly is all that is needed. No patients should be left unobserved for fear of hemorrhage.

In older children the operation for circumcision may be performed in the same manner as for adults, i. e., as follows: Circumcision becomes necessary for one of several reasons, e. g., cleanliness of the parts, adhesions of the prepuce, too long a foreskin, sores or wounds under the prepuce, chronic urethral discharges, and often partial treatment of hypertrophied prostates. The operation is best performed by a dorsal incision through the skin and mucous membrane carried close to the corona (but not too close, so as to allow for shrinkage and contraction) and then cutting away the foreskin with a circular incision by means of a curved scissors; in cutting the foreskin it is best to make the incision a little away from the frenum, so as to avoid the artery. After the foreskin is entirely removed, a few stitches are inserted, uniting and bringing in contact the skin and the mucous membrane, and should the frenum artery be cut by accident or otherwise, a stitch is put through to catch the artery and control hemorrhage.

In applying a dressing it is best to allow the stitches to be long, so that after being tied they will offer three quarters to one inch, so that after applying a small narrow strip of iodoform gauze and tying it upon the wound with the same stitch used for sewing we have a neat and small aseptic dressing. Above this small strip an ordinary sterile dressing is applied and the patient is permitted to go about, although it is best to rest in bed for twenty-four hours and to take a fluid diet with plenty of water, keeping the bowels in an active condition.

Catgut should be used, as it will be absorbed, and the wound need not be dressed for three or five days, when primary union will, as a rule, have taken place. The operation can be performed under a general anesthetic or under a local anesthetic of novocaine two to four per cent.

Dr. Hartford R. Burwell, of Washington, D. C., advises:

Antisepsis.—Cleanse part thoroughly with soap and water. Follow with bichloride one in 5,000. Protect with sterile towels.

Instruments.—Scalpel, one pair curved scissors, four artery clamps, one grooved director, needle holder (may use clamp to carry needle instead), one small cutting needle.

Suture material.—Black silk and No. 1 plain catgut.

Operation.—Outline circular incision one quarter inch behind coronal sulcus for entire circumference of penis. Place grooved director between prepuce and glans exactly in midline anteriorly. Cut through skin and mucous membrane with director as guide to circular incision outlined as suggested. Cut through midline posteriorly in same manner. Avoid artery of frenum. Cut off each lateral flap thus made with curved scissors, using outline first made as guide. Establish complete hemostasis by catching and tying bleeding vessels with catgut sutures. Complete operation by uniting cut edges of skin and mucous membrane with interrupted silk sutures (use catgut in young children) placed from one quarter to one half inch apart. Apply dry sterile dressing and bandage. Remove sutures in six to eight days.

Dr. Melville A. Hays, of New York, states:

The usual indication for circumcision is phimosis, but in older subjects it may be rendered necessary by the appearance of chancroids, etc., under the prepuce. The operation may ordinarily be done under local anesthesia (two to four per cent. cocaine solution), but in young or nervous children it is sometimes necessary to use a general anesthetic, either chloroform or ether.

The parts should be thoroughly cleansed with green soap and warm water followed by dilute alcohol, care being used to prevent abrasion of the skin or mucous membrane. A fairly firm constriction of the penis should then be made and the cocaine solution (when this is used) injected along the line of the intended incision. The prepuce is then drawn well forward and grasped in a pair of forceps long enough to project beyond both sides of the prepuce and so placed as to avoid injury to the frenum or its artery.

The projecting portion of the prepuce is now cut away by means of a sharp bistoury or scalpel, the upper edge of the forceps being used as a guide for the incision. The forceps are now removed and the skin permitted to retract, exposing the mucous membrane; the mucous membrane is now trimmed off with the scissors, a margin of one sixteenth to one eighth of an inch being left all around. If the artery of the frenum has been cut, it must now be ligated with fine catgut, while all other bleeding points are checked. The edges of the skin and mucous membrane are now carefully brought together by a number of interrupted sutures (the number depending upon the size of the organ operated upon), horse hair and a very fine needle, curved or half curved, being used for this purpose.

The wound is now sponged carefully, dusted with finely powdered boric acid, and a strip of dry sterile gauze firmly applied; a piece of oiled silk, perforated to permit the protrusion of a portion of the glans with the meatus, is then applied and retained by a firm narrow bandage. In older persons, who will use care in urinating and be careful to dry the meatus with a pledget of cotton each time, this dressing may be left in place for four or five days; in younger persons it is usually necessary to change the dressing at least once and often twice in twenty-four hours. After removal of the stitches, the parts are dressed with powdered boric acid and a narrow gauze bandage.

The formation of "dogs' ears" which often mar the result of the operation, will be avoided by cutting the skin carefully, going as close as possible to the frenum, and trimming the mucous membrane very carefully so that there is left only a sufficient margin to permit of suturing.

(*To be continued.*)

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Contemporary Comment

Standardized Hospitals.—Early medical education in the United States began upon a high plane. The first four medical schools organized before the Revolution required all applicants for admission to have served first an apprenticeship with some practitioner of medicine and to demonstrate their proficiency in science and Latin. The students then took one year of theoretical teaching and anatomy, another year of clinical instruction and still another year of hospital work. At the end of this time they received the degree of Bachelor of Medicine. After three years of practical work they returned to defend before the faculty an original thesis on some medical subject. If successful they received the degree of Doctor of Medicine. These were the European standards of that day. How these high standards were cut down in the early years of our national life by the mass of unschooled medical practitioners in an interesting story, but too long here to relate, observes the *Texas State Journal of Medicine* for September, 1916. From this colonial stubble a new medical profession is springing to life. Scientific and linguistic preliminary education have been reestablished; theoretical and clinical teaching have been strengthened in our medical schools and now come six medical colleges, Rush, Northwestern, Leland Stanford and the Universities of California, Minnesota and Vermont, requiring all applicants hereafter to pursue a year of hospital study, in an "approved hospital" before receiving a medical degree. The boards of medical registration of Pennsylvania, New Jersey, and Rhode Island have adopted this requirement for all future medical licentiates. It is probable that within five years this will be the uniform standard of all medical schools and State boards.

But where are these "approved hospitals?" The Council on Medical Education, after its arduous struggle for medical college efficiency, is about to begin the survey of hospitals in the United States. The American College of Surgeons will cooperate with a gift of $30,000 from the Carnegie Foundation for this purpose. Three years will be required to turn the searchlight on hospitals. Disclosures as to inefficiency will doubtless rival the startling shortcomings recently found in many medical schools.

We urge every member of the Texas medical profession who is connected with any hospital to ask "Is it well organized? Has it nécessary funds? Has it adequate equipment? Does it give safe service? Has it a good follow up system? Has it a skillful, scientific staff? Is the training school efficient, etc.?" The last few years have shown a rapid increase in hospital construction throughout Texas. Hospital standardization will bring about a tremendous improvement, especially in our public and municipal hospitals, by establishing ideals and requirements of efficiency, below which no public institution will be content to operate and less than which the public will not accept. Every one of our hospitals should keep in touch with this movements and work toward the adoption of such plans as will insure its inclusion in the forthcoming list of Recognized and Approved Hospitals of the United States.

Kerosene in Throat Affections.—The *Medical Summary* for September, 1916, after discussing the immense number of new drugs forced upon the practitioner's attention, recalls how often we are obliged to resort to old remedies. It then proceeds to summarize from the *British Medical Journal* an experience of Dr. T. M. Clayton with kerosene.

Four grave cases of laryngeal diphtheria in young children ranging in ages from two to four years were treated by the internal administration of kerosene or "lamp" oil and recovery was attributed to the remedy. Two of the four cases were in such condition that tracheotomy was out of the question. It was not performed in any of these cases. All were treated by injection with antidiphtheria serum. To each, doses of thirty minims of kerosene oil were given thrice successively every four hours, then ten minim doses three or four times daily, until normal breathing was established, which occurred in all four cases in forty-eight hours. From the first dose breathing became easier, improving with each successive administration until it became tranquil. In no case was any untoward action of the petroleum observed. The author is inclined to give the chief credit of the four recoveries to the petroleum. Similar cases previously treated with antitoxin without petroleum had been lost. Two of the patients were practically *in extremis* when first treated with paraffin. The author is convinced that if petroleum were administered in the conditions variously diagnosed as spasmodic croup, membranous croup, or laryngeal diphtheria, many lives would be saved. The taste of the kerosene was disguised by means of compound decoction of sarsaparilla.

Editorial Notes and Comments

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NEW YORK, SATURDAY, OCTOBER 7, 1916.

WORK OF THE STATE DEPARTMENT OF HEALTH.

On pages 50 to 55 of Governor Whitman's report to the voters of the State of New York for 1915, 1916, will be found matter of special interest to phycians; it is embodied in the letter to the Governor of Dr. Hermann M. Biggs, commissioner of health. The commissioner maintains that his prophecy of some years ago, that with a little support from the Governor and the Legislature, in five years 25,000 lives could be saved to the State outside of the city of New York, has been fulfilled. The death rate for 1915 was the lowest in the history of the State, and notwithstanding an increase of nearly 300.000 in population there were 2,000 fewer deaths than in 1910 from the communicable diseases. The courageous support of the Governor resulted in substantial concessions by the Legislature, and a new and properly equipped laboratory building in Albany will soon replace the shabby lean-to, made over from a stable, formerly used by the health department.

An emergency fund provided by the Governor was of incalculable assistance in the fight against the unforeseen epidemic of infantile paralysis which began last July; sanitary supervisors, nurses, diagnosticians, and bacteriologists in sufficient number have been appointed and necessary branches opened at Roslyn and Middletown. "An eminent surgeon" is being interviewed in the hope that he can organize clinics throughout the State for the purpose of instructing the general practitioner how best to prevent deformity from following the disease. A corps of skilled nurses will also be employed for the benefit of needy families.

A trained nurse has traveled throughout the State with exhibits, charts, diagrams, etc., to demonstrate how the enormous death toll of children may be reduced, how milk and drinking water should be handled, and how communicable diseases should be fought; the result in diminishing infant mortality has been most encouraging. More and more the village population is adding to its knowledge of sanitary matters with notable results to the general welfare. The department has beeen enabled to enforce the Vital Statistics Law, and has coordinated advantageously with the Department of Education in school hygiene, and in other matters with the Department of Agriculture, the Hospital Commission, the Prison Commission, etc. With the Department of Agriculture there has been active cooperation in the examination of foods, the detection of anthrax, and the distribution of information at the county fairs concerning sanitary matters.

To Camp Whitman the department was able to send a sufficient amount of typhoid vaccine, a water analyst engineer to secure a supply of safe drinking water, and a bacteriologist who examined not only the water, but the men engaged in the preparation of food in order to detect typhoid carriers.

Commissioner Biggs congratulates the Governor on the epoch making transfer of quarantine from State to Federal control; a transfer which has been energetically supported for many years by the NEW YORK MEDICAL JOURNAL. Among other advantages this relieved the State health board of a constantly increasing expense. The burden and responsibility of quarantine are undoubtedly matters for Federal control; since 1892 the physicians of New York have been fighting for this righteous change, fully aware of the indecent way in which the quarantine station was subjected to petty local politics. The number of immigrants coming into the port of New York, observes the commissioner, far exceeds that coming into all other ports together; and it was only proper that all the States should contribute rather than place the burden of expense wholly on the State of New York.

THE HASTY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

The problem of the early diagnosis of pulmonary tuberculosis is one upon which volumes have been written, and the general practitioner has received much criticism for his failure to diagnose the disease early enough to assure a permanent cure of the foci already present. We need not enlarge upon the great need to make such early diagnoses, nor upon the benefits to be derived. We are all agreed upon this fundamental point in the effort to eradicate tuberculosis. The next step is to diagnose the early cases, as demanded.

All in all, the diagnosis of pulmonary tuberculosis in an early stage is not easy, even for the expert in this field. Many cases are so puzzling in the early stages, that, when confronted with them, even the expert finds himself in a state of indecision. What, then, shall we expect of the average physician, who has given but a moderate amount of time and energy to the problem, or, perhaps, has had no special training in this field?

One of the dangers in the effort to diagnose pulmonary tuberculosis as early as possible, is that cases of a nontuberculous nature may be labeled tuberculosis, with all that it means for the future welfare of the patient. Imagine diagnosing pulmonary tuberculosis in a patient who is really free from the disease in an active form, and his subsequent treatment as if he were afflicted with tuberculosis! Only one who has had the disease and made the sacrifices necessary to effect its early arrest can appreciate the full import of the wrongful diagnosis. This is perhaps especially true of a professional man who goes forth "to take the cure" in some far away resort or sanatorium, where he has no income, while his expense is by no means small; it may mean financial ruin. Financial ruin alone would not be so bad a result, if worse were not in store for a proportion of these persons. In some of them develop psychoneurotic states. Others become forever fearful of their health, and, in order to avoid possible overexpenditure of energy, limit their work so that they are never as fit and efficient as they were before. Still others become parasites upon their family, friends, or society. In fact one in whom tuberculosis has been wrongly diagnosed is apt to have as many types of reaction as one who really has the disease. Furthermore, if the patient has some other disease which requires treatment of some sort beside the general hygienic, dietetic, rest and fresh air treatment of tuberculosis, this too is neglected. The harm done may be irreparable.

Therefore, in spite of all that may be said in criticism of the practitioner if he fails to diagnose pulmonary tuberculosis at an early stage when the evidence is sufficiently plain, he should not permit himself to label any case tuberculosis unless there is positive evidence that tuberculosis exists, and that this tuberculosis is active and not inactive, since inactive or old, healed tuberculosis should not lead to immediate treatment. Is not the modern view well expressed in the saying, *Jedermann hat am Ende ein bischen Tuberculose?* (Everyone has tuberculosis once in his life.)

When we are uncertain as to the diagnosis, we should be frank enough to admit our uncertainty. This means that we should keep all doubtful cases under observation long enough to permit thorough study. If, after a careful observation by all possible methods, including clinical history, temperature, physical examination, sputum examination, x ray examination, and other methods of choice, we are unable to state positively that the patient before us has active pulmonary tuberculosis, we have no right so to label it. We can continue to keep the patient under observation, and, in the meantime, do all that is possible to improve his general health, regulate his habits, especially his hours of sleep, his hours of work, and his diet, with the addition of whatever individual hygienic measures we can employ.

Beware the hasty diagnosis of pulmonary tuberculosis. It is an obligation that we owe our patients, society, and our own consciences.

SKULL SURGERY.

Brain surgery is one of the latest developments in the art of wielding the knife, and it seems no slight undertaking, even in the twentieth century, to chisel through the cranial bones and to delve beneath the wrappings of the seat of consciousness; yet if brain surgery is new, surgery of the skull is certainly an exceedingly ancient practice.

Recent archeological explorations in Peru have brought to light, among other interesting remains, human skulls with as many as three large openings, circular, as if cut with a modern trephine. They were made during the life of the owner of the skull, for, in some cases at least, they show evidence that the healing process went forward in the edges of the bone wound. In Europe the remains of Neolithic man, dating back at least 6,000 years, show that the contemporary surgeon was exceedingly bold in exposing the brain. One of the skulls of this time has two large oval openings, one on either side, with evidence of Nature's repair of the edges of the wound. Moreover, these openings were made, not with a nicely adjusted steel centre pin trephine, nor even with the help of a metal chisel, but with slivers of flint.

It was supposed at one time that the holes in the skulls found in these ancient remains were punctured after death in order to set free the spirit of the owner, but the evidence of the inflammatory processes which followed the operation have changed that idea. It is not likely that the medicine man could have had any such post mortem intention, for it was not until comparatively recent times that the brain was considered to be the seat of the soul. It is as much this theory, in its religious connection, together with the forbidding thickness of the skull, that has made modern man consider the opening of the brain case so serious a matter, and to look upon the brain itself as an exceedingly delicate structure.

Why these early craniotomies were done, we can, as yet, only guess. Possibly severe headaches may have been a sufficient cause to bring consent to such strenuous measures for relief, though it would not seem that such afflictions were frequent in that early time. There is no evidence that the openings were made to relieve pressure on the brain after an injury to the skull, though such injuries must have been common in an age when weapons of war were sticks and stones. It may have been that the surgical openings were made at the site of such skull wounds as were followed by unconsciousness, the surgeon reasoning that the unconsciousness was somehow connected with the injury. Surely so callous a creature as our distant ancestor must have been, would not, if conscious, consent to have his skull sawed open with a flint chip or any other instrument. Did these distant ancestors of ours possess some anesthetic which served in these cases?

Modern exploration of the brain has shown that the organ is not so delicate and unapproachable as was once supposed, and that it can be delved into with the assurance of comparatively complete recovery. In many ways it is a simpler matter to open the dura than the peritoneum, but the former procedure, because the brain is the seat of mental activity, will always seem the more serious undertaking. No matter, however, what ideas the ancient medicine man had regarding the functions of the brain, he has set us a bold example of what may be done with little science and imperfect instruments. Considering the fate which often overtakes the unsuccessful healer of a primitive tribe, he was not only bold but brave.

RECURRENT POLIOMYELITIS.

Not long ago the statement was made by one of our most eminent authorities that "infantile paralysis is one of the infectious diseases in which insusceptibility is conferred by one attack." It seems to be pretty well established that as a general rule this statement is true; that an attack of poliomyelitis confers a lasting immunity in the great majority of cases. That this dogmatic statement, however, may not be invariably true is proved by a case reported by E. W. Taylor (*Journal of Nervous and Mental Diseases,* September). A child, three years old, had an attack of poliomyelitis in which the right leg and the left arm were chiefly affected. The paralysis of the arm passed away quickly, that of the leg improved in some measure, but remained evident. Three years later the child suffered from another attack, which set in like the first and rendered him extensively paralyzed, so that he could make few voluntary movements. In one week improvement began, especially in the left arm and right leg, the extremities which were mainly affected before. The left leg was rendered practically useless. Taylor says: "The onset with fever, followed by a flaccid atrophic paralysis, without sensory involvement and resulting in permanent muscular atrophies, are entirely characteristic and could hardly be due to any other cause. It does not seem open to dispute that there were in this case two distinct attacks separated by a period of three years of health."

A few other cases of apparent reinfection have been reported from time to time. Excluding all that seem to be in any way doubtful, as well as those in which the interval was four months or less, as it is quite possible that these were cases of exacerbation or relapse rather than of actual second attack. Taylor has collated from the literature four cases beside his own in which the interval was one of years. In these the intervals were two years and three months, six years, fourteen years, and sixteen years. The writers who reported the first believed their patient to have been a carrier, and that the harbored virus resumed activity at the end of a little over two years, an assumption that was not proved. Perhaps it cannot be disproved in any case, but it seems to be a more rational theory that recurrence after the lapse of fourteen or sixteen years is due to reinfection. However this may be, these cases make it clear that recurrent attacks of poliomyelitis have been known to occur, and we are justified in the conclusion that in rare cases an attack of poliomyelitis does not confer such an immunity that a second, independent seizure is impossible. This is true of the immunity conferred by all of the other infectious diseases with which we are acquainted, as it is imperfect in a greater or smaller proportion of the cases, so it is not astonishing that the immunity conferred by this disease should be imperfect occasionally. Still, such an imperfection appears to be infrequent and recurrent poliomyelitis to be rare.

LAMBLIA INFECTION IN UNTRAVELED ENGLISHMEN.

A. Malins Smith and J. R. Matthews write to the *British Medical Journal* for September 16th, of three men, two soldiers and a sailor, who came under their care and in whom Lamblia cysts were found in fair number. Only one of the men had ever been out of England and his absence had amounted to only two days spent in Holland.

The interest of these cases lies in the fact that almost certainly the infection of Lamblia was contracted in England. As to the probable date and circumstances of the infection, and as to the possible or probably connection of the Lamblia infection with the attacks of diarrhea the writers make no observations, for on these points the facts at their disposal afford no evidence. It is almost impossible now, and will shortly become quite impossible to offer any evidence as to whether Lamblia is indigenous in England. The presence of the numerous cases of returned soldiers carrying Lamblia will make it impossible to state whether any future case is of native origin.

THREADWORMS SIMULATING APPENDICITIS.

S. G. Papadopoulos, M. B., of London, communicates to the *Lancet* for September 16th the details of a case diagnosticated as appendicitis but which turned out to be one of ordinary threadworms. The patient, a girl aged twelve years, was admitted to hospital on July 1st with the following history: She was quite well up to two days previous to admission, when she woke up in the night with severe abdominal pain and vomiting. These signs continued to be very severe the following day. She vomited bile stained fluid continually and was unable to keep anything down. The pain was localized to the right iliac region. A private practitioner diagnosed acute appendicitis. On admission the temperature was 103° F., the pulse 128, the respirations 22. The patient had taken oil on the previous night and the bowels were opened once on the following morning. On palpation a definite swelling was felt about an inch above and on the outer side of McBurney's point. At the moment a retrocecal appendicitis with rupture of an appendix abscess was suspected.

The operation was a right rectus incision, disclosing normal intestines, gallbladder, kidneys, and ovaries. The mucous coat of the appendix, however, was slightly injected and the whole canal was full of colonies of actively moving threadworms. The girl left the hospital, quite well, fourteen days later.

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News Items

Changes of Address.—Dr. Paul E. Bechet, to 40 East Forty-first Street, New York.

Dr. J. Edgar Getman, to 924 West End Avenue, New York.

Dr. Charles Johnstone Imperatori, to 17 East Thirty-eighth Street, New York.

Dr. Frederick M. Townsend, to 71 Central Park West, New York.

The Illinois State Hospitals' Medical Association announces that its next meeting will be held at the Peoria State Hospital, Peoria, Ill., October 26th and 27th.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, October 9th, Samaritan Hospital Medical Society; Tuesday, October 10th, Pediatric Society; Wednesday, October 11th, Philadelphia County Medical Society; Thursday, October 12th, Pathological Society.

A Gastrointestinal Clinic at the Northwestern General Hospital, Philadelphia.—A clinic for the diagnosis of diseases of the stomach and intestines has been established at the Northwestern Hospital, Philadelphia, which will be in charge of Dr. Louis Winfield Kohn, formerly assistant in the Johns Hopkins Hospital, Baltimore. Dr. J. Douglass Blackwood will have charge of the laboratory.

Management of Poliomyelitis.—Dr. Robert W. Lovett, professor of orthopedic surgery at the Harvard Medical School, read a paper on the Management of Poliomyelitis with a View to Minimizing the Ultimate Disability, at a stated meeting of the New York Academy of Medicine, Thursday evening, October 5th. The subject was discussed by Dr. Simon Flexner, Dr. E. C. Rosenow, Dr. Frederick Tilney, Dr. Charlton Wallace, Dr. G. R. Pisek, Dr. Foster Kennedy, and others.

Health Insurance in the Prevention of Tuberculosis.—Nearly 1,500 antituberculosis associations in almost every part of the United States will be asked to participate in a campaign for health insurance legislation by the American Association of Labor Legislation, according to an announcement of the National Association for the Study and Prevention of Tuberculosis. Bills asking for health insurance legislation will be introduced in more than twenty States during the coming fall and winter and the support of the antituberculosis associations and other public health organizations will be urged for these bills.

The Army Medical School will open October 16th, with the largest class in its existence. Up to date sixty-six students have advised the medical department of their intention to attend. Applicants for appointment in the Medical Corps of the Army who qualified at the examination held September 5, 1916, are: Dr. James E. Ash, Harvard Medical School; Dr. Luther T. Buchanan, Jr., Oxford, N. C.; Dr. Joseph M. Greer, Fort Huachuca, Arizona; Dr. Henry L. Krafft, Peoria, Ill.; Dr. Louis J. Regan, State Hospital, Utica, N. Y.; Dr. James F. Rochan, New Brighton, N. Y.; Dr. Cyrus B. Wood, armory, Louisville, Ky.

Medical Society of the Missouri Valley.—Dr. C. R. Woodson of St. Joseph, Mo., was elected president of this society, at the annual meeting held in Omaha, Thursday and Friday, September 21st and 22d, and other officers were elected as follows: Dr. E. W. Rowe, of Lincoln, Neb., first vice-president; Dr. C. B. Higginlooper, of Winterset, Iowa, second vice-president; Dr. O. C. Gebhart, of St. Joseph, Mo., reelected treasurer; Dr. Charles Wood Fassett, of St. Joseph, reelected secretary. A merger of the Medical Society of the Missouri Valley with the Tristate Medical Society of Illinois, Iowa, and Missouri was proposed and a committee was appointed to take up the matter with the officers of the Tristate body. Next year's meeting will be held in Keokuk, Iowa.

New York and New England Association of Railway Surgeons.—The twenty-sixth annual meeting of this association will be held in New York, October 18th and 19th, with headquarters at the Hotel McAlpin. Wednesday, October 18th, will be devoted to the reading and discussion of scientific papers, with an executive session and the election of officers. On Thursday clinics will be held in the leading hospitals of New York. Dr. William S. Bainbridge will deliver the address in surgery. Dr. D. H. Lake, of Kingston, Pa., is president of the association, Dr. H. G. Stetson, of Greenfield, Mass., first vice-president, Dr. W. H. Hodge, of Niagara Falls, second vice-president, Dr. J. K. Stockwell, of Oswego, N. Y., treasurer. Dr. George Chaffee, of Little Meadows, Pa., corresponding secretary, and Dr. J. H. Reid, of Troy, N. Y., recording secretary.

The Pediatrist and the Poliomyelitis Epidemic.—At a meeting of the section in pediatrics of the New York Academy of Medicine, to be held Thursday, October 12th, the evening will be devoted to a consideration of the lessons to the pediatrist from the recent epidemic of poliomyelitis. Papers will be read as follows: Epidemiology and Public Health Problems, by Dr. C. H. Lavinder, of the United States Public Health Service; Review of the Symptoms of Onset Collated from the Cases of Poliomyelitis at the Willard Parker Hospital, by Dr. May G. Wilson; Personal Experience of the Abortive and Meningitis Types of Poliomyelitis, by Dr. Leon Louria; The Diagnosis from the Point of View of the Laboratory Field Worker, by Dr. Josephine B. Neal; Treatment, Prophylactic and Curative, by Dr. Herman Schwarz; Problem of the Aftercare, by Dr. Donald Baxter. A general discussion will follow. The fall clinical meeting of the section in pediatrics of the Medical Society of the State of New York takes place on the same date, and the members have been invited to hold a joint meeting with the pediatric section of the academy. Dr. Royal S. Haynes is chairman of the section and Dr. Herbert R. Wilcox secretary.

Gifts and Bequests to Philadelphia Hospitals.—Announcement is made of the following legacies and gifts to hospitals in Philadelphia: The Samaritan, $100,000 from the late Charles W. Kolb; Episcopal, $1,000 from the late William H. Whitall and $10,000 from the late Hall Engles, who gave the same sum each to the Pennsylvania, the Presbyterian, the Polyclinic, the Jefferson; and the Samaritan hospitals and $5,000 each to the Jewish and the Medico-Chirurgical hospitals and the Home for Incurables; the Misericordia, the St. Agnes, and the St. Joseph's hospitals, $500 each from the late Annie McNulty; Howard Hospital, $2,000 from the late C. Cresson Wister; St. Mary's Hospital, $5,000 from George W. Nevil (second donation) and about $700 from the late Dennis Whalen; Presbyterian and Rush hospitals, $5,000 each, and St. Christopher's of Philadelphia and Children's of Atlantic City, N. J., $2,500 each from the late Eugene L. Sauter; Children's Homeopathic and St. Luke's, $2,000 each, by the late Rachael L. Jones; St. Christopher's, $5,000, by the late Theresa Scott; Home for Incurables, $1,000, and the Methodist Hospital, $500, by the late Mary S. Geiger; Presbyterian Hospital, a contingent bequest of $24,000 by the late David M. Barrick; St. Vincent's Maternity Hospital, $5,000, and St. Joseph's and St. Agnes hospitals, $1,000 each, by the late Mrs. Caroline Earle White.

Personal.—Dr. John Chalmers Da Costa has been appointed successor to the late Dr. William J. White as consulting surgeon to the Philadelphia General Hospital.

Dr. John B. Macdonald's appointment as successor to Dr. George M. Kline as superintendent of the State Hospital at Danvers, Mass., has been confirmed.

Dr. Frank Maltaner, of Leland Stanford University, Dr. W. E. Evans, of Knoxville, Tenn., and Dr. John Alexander McIntosh, Jr., of Raymond, Miss., have been added to the faculty of the College of Medicine, University of Tennessee.

Dr. W. C. Lyle has resigned as manager of the University Hospital, Augusta, Ga.

Dr. William C. Gorgas, surgeon general, United States Army, arrived in New York on September 25th after a two months' study of sanitary conditions in Chile, Peru, Bolivia, Ecuador, and Panama, as chairman of the yellow fever commission of the Rockefeller Foundation.

Dr. J. Lewis Ziegler, of Philadelphia, has been elected a member of the board of trustees of Bucknell University, Lewisburg, Pa.

Dr. Edward A. Treacy has been appointed assistant gynecologist to St. Joseph's Hospital, Philadelphia.

Dr. Edward K. Tullidge, of Philadelphia, now a lieutenant surgeon, is with the Pennsylvania troops on the Mexican border.

Dr. James R. Clemens has been elected dean of the John A. Creighton Medical College, Omaha, Neb.

Dr. A. I. Ringer, formerly assistant professor of physiological chemistry at the University of Pennsylvania, has been appointed professor of clinical medicine (diseases of metabolism) at Fordham University School of Medicine, New York.

The Accuracy of Certified Causes of Deaths.—The committee appointed by the section in vital statistics of the American Public Health Association to consider the accuracy of certified causes of death and their relation to mortality statistics and the International List of Causes of Death, has submitted a report which appears in the September 22d issue of *Public Health Reports*. The committee is composed of the following members: Dr. Haven Emerson, health commissioner of New York city, chairman; Dr. William H. Guilfoy, Dr. E. H. Lewinski-Corwin, Dr. Louis I. Dublin, Dr. Charles Norris, Dr. T. Warfield Longcope, Dr. W. R. Williams, and Mr. George H. Van Buren, executive secretary.

Pertussis Vaccine.—The Health Department's whooping cough clinic, at Sixteenth Street and Avenue C, was discontinued on September 30th. This clinic was established more than two years ago for the purpose of gathering data on the therapeutic value of a specific vaccine for whooping cough, and the results achieved will be published in full in the *Bulletin* of the Health Department. Physicians wishing to use the health department's pertussis vaccine may obtain it, gratis (on condition they make a full report of their cases to the department), by applying in person at the Health Department Research Laboratory, foot of East Sixteenth Street, between the hours of 9 a. m. and 4 p. m., or on presentation by a messenger of a written request for the same signed by the physician. Printed directions for use are given out with the vaccine.

Tuberculosis Conferences.—Five sectional conferences on tuberculosis will be held in various parts of the country during the month of October. The first of the series, the Mississippi Valley Conference, met at Louisville, Ky., October 4th, 5th, and 6th, and the other conferences will be held as follows: New England Conference, at New Haven, Conn., October 12th and 13th; the conference for the Southwestern States, at Albuquerque, N. M., on the same dates; the North Atlantic Conference, at Newark, N. J., October 20th and 21st, and the last of the series, the Southern Conference, at Jackson, Miss., on October 30th and 31st. There is no membership nor registration fee in connection with these conferences, and any one interested in the tuberculosis campaign or other phase of the public health movement is invited to attend. Complete programs of the conferences may be obtained from the National Association for the Study and Prevention of Tuberculosis, 105 East Twenty-second Street, New York.

American Medical Editors' Association.—The program which has been arranged for the annual meeting of this association, to be held at the McAlpin Hotel, New York, on Wednesday and Thursday, October 25th and 26th, contains the following papers: Latin and Greek as Requisites to the Study of Medicine, by Dr. Abraham Jacobi; Responsibilities of Medical Journalism, by Dr. G. M. Piersol, of Philadelphia; The Special Journal versus the General Medical Journal, by Dr. William Benham Snow; Book Reviews in Medical Journals, by Dr. H. Sheridan Baketel; The Relationship Between Medical Journals of the Day, by Dr. W. E. Jones; The Medical Journal and the Materia Medica, by Dr. Francis E. Stewart, of Philadelphia; The Private Journal and Its Sphere in Medical Journalism, by Dr. A. S. Burdick; Independence in Medical Journalism, by Dr. Llewellyn Eliot; Some Suggestions as to the Details of Medical Journalism, by Dr. A. L. Benedict, of Buffalo; two papers, whose titles will be announced later, by Dr. Ira S. Wile and Dr. George W. Kosmak. There will be a symposium on the duty of the medical editor in acquainting the doctor with medical legislation and its administration, and in giving his aid, cooperation, and support in the framing and enforcing of proper laws, with special reference to antinarcotic legislation. The papers and discussions in this symposium will be presented by prominent judges, physicians, and lawyers. The officers of the association are: Dr. Edward C. Register, of Charlotte, N. C., president; Dr. W. A. Jones, first vice-president; Dr. G. M. Piersol, second vice-president; Dr. Joseph McDonald, Jr., secretary and treasurer, 92 William Street, New York. Executive committee, Dr. C. F. Taylor, Dr. John MacEvitt, Dr. A. S. Burdick, and Dr. Joseph MacDonald, Jr.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Thirty-ninth Communication.

BRONCHITIS.

Those who have read the preceding article on acute catarrhal affections of the nose and throat will have found much of further applicability in the treatment of bronchitis. Inflammations of the trachea and bronchi are frequently but secondary extensions from mucous involvements of the upper respiratory tract; but whether the attack is primary or secondary there is a marked similarity of tissue reaction and of drug medication. In tracheobronchitis there is the characteristic active congestion of the mucosa, followed by excessive exudation, and a more or less prompt restoration to the normal. Unless vital resistance is at an unusually low ebb, convalescence proceeds in a definite manner little modified by medication, drugs being used solely to secure some alleviation of sundry more or less annoying symptoms. Obviously, if supportive or restorative needs arise, more energetic measures are demanded.

The attractive possibility of actual accomplishment makes attempts at aborting bronchitis ever alluring. Here again, thorough clearing of the *prima via* is a fundamental duty; possible toxins are thereby eradicated, the kidneys are temporarily relieved of some of their work, and another avenue of elimination becomes available. Sweating the patient utilizes the emunctory function of the skin, and, by the superficial hyperemia induced, tends to relieve the deeper congestions. Place the patient in bed, cover generously with blankets, put hot water bottles at his feet, have him imbibe copiously of innocuous hot drinks, and possibly give him a good Dover's powder. This treatment will tend to make the patient less uncomfortable eventually, even though it may fail to break the run of illness.

The use of belladonna is not so clearly indicated in bronchitis as in rhinitis, though it has undoubted effect in reducing the mucorrhea; moreover, it would be of considerable service were there present any undue tendency to spasm of the bronchial musculature. In robust patients the use of aconite is desirable in bringing back into reasonable control an acutely upset vasomotor mechanism; but great circumspection is necessary in selecting both dose and patient, and the reaction needs to be carefully watched.

If the cough becomes too harassing, if it interferes too much with the patient's hours of repose, some sedative may well be employed, and codeine is probably as satisfactory for this purpose as any obtunder of sensory reflexes, but its administration should not be continued one hour longer than is absolutely necessary.

Much has been written, but little demonstrated, concerning expectorant mixtures; and sundry drugs have been recommended because of an assumption that they liquefy the bronchial secretions. One of the early phenomena attending convalescence from bronchitis is increased fluidity and copiousness of the bronchial secretions; and it is not unlikely that some hasty generalizers have credited this phenomenon to the use of some medicine previously administered; but mere sequence is not a demonstration of causation, as our students are frequently warned, and convincing evidence is lacking that the bronchial secretion is stimulated by any drug known. A drug frequently recommended for this purpose is the chloride of ammonium; but sal ammoniac passes through the carnivorous animals unchanged, though altered to urea in the herbivorous animals; and Cushny says the pulmonary epithelium is impermeable to the ammonium ion; so it is a pharmacological puzzle how ammonia can be of any service in promoting bronchial secretion. But if it has utility, the best way of administering it is by means of deep inhalations of the nascent chloride vapor. This mode of treatment has been often recommended, but clinical reports as to its real efficiency are very scanty. Let us have many experiments with this vapor, and careful reports as to any real determinable value.

Certainly the room should have a relative humidity of at least fifty per cent. This may be partially attained by means of vessels of water kept constantly boiling, to which may be added experimentally menthol or oil of eucalyptus.

Antityphoid Vaccination in the Presence of Albuminuria.—Widal and Méry (*Presse médicale*, June 8, 1916) report a study of the effects of antityphoid vaccination in twenty-five military chauffeurs in active service, all with albuminuria and in twenty-six men admitted to hospitals either for albuminuria or for other persisting signs of renal involvement. The vaccine used was a heated preparation immunizing against both types of paratyphoid organisms as well as against the typhoid bacillus. Nearly all the men received four injections at weekly intervals. The observations showed, in the first place, that the vaccinal reactions are no more marked in albuminurics than in normal subjects, whatever the dose of vaccine given. In none was there a return of any of the functional evidences of Bright's disease, such as high blood pressure, edema, or uremic symptoms. The amount of albumin passed was in some instances unaffected, in others increased, and in still others slightly diminished after the vaccine injections. Often the effects of successive injections on the albumin in a given subject were different. Where the albuminuria was augmented, the increase generally began on the second day after the injection, and lasted often only a day, sometimes two or three days, rarely longer. Preexisting casts, leucocytes and erythrocytes sometimes showed a slight, but temporary increase after the injections, and at times one or more of these bodies appeared in urine previously free from them. The urea content of the blood and the Ambard coefficient showed insignificant and temporary oscillations after injections. On the whole, the vaccination was thus well borne not only by those free of all disorder other than albuminuria, but by subjects who had previously had symptoms of Bright's disease. While it is recognized that men who have recently had hematuria or acute nephritis, who pass more than one gram of albumin per liter of urine, or whose blood serum shows more than 0.5 gram of urea per liter, should be relieved of military duties, several of the albuminurics studied by the authors came under these specifications and yet showed no ill effect from antityphoid vaccination. Admission to military service thus, from the standpoint of albuminuria, certifies the subject's aptitude to vaccination. Albuminurics considered incapable of withstanding so mild a procedure as antityphoid vaccination should not be kept in the army, exposed to typhoid infection.

Intravenous Vaccine Therapy in Typhoid Fever.—Petzetakis at a meeting of the Société de biologie (*Presse médicale,* August 3, 1916), reported excellent results from intravenous administration of antityphoid vaccine in enteric fever. The injection is followed by a marked thermal reaction lasting from two to five hours. Within six hours after the injection the general condition is improved, headache, coma, the typhoid state, and the other symptoms of the disease being relieved. Pulse dicrotism disappears, and the arterial pressure rises, Meteorism is lessened, the appearance of the tongue is altered, the stools become regular and normal, and complications are prevented. Copious sweating and a drop in the temperature likewise follow the injection. A leucocytosis is induced, and the urinary output is increased for one or two days. Where no serious renal parenchymatous lesions exist, the renal filter is apparently not influenced by the procedure.

Serum Therapy in Typhoid Fever.—A. Rodet (*Bulletin de l'Académie de médecine,* August 8, 1916) reports results obtained in 400 cases with serum prepared under his direction. When the serum is administered early enough, it usually arrests the progress of the intoxication and shortens the disease. To act most efficaciously the serum must be begun before the eleventh day. Later the effects are inconstant and usually less pronounced. The initial dose is fifteen to twenty c. c., subsequent doses usually less and decreasing in size—ten c. c., five c. c. The injections are best given at two day intervals. Three injections usually suffice. At times the effect on the temperature curve is seen on the day after the initial injection; oftener, after thirty-six or forty-eight hours; occasionally, later still. In a rather large ratio of the cases the descent of temperature is rapid and regularly progressive, the normal temperature being reached in six to eight days; instances of such abortion of the disease may be observed in cases very severe at the outset. In other cases, defervescence is slower, with amplified diurnal oscillations; more rarely, usually in cases treated late, the temperature reascends after a temporary drop, the specific action of the remedy having given out. Other symptoms follow the temperature changes; those due to nervous intoxication show especial benefit. Often the improvement precedes defervescence, the first effect of the serum sometimes being a state of euphoria noticed within a few hours after the first injection. Recrudescences and relapses are not rare, but constitute no objection to the serum, betokening rather an incomplete or insufficiently prolonged specific action, probably remediable by better regulation of the doses or resumption of treatment. In 167 cases running a regular course and treated with serum before the eleventh day, the average duration of the disease was 23.7 days; in twenty-eight similar cases receiving serum only after the eleventh day, thirty-three days. Preexisting advanced tuberculous lesions or a simultaneous or secondary infection with streptococci, staphylococci, diphtheria bacilli, etc., interfere with the efficacy of the treatment. Indeed, where the serum seems devoid of action, a suspicion of some mixed infection is warranted. The serum is actually of diagnostic value, producing little or no effect even in such closely related disturbances as the paratyphoid fevers. Recently the writer has prepared an antiparatyphoid serum, to be used analogously.

Cholelithiasis.—R. Alexander Bates (*American Journal of Surgery,* September, 1916) summarizes the points to be observed in the treatment of cholelithiasis as follows: 1. Biliary concretions, for the most part are composed of cholesterin, which is a normal constituent of bile, a monoatomic alcohol easily broken up by again restoring bile to normal 2. Cholesterin precipitation occurs only in stagnated, decomposed bile. 3. The rhythmic contractions of the gallbladder musculature are probably due to its secretin, which is similar to the secretin of the duodenum. 4. Medication should aim to alkalinize the bile, stimulate the bile secreting and excreting mechanisms by activating biliary secretion, and aid biliary antisepsis and mucosa tone. 5. Necessary surgery is in no way to be deprecated.

Unilateral Symptomless Hematuria.—R. L. Payne, Jr., and William B. MacNider (*Jour. A. M. A.,* Sept. 23, 1916) have shown that in addition to the presence of calculi, neoplasms and tuberculosis in the renal pelvis, this condition is often due to an infection of the medullary and pyramidal portions of the kidney with thrombosis, congestion, varix formation and hemorrhage. The treatment may be either operative or nonoperative. The latter comprises the injection into the kidney pelvis of styptics or of epinephrine and the administration of horse or human serum or of whole blood and of autogenous vaccines where the infectious agent can be isolated. This form of treatment, however, has the great disadvantage of masking symptoms where neoplasm or tuberculosis is the cause. Operative measures are far more satisfactory in general, for the exact diagnosis of cause can then be made. In the infective form complete nephrotomy gives excellent results, probably by establishing an efficient collateral circulation. In some cases, however, even of the infective form, cure can be assured only by nephrectomy.

Pyorrhœa alveolaris: Its Complications and Its Treatment with Emetine.—E. W. Koch (*Indianapolis Medical Journal,* September, 1916) says that although emetine hydrochloride is of benefit in the treatment of amebic pyorrhœa alveolaris, it alone will not cure the disease. Local dental treatment likewise, unaided and unrepeated, cannot produce a lasting cure. A rational management of this disease requires the employment of both measures, the emetine hydrochloride to remove the exciting cause, and the proper dental instrumentation to remove the predisposing causes and the factors that interfere with tissue healing.

Vaccines in Dental Infections.—Ernest E. Irons (*Jour. A. M. A.,* Sept. 16, 1916) considers that while active immunization through the use of vaccines has proved of great value prophylactically, the question of the value of vaccines in the presence of an existing infection is debatable. The administration of a vaccine in the presence of infection may quite as readily turn the balance against as in favor of the host, and it is nearly, if not quite impossible to foresee which will be the case. In cases of dental abscess a vaccine could at best be only an adjunct to other methods of treatment, and even as such it has proved disappointing. Further, proper dental surgical measures, with adequate drainage have rendered the administration of vaccines superfluous since cases do as well without their addition as with it. The same statements can be made with equal truth regarding the treatment of pyorrhea.

Ionization in the Treatment of Adherent Scar Tissue, with or without Contracture of Extremities.—M. Chiray and G. Bourguignon (*Presse médicale,* August 3. 1916) report excellent results from potassium iodide ionization in long standing scars which have become attached to subjacent tissues. The beneficial effects appear in a constant order, the scar first becoming pale, then thin and smooth, and finally loosened from the underlying tissues, over which it now glides freely. Tenderness of the scar completely disappears. In a series of 223 cases the treatment caused attenuation and complete loosening of the scar in eighty-five per cent. of instances; in the remaining fifteen per cent., loosening had not yet occurred when the man had to be discharged, but probably would have followed in some cases if the treatment had been kept up. The liberation of the scar occasionally takes place within eight or ten days, in the majority in five or six weeks, and in obstinate cases in three or four months. It is best to continue the treatment for some time after apparently sufficient results have been attained. In cases in which, after loosening of the scar, a deep fibrous scar is felt beneath it, ionization fails to influence the latter scar; these cases are subject to x ray treatment. The ionization frees any muscular or nervous tissue previously included in the superficial scar, thus improving motion and arresting local nerve irritation. Where the scarring has led to an established, though primarily "reflex" or "hysterical" contracture of the affected limb, forced mobilization by the surgeon himself is added to the ion treatment; in many cases improvement is rapid and in a few weeks free motion is regained. The gradual mechanical stretching is practised daily after the ionization treatment, being discontinued temporarily if sharp pains appear in the extremity. Anesthesia, forced correction, and fixation in a plaster cast were found practically useless. Excision of the scar is to be resorted to only if ionization and the x rays fail, as the vicious scars not infrequently recur after excision, though not after ionization. In the latter treatment the electrodes used consist of plates of zinc or tin of size corresponding to the scar and covered with felt or chamois skin. The negative electrode, moistened with one per cent. potassium iodide solution, is placed over the scar, and the positive, moistened with water, on the opposite aspect of the limb. A ten m. a. current is sufficient, yielding a more regular ionization than stronger ones. The current should not exceed 0.5 to one m. a. per square m. of electrode. The iodine ion is forced through the affected tissues with the current. Daily treatments each lasting one half hour are administered.

Treatment of Wounds by Ozone.—John Jeffrey (*Brit. Med. Jour.,* Aug. 26, 1916) states that septic wounds can be treated by the application of nascent ozone, including sepsis in such blind cavities as the nasal accessory sinuses. Usually after a very few applications the sepsis will have entirely cleared up and healing will begin in a healthy layer of tissue. The ozone can be readily prepared by passing a stream of oxygen from an ordinary cylinder through a small glass ozonizer and may be blown directly over the surface of the infected area by means of a Eustachian catheter, which can be inserted into every recess of the cavity.

Use of Picric Acid in Surgery.—T. F. Brown (*Lancet,* Sept. 2, 1916) reports that this substance is four times as active as phenol and is capable of destroying streptococci or staphylococci in two minutes in a one per cent. solution. On the strength of these facts the author has employed it as a wound dressing in war with the utmost success. He has developed the following routine as the result of an experience in over 3,000 cases. In superficial wounds a one per cent. solution of the acid was applied upon a thin layer of gauze, thus leaving the wound practically exposed to the open air. The dressing seldom had to be changed oftener than once a day. Deep suppurating wounds were syringed out twice daily with a one half to a one per cent. solution and mechanically cleaned every two or three days with peroxide of hydrogen. The same treatment was employed where there were sinuses. In the cases of suppurating fractures or extensively crushed tissues arm or leg baths in 0.5 per cent. solutions were given for half an hour at a time. After granulation in any case had reached the surface of the surrounding tissues, the solution used was never stronger than 0.5 per cent. since the stronger solutions seemed to damage the tender growing epithelium. In his wide experience the author encountered no contraindications and never saw a case of poisoning. The sole disadvantage of the drug was the deep and quite lasting staining of the superficial tissues. The drug was found to give good results in erysipelas in addition to open wounds.

The Mechanism of Saline Dressings.—Kenneth Taylor (*Brit. Med. Jour.,* Sept. 2, 1916) takes issue with Wright and proceeds to show many objections to Wright's statements and many fallacies in his arguments. He shows that hypertonic saline does not cause the pouring out of normal protective substances, that its action is essentially dependent upon the laws of osmosis, that its presence inhibits or checks tryptic digestion, and that it causes very marked cellular edema in the lining of the wound. Much the same objections apply to both isotonic and hypotonic salines. He also points out that clinical experiences have not decisively proved the superiority of the saline dressings and that their theoretical indications are based upon an erroneous hypothesis of the structure of the tissues lining wounds. Certain of the actions of the hypertonic saline solutions are undesirable and even harmful.

Sarcoma of Intraabdominal Testis.—W. W. Grant (*Jour. A. M. A.,* Sept. 23, 1916) observes that this insidious malignant growth is seldom recognized early enough in its development to permit radical removal, but the experience of the author in a case of advanced growth indicates a hopeful plan of treatment. When the patient was first seen the tumor was too far advanced for surgical removal and the patient was put upon repeated injections of Colby's fluid. Under this treatment the tumor diminished in size and grew firmer. Remissions in treatment were followed by accessions of growth, so the treatment was continued for many months and a few x ray exposures were given. The tumor was thus checked in growth and reduced in size and encapsulation took place so that an operation succeeded in effecting its complete enucleation. This was followed by a course of x ray treatment and Coley's toxins. It is now over a year and a half since operation, and the patient remains free from recurrence and is apparently cured.

Action and Clinical Uses of Papaverine.—D. I. Macht (*Archives of Internal Medicine,* June, 1916) reports results of investigations of this opium alkaloid in both animals and man, including clinical cases. The alkaloid, generally used as papaverine hydrochloride or sulphate, was found to cause, by direct action on the heart muscle or its intrinsic ganglia, a marked increase in the tonicity of the heart, with slight slowing of the rate and an increased output. The drug is a powerful dilator of the coronary artery, and lowers general blood pressure, chiefly by directly dilating the bloodvessels, especially the splanchnic and peripheral vessels. While producing a slight narcotic effect, papaverine distinctly stimulates respiration, and is a bronchodilator. It relaxes all smooth muscle tissue, including strips of intestine, uterus, and bladder, and the excised pyloric sphincter. It also possesses general analgesic properties, forty mgm. of it being in this respect almost equivalent to ten mgms. of morphine, though the general narcotic effect is much less. The drug is of relatively low toxicity. Subcutaneous doses of forty to eighty mgms. in adults are quite safe. The author's clinical trials of the drug proved encouraging. In relieving pain it proved more effective than codeine, though inferior to morphine. In most instances of cardiac dyspnea it proved efficient. In an advanced consumptive habituated to herome, it relieved a troublesome cough, and in a case of aneurysm strikingly relieved cough which had not been influenced by any other drug. A case of bronchial asthma was relieved immediately. Its salient property of relaxing smooth muscle was also manifest in cases of spasm of the biliary ducts, and in pylorospasm, in which it was given by mouth with favorable results. It was also introduced directly into the ureter through a cystoscope in two cases of ureteral calculus, with successful effects. The peculiar effect of papaverine on the circulation, promoting coronary circulation and stimulating the heart while lowering the blood pressure, suggests its use in angina pectoris and cases of hypertension. Pal has used it to abort uremic crises. Its stimulating action of the respiratory centre suggests its use instead of morphine, where depression of that centre is undesirable. Macht slowly injected forty mgms. of papaverine, diluted with 200 c. c. of saline solution, intravenously on three occasions without any untoward symptoms.

Some General Information Concerning the Diagnosis and Treatment of Syphilis.—M. A. Reasoner (*Military Surgeon,* September, 1916) concludes thus with respect to the diagnosis and treatment of syphilis: 1. Syphilis should be diagnosed and treatment begun at the earliest possible moment. The dark field, or in the absence of this, staining methods, should be employed as an aid to diagnosis. The organism will not ordinarily be found for several days after the application of antiseptics, especially mercurial salts. 2. The interpretation of the Wassermann reaction is sometimes a matter of difficulty. In the absence of history or manifestations, a single positive reaction is not sufficient evidence upon which to base a diagnosis. In the presence of suspicious manifestations, indeed, several negative Wassermann reactions are not sufficient to establish a diagnosis. Other procedures may be necessary to confirm the diagnosis. Even with a uniform technic, the reaction of an individual may be subject to unaccountable variation. 3. The greatest good will be accomplished by the administration of both salvarsan and mercury. The best results are to be expected when treatment is begun early. The administration of mercury should be pushed to the physiological limit. The soluble salts of mercury have some points of superiority over the insoluble salts. Treatment by way of mouth does not give the best results. The results obtained from inunctions, when properly given, compare favorably with those from any other form of mercurial administration. Potassium iodide is not in itself an antisyphilitic drug. Its greatest field of usefulness is in the presence of tertiary gummatous lesions in conjunction with antisyphilitic drugs. Frequent examinations of the urine are desirable, as both salvarsan and mercury may exert an untoward effect upon the kidneys. 4. It is believed that syphilis is curable in a certain percentage of cases. A tentative standard has been proposed. Further investigation is desirable along these lines. 5 The results obtained from spinal fluid examinations are of great value. These examinations should be more generally practised than is now customary. 6. The provocative Wassermann reaction is a refinement of the ordinary reaction. Information may be obtained from this reaction which can be gained in no other manner. 7. Rubber gloves are a desirable protection to the operator in handling syphilitics. 8. The luetin reaction has its greatest value in the diagnosis of hereditary and tertiary syphilis, tabes, paresis, and old cases of cerebrospinal syphilis. 9. In positive cases further information may often be obtained from a titration of the Wassermann reaction.

Laxatives in Abdominal Surgery.—Winslow Anderson (*Pacific Medical Journal,* September, 1916) lays stress on the avoidance of such drugs as aloes, cascara, jalap, etc., in abdominal surgery and pelvic inflammation. Three types of laxatives only are allowable in these cases, viz., salines, blue mass, or calomel in small doses, and castor oil. Where laxative enemas are employed, no soaps should ever be used, as they are too irritating and may set up inflammation not only of the rectum but also of the pelvic peritoneum or viscera. Suitable laxative enemas are:

1. One pint of normal saline solution at 102° F.
2. Two ounces of magnesium sulphate in one pint of water at 102° F.
3. Two ounces of glycerin in one pint of water at 102° F.
4. Two ounces of castor oil in gum arabic emulsion (one half ounce of acacia to one pint of water).
5. One half ounce of turpentine in one pint of gum arabic emulsion.

6.

℞ Fellis bovis, ...gr. xx;
Glycerini, ...℥i;
Aquæ amyli, ...Oi.
M. Fiat enema.

7.

℞ Infusi sennæ compositi, ...℥viii;
Aquæ, ...q. s. ad Oi.
M. Fiat enema.

8.

℞ Emulsi asafœtidæ, ...℥viii;
Tragacanthæ pulveris, ...℥ss;
Aquæ, ...q. s. ad Oi.
M. Fiat emulsum.

Prevention of Subinvolution and Retroversion.—A. C. Beck (*American Journal of Obstetrics,* July, 1916) states that in spite of careful trial of various measures recommended of late for the prevention of uterine abnormalities after the puerperium, including bed exercises, the knee chest position, repair of all lacerations, etc., the subsequent history of maternity cases at the Long Island College Hospital has shown these procedures to be inefficient, many cases returning with subinvoluted uteri and twenty to thirty per cent. showing retroversion. In the belief that having the patients walk on all fours might have a beneficial effect, this procedure was finally tried in a series of thirty-seven cases. On the ninth day after labor each patient was required to walk five or six yards on her hands and feet with the knees held as stiffly as possible. Next day the distance was doubled and the exercise carried out both morning and afternoon. The walk was augmented proportionally each day until discharge, the patient being then advised to continue until she returned two or three weeks later to the post partum clinic. The exercise was to be performed in the morning before dressing and at night after undressing. Whereas, among sixty patients in whom the procedure was not carried out, forty-five per cent. acquired retroversions, with subinvolution not infrequent and the vaginal discharge sometimes containing blood, among the thirty-seven who carried out the treatment and continued it at home, only 13.5 per cent. showed retroversion on their return and none showed subinvolution, the uterus being, in fact, in most instances considerably smaller than was to be expected at the time of examination. The condition of the perineum was observed to have little bearing on subsequent retroversion. Most of the trouble seemed to be due to neglect of patients after the second week post partum.

Acute Tonsillitis Complicated by Endocarditis.—W. D. Hoskins (*Indianapolis Medical Journal,* September, 1916) says that acute tonsillitis in children is not infrequently complicated by acute endocarditis, with resulting permanent injury. Children with acute tonsillitis should be put to bed and kept in bed until the fever has entirely subsided and all evidence of acute tonsillar infection has disappeared. When endocarditis occurs, keeping the child in bed and absolutely quiet for a considerable time will usually result in complete recovery. If acute tonsillitis in children was regarded as a serious disease, or at least as having serious possibilities, and was treated accordingly, some lives would be saved, and many children would be spared a life of chronic invalidism.

The Local Treatment of Burns.—R. J. Willan (*Brit. Med. Jour.,* Sept. 2, 1916) has worked out the following highly satisfactory plan of treatment on a series of twenty-eight cases of burns. The most essential single measure was the prevention of sepsis, which was found to be very fatal in burned persons. This was accomplished by the strictest observance of antiseptic precautions. The first step was the puncture and drainage of all blisters after sponging the surface with a five per cent. solution of phenol. The first dressing was one of a solution of picric acid, which was left on for two days if there was no infection. The occurrence of sepsis was looked for twice daily by smelling the dressings, which was found to be a valuable means of detection. In the absence of sepsis the picric dressing was removed after two days, the new blisters, if any, punctured, the wound covered with a mixture of equal parts of boric ointment, and petrolatum over which surgeons' lint was spread, and the whole enclosed in an ample dressing. In the presence of sepsis the wound was treated every four hours by hot boric acid fomentations under jaconet, all loose skin cut away and a dressing applied of alembroth wool, containing a small amount of bichloride of mercury. When the wound was rendered healthy the dressings were changed to those already described for nonseptic cases. A very simple form of first dressings for burns of the extremities was devised in the form of a single antiseptic wool covering which was held in place without pressure by means of a series of tapes.

Miscellany from Home and Foreign Journals

The Diagnostic Value of Tubercle of the Choroid.—Sydney Stephenson (*Lancet*, September 9, 1916) illustrates the great value of the discovery of tubercle in the choroid in the diagnosis of obscure cases by reporting three cases of general acute tuberculosis in which other diagnoses were made, and in which the correct one was possible only after the examination of the eye grounds. All three cases occurred in children, but tubercle of the choroid is not less common in adults where there is a general acute miliary tuberculosis. The reason for the general belief that choroidal tubercle is a rare finding lies in the fact that the eye is not usually included in the routine examinations made by physicians. If such were the case, tubercle of the choroid would often be found. The ophthalmoscope should be employed as a routine aid to diagnosis on the same plane as the stethoscope on account of the large amount of definite information which it yields.

Value of Recent Laboratory Tests in Nephritis.—Arthur F. Chace and Victor C. Myers (*Jour. A. M. A.*, September 23, 1916) state that extensive study of several of the newer tests of renal function has shown: 1. That an increase of uric acid in the blood is a valuable early diagnostic sign of beginning nephritis. 2. The blood urea is a valuable guide in treatment in moderately severe nephritis, since its changes reflect the patient's condition promptly. 3. Blood creatinin is of great prognostic value, indicating a fatal outcome in a comparatively short time if there is over five mgm. per 100 mils of blood. 4. Van Slyke's method of measuring the carbon dioxide combining power of the plasma is valuable as an index in both diagnosis and treatment. 5. In diabetes complicated with nephritis, determinations of the glycosuria are of little value, since the kidney permeability is lowered by nephritis. The blood sugar should be estimated in addition to that in the urine. 6. Finally, Ambard's coefficient has proved disappointing.

Observations in One Hundred Appendicectomies.—F. C. Warnshuis (*Lancet-Clinic*, Sept. 9, 1916) noticed that patients with gangrenous, purulent, or perforative appendicitis mentioned chills or chilliness as having been experienced at the very beginning or in the first few hours of the attack. Where a history of such a chill is obtained he now urges operation as more imperative and anticipates drainage as being necessary. Where an icebag or cold had been applied before operation there was noticed a lack of effort on the part of nature to wall off the appendix from the rest of the abdominal cavity, and the organ was frequently found much congested, perforated or gangrenous. Where, however, a hot water bag or moist heat had been used a greater attempt toward walling off was manifest. Thus, use of the icebag seems harmful—especially if prolonged. Acute pain stopping in twenty-four to forty-eight hours, with marked rigidity, suggests gangrene or acute stasis and is often followed in twelve to twenty-four hours by sudden pain indicating perforation. Temperature and pulse rate are untrustworthy as indicators of safety. Gangrenous and purulent appendixes may coincide with normal temperature and pulse; again, in three cases with a temperature exceeding 103° F., the writer found appendixes only markedly congested, and the temperature dropped to 99.5° in twelve hours after operation. Rigidity and one finger point tenderness are less pronounced in acutely inflamed retrocecal appendixes than in appendixes elsewhere situated; rectal or vaginal examination elicits extreme tenderness in these cases. Nausea or vomiting exists in every attack of true acute appendicitis. Warnshuis places no dependence on the leucocyte count. When appendicitis has been diagnosed one should operate promptly, regardless of the number of hours it has existed. It is unjustifiable not to advise operation because a case is mild. If the appendix is regularly removed, convalescence is hastened and secondary operations are obviated. When drainage is required, abundant means of drainage should be provided. The author always inserts a cigarette drain in acute cases where serous exudate is present, to be removed usually in forty-eight hours. Where the appendix is distended with pus, with free serum present, a double cigarette drain is inserted. In walled off gangrene or pus cases, two split tubes are used. Where there is free pus, no attempt to suture is made, the wound being merely packed and free drainage secured with split and perforated rubber tubes. Sloughing of stitches, after a wound is partly sewed, is successfully obviated by means of seventy per cent. alcohol compresses, changed twice daily. One should not attempt early removal of drainage, and should avoid meddlesome postoperative care.

Contributions to the Study of Shell Shock.—Charles S. Myers (*Lancet*, Sept. 9, 1916) concludes from a study of a large number of cases showing mutism, dysarthria and aphonia that they are not due immediately to such factors as violence, gas poisoning, or physical causes, but are the result of functional inhibitions. These inhibitions may usually be traced to intense fear or horror, but may occasionally be due to conditions in which consciousness is so quickly lost that no emotional experiences can have been felt by the patient. These disturbances are not generally the result of suggestion or association, although previous experience or congenital tendencies may modify their form. They are also not due to a fixed idea in the ordinary meaning of the term, since there is no evidence of a disordered volition. They are due primarily to a derangement of the conscious and unconscious processes which underlie the personality. The inhibitions themselves may be of several grades, but in every case are purely functional and depend upon the personality of the subject at any given moment. The personality itself may be affected by sleep, light anesthesia, hypnosis, strong emotion, or momentary lapses of attention. The disturbances are not maintained or evoked by fear alone; other emotions such as horror, grief, disappointment, and anxiety play their parts.

An Ophthalmic Compressor for Eliciting the Oculocardiac Reflex.—J. Roubinovitch, at a meeting of the Académie des sciences, Paris (*Presse médicale*, August 10, 1916), referred to the physiological effects of pressure on the eyeballs which, under normal conditions, causes a slowing of from four to ten beats a minute in the pulse rate, and in various pathological conditions either a more pronounced slowing, an absence of slowing, or an actual acceleration. The customary method of eliciting the reflex by having an assistant press upon the eyeballs with his fingers is disadvantageous in that the pressure made varies with the assistant and at different times with the same assistant, cannot be exactly measured, may convey infection, and requires the services of a third person. Roubinovitch has devised an instrument free from these defects, consisting of a species of spectacles with supports designed to rest on the forehead, nose, and eyes, readily adjustable, and permitting the application of any desired degree of pressure on the eyeballs. The pressure pads are so disposed that the instrument can be adjusted immediately for certain pressures and the pressure removed promptly when desired. In normal subjects the apparatus produced the oculocardiac reaction exactly as obtained by digital compression. In a number of nervous conditions, such as epilepsy, pulse acceleration was induced in the majority of cases.

Cardiac Rhythm in Soldiers in Active Service.—Léon Binet (*Presse médicale*, August 10, 1916) points out that in the soldier, after temporary arduous exertion there may appear either, 1, a state of asystole with uncountable, thready pulse, possibly soon followed by death; 2, paroxysmal tachycardia, easily relieved by the swallowing of a large bolus of dry bread or by exerting pressure on the eyeball; or, 3, a condition of heart insufficiency with marked arrhythmia and tachycardia, due primarily to insolation. After physical overwork lasting several days, on the other hand, perhaps with sleepless nights, a different condition is observed. Examining a regiment of men in peace time the author found seven per cent. of the men with a pulse rate below seventy; a resting regiment examined in January, 1916, showed similarly six per cent. of men with the pulse below seventy; examination of one hundred men after a very active period, however, during which these men had had to fight day and night and execute other arduous tasks, showed fifty-six men with a pulse below seventy, including twenty with pulse at fifty-five or lower. The existence of a fatigue bradycardia is thus demonstrated. Curiously, the temperature in these overworked soldiers with a pulse rate of sixty or sixty-five is sometimes above normal—38° or 38.5° C. Feeling the pulse for information as to the presence or absence of fever in such subjects is, consequently, misleading. The effects of psychic tension or shock on the pulse rate such as arises from being heavily bombarded with shells, bombs, and torpedoes, was studied in ten subjects. In two there was no change, in five there was a more or less marked slowing, e. g., from seventy to fifty, and in three an acceleration, e. g., from normal to 120. Acceleration seemed most likely to occur in men who had just reached the front or were only moderately courageous. In some cases pulse reactions of this type persist a long time after, as in a patient of Dejerine, whose pulse, after a psychic shock, showed a permanent tachycardia of 160 and at times 180. Sustaining a wound was found usually to increase the pulse rate to ninety, 100, or 110 for several hours, except in men with dangerous cranial wounds, in whom it dropped to sixty-five or fifty-five, and in cases of chest wound with cardiac implication, e. g., a hemopericardium. Explosion of a large shell close at hand caused pulse changes according to whether vagal or sympathetic excitation took place. Eight men in a series of sixteen showed acceleration to between eighty and 100; five, an irregular rhythm with a rate of eighty to 120, and three, a slowing to fifty-six or sixty. Airmen who have just executed a rapid descent or ascent show a slowing, e. g., from seventy-five to fifty-six, due to vagus excitation, which is likely to be associated with low blood pressure and a tendency to syncope (aviator's disease).

Uremia.—Nellis B. Foster (*Jour. A. M. A.*, September 23, 1916), after careful analysis of cases, divides uremia into three distinct types, dependent upon the nature of the functional defect in the kidney. These are: 1. The urinary poisoning of Ascoli, or retention type, which is marked by progressive asthenia and anorexia, stupor and death. 2. The cerebral edema type, due to salt and water retention with edema and symptoms much like those in the first type, but of slower development. Convulsions are absent from both of these forms. 3. The toxic type, or epileptiform uremia, with nitrogen retention and the formation of a toxic body in the blood. The presence of such a toxic body has been demonstrated by the author by isolating it in crystalline form from the blood in fatal cases. The administration of this body to animals kills them with symptoms of dyspnea, defecation, convulsions and coma. Although cases are to be found in which the type is clear, the usual condition encountered is one in which the types are mixed, one type, however, usually predominating in the clinical picture.

Examination of Gastric Contents in the Cardiopath.—A. G. Brown, Jr., (*Virginia Medical Semi-Monthly*, July 21, 1916) refers to the palpitation, tachycardia, bradycardia, arrhythmia, Stokes-Adams syndrome or breast pang frequently accompanying and apparently excited by gastric conditions manifest in such symptoms as eructations, pyrosis, distention, so called gastralgia, nervous vomiting, etc. By careful study of the stomach contents of heart cases he finds much benefit can be obtained in removing not only distressing, but actually dangerous cardiac signs and conditions. While the introduction of a stomach tube or a duodenal tube or bucket is contraindicated in some serious heart maladies, many cases remain in which their use with average skill subjects the patient to no new danger. Chronic gastrorrhea (Reichmann's disease), characterized by epigastric fullness and burning pain appearing usually one or two hours after eating, with relief when copious vomiting of greenish watery fluid occurs, is not infrequent in cardiopaths who during the paroxysms may suffer greatly from dyspnea and palpitation as a result. In such cases heart remedies prove of little use unless the gastric condition is treated by dietetic and medicinal measures also, with or without gastric lavage and physical treatment. Test meal examinations reveal imperfect starch digestion, but meats and fats may be freely used. Frequent, small, dry feedings were found by the writer to give good results, with liquids permitted only in moderation. Lavage, when used, is practised before retiring, or before breakfast, or both. Chronic acid gastritis (hyperchlorhydria), with secretion of gastric juice normal in amount but hyperacid, is also a complicating factor in the cardiopath, causing epigastric distress or pain at the height of digestion, usually with gaseous distention, which aggravates the cardiac symptoms and excites distinct heart attacks. Success in such heart cases is largely dependent upon examination of the stomach contents, as it is also in those complicated with achylia gastrica, manifest in anorexia, pressure sensations, eructations, pain after eating, and diarrhea, due to patulence of the pylorus from absence of hydrochloric acid. In these cases foods of animal origin are to be prohibited and ascending doses of dilute hydrochloric acid given. Acute gastric dilatation occurs at times as a serious complication of heart disease, and requires immediate lavage and evacuation of the overloaded stomach. Brown finds the duodenal tube more useful in examining the gastric functions than the ordinary stomach tube. By its use serial examinations of fractional amounts of the gastric contents may be made throughout gastric digestion and more accurate study and treatment therefore carried out. Patients, moreover, submit to it more readily than to the stomach tube.

Differential Diagnosis of Tuberculosis of the Lungs.—E. Rist (*Presse médicale,* July 24, 1916) discusses, in particular, cases of persistent cough free from tubercle bacilli in the sputum, with or without slight and transitory physical signs suggestive of tuberculosis in one of the apices, and with lungs absolutely clear upon x ray examination. Too often a diagnosis of probable tuberculosis is made in cases such as these, owing to insufficient care in examination. The cough in such instances may be due actually to some cardiac affection, especially mitral stenosis, to chronic nephritis, to gastric atony with ptosis, or to mild exophthalmic goitre. As Pierre Marie has pointed out, many cases of the later variety exhibit a dry, fatiguing, and very persistent cough, the diagnosis, in the absence of distinct thyroid enlargement, requiring careful examination for tremor and the signs of von Graefe and of Moebius, together with radiography of the thorax and sputum examination for bacilli. Much more frequently mistaken for tuberculosis, however, especially in the male sex, are conditions due primarily to various chronic nasal and pharyngeal disorders, often hardly noticed by the patients themselves. Many of these patients are accustomed to hawking up in the morning more or less thick, sometimes blood stained mucus; they catch cold easily, but complain only of the attendant, persisting cough, which renders them apprehensive of serious thoracic complications. In other coughing patients, an atrophic rhinitis is the primary factor. Often the mere external conformation of the nose should suggest, to the alert physician, morbid conditions within, such as excessive narrowness of the cavities or a deviated septum. In most chronic nasal cases the voice shows the peculiar change of quality termed rhinolalia, due to altered resonance in the nasal cavities, together with an habitual cough, either dry and paroxysmal, or loose and productive, and even at times associated with hemoptysis, due to varicosities of the tongue or trachea, the result of the chronic inflammation of the mucosæ kept up by the nasal condition. Catarrhal laryngitis and bronchitis, indeed, frequently accompany cough of nasal origin. At times there are physical signs of bronchitis restricted to one portion of a lung, often mistaken for tuberculous involvement unless due attention is paid to accurate percussion, x ray examination, and sputum examination. Fever, dyspnea, and pain may coexist. A frequent source of error is the diminished breath sounds at the apices due to the imperfect filling of the lungs owing to chronic nasal disease. The importance of nasal conditions, especially adenoids, in causing cough in children is clearly realized by all, but not so in adults. When the existence of nasal trouble has been detected by the general practitioner, the case should be referred to the specialist for more precise diagnosis and treatment. The rapidity with which an obstinate cough will disappear upon removal of a hypertrophied turbinate or spur or arrest of a chronic sinusitis is astonishing. Rhinologists themselves fail to realize the pronounced influence exerted by these affections on the bronchial tree.

A New Clinical Hemoglobinometer. — H. Haessler and H. S. Newcomer (*Archives of Internal Medicine,* June, 1916) have modified the Sahli hemoglobinometer in such a way as to secure the advantage of comparison of the specimen under examination with an interrupted series of standards, thus facilitating exact estimate of the hemoglobin value of the specimen. Instead of the single standard tube, eleven graded comparison tubes are used, the densities of which correspond to readings varying by ten from ten per cent. to 110 per cent. hemoglobin. The standard fluids are made up according to Sahli's specifications, the tube marked 100 per cent. containing in 10,000 c. c. the equivalent in hematin hydrochloride of 17.2 grams of hemoglobin, which is the standard amount of hemoglobin in 100 c. c. of blood. The details of the preparation of the several standard tubes are given. Beads are enclosed in the tubes so that the contained fluid can easily be rendered homogeneous by shaking. The tubes are arranged in regular series in a rack, with intervals such that the comparison tube can be fitted in between any two of them. Dilution of the patient's blood is well done with the ordinary red blood pipette, decinormal hydrochloric acid being used as diluting fluid. Diluted one in 100 the blood is dropped into the comparison chamber. On placing the tube at different points in the rack the point at which the progressive shading in the series of tubes becomes harmonious is readily found, and the amount of deviation from one of the multiples often estimated. The readings can be made in any light and with certainty to a multiple of five, that is, to within 2.5 of the correct percentage.

Röntgenological Shadows Associated with Subdeltoid Bursitis.—John McWilliams Berry (*American Journal of Orthopedic Surgery,* August, 1916) reports four cases of subdeltoid bursitis, all of which, upon x ray examination, showed a shadow in the bursal region which disappeared under simple treatment. He also reports two other similar cases, one over the greater trochanter of the femur, the other at the knee joint, and observes that the deposit may appear quickly after a trauma and disappear in a short time.

Arthritis deformans.—E. Senger (*Berlin. klin. Woch.,* March 6, 1916) shows that so called arthritis deformans is probably not an entity, but is rather a group of anatomical changes which may arise from many different causes. Among cases presenting the typical clinical and röntgenological pictures of arthritis deformans are many due to trauma, to syphilis, to gonorrhea, and to other infections. A considerable proportion of such cases is curable and it is, therefore, of prime importance to discover the cause in any given case before considering it as incurable.

Case of Fracture of the Odontoid Process of the Axis.—Prescott LeBreton (*American Journal of Orthopedic Surgery,* September, 1916) reports the case of a man, twenty-two years of age, who was admitted to the hospital two weeks following injury with a fracture at the base of the odontoid process of the axis. The patient showed deformity; fixation of the head slightly to the left and with chin up; slow pulse; and complained of constant pain and local tenderness. The patient reduced the fracture himself one night by twisting his head straight. Recovery with good function followed.

An Early Type of Gallbladder Disease.—Russell S. Fowler (*Archives of Diagnosis,* July, 1916) lays stress on a condition characterized symptomatically by an occasional brief colicky cramp in the epigastrium, sometimes associated with tenderness over the gallbladder—caused by temporary blocking of its neck—and at times radiating to the back. If passage of a small stone through the ducts is taking place, there is more severe pain and sometimes temporary jaundice. The actual condition of the gallbladder in these cases (cholecystitis catarrhalis subacuta) is merely one of infiltration with leucocytes, without any gross pathological change. The organ is not abnormally distended. Careful palpation may show small calculi but is not trustworthy. The diagnosis is verified only by opening the gallbladder and inspection of its interior by one who has already seen the condition. Enlargement of the gland of the cystic duct is sometimes found. When the attacks of pain are frequent—every few months—whether they are disabling or not, the operation is to be advised in this class of cases. If all stones present can be readily removed without trauma and there is absolutely no gross change in the mucous membrane, cholecystostomy is in order; otherwise, cholecystectomy. Fowler prefers the latter operation, believing these cases to represent the initial stage of the ordinary calculous gallbladder disease. Thus performed early, the operation will obviate a great deal of the customary discomfort and the restrictions as to mode of life in cholelithiasis.

Visceroptosis from the Radiographer's Viewpoint.—Fred H. Baetjer (*American Journal of Orthopedic Surgery,* September, 1916) believes that the condition is incidental and has little or no bearing upon the development of spinal lesions.

Anatomy of Visceroptosis.—W. E. Sullivan (*American Journal of Orthopedic Surgery,* September, 1916) believes that the support of the abdominal viscera is dependent upon the shape of the abdominal cavity and the condition of the muscles, ligaments, vessels, and of the viscera themselves.

Role of Visceroptosis in the Etiology of Arthritis deformans.—David Silver (*American Journal of Orthopedic Surgery,* September, 1916), admitting that the intestinal tract is one of the routes of entrance of the infecting organism of arthritis deformans, points out that then the danger of contracting the disease is greater if visceroptosis develops with possible stasis and interference with glandular secretions.

Medical Aspects of Visceroptosis. — Henry Wald Bettmann (*American Journal of Orthopedic Surgery,* September, 1916) considers the acquired type of visceroptosis the only true clinical type, and the so called congenital form could be better named habitus asthenicus, as the malposition of the abdominal organs is but one defect of the many. He condemns the "mechanistic conception of disease" and states that every case is an individual study.

Visceroptosis as a Variation from an Anatomical Norm.—Robert B. Osgood (*American Journal of Orthopedic Surgery,* September, 1916) presents a general discussion with historical, anatomical, physiological, röntgenological, clinical, surgical and orthopedic evidence. He is certain that visceroptosis may be present without symptoms and that it is incidental. He thinks it most difficult to restore a patient to the normal, but it is quite possible in many cases to relieve the symptoms.

Prevalence of Chronic Mouth Infections.—Frederick B. Moorehead (*Jour. A. M. A.,* Sept. 16, 1916) reports 700 cases subjected to careful examination to determine the incidence of chronic alveolar abscess occurring about the apices of the teeth. This form of chronic infection was found to occur in from sixty-nine to eighty-nine per cent., depending upon the class of patients. Thus in a large group of hospital cases of chronic arthritis abscesses were found in eighty-nine per cent.; in a second group, containing no cases of arthritis, the incidence of abscess was seventy-four per cent., and in a group of private cases it was sixty-nine per cent. It was only in adults that these abscesses were found of much importance as a source of systemic or metastatic infection, since in earlier life the tonsils far outweighed the teeth as portals of infection. The age period from twenty-five to sixty years was found to be that of greatest danger from the teeth, but even edentulous jaws harbored sealed abscesses where the teeth had been. A majority of the abscesses were found about teeth previously subjected to treatment of the root canals. The importance of proper root canal treatment is obvious. The most satisfactory means of diagnosis, as well as of determining the extent of tissue destruction, is by x ray examination.

Proceedings of National and Local Societies

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Third Annual Meeting, Held at Washington, D. C., May 11 and 12, 1916.

The President, Dr. J. W. Jobling, of Nashville, Tenn., in the Chair.

(*Continued from page 670.*)

Localization of a Streptococcus in Animals from a Case of Recurring Neuritis and Myositis (*Continued.*)—Dr. Edward C. Rosenow, of Rochester, Minn., pointed out that the cavity in the tooth, judging from the character of the filling and the bacterial flora, was quite unable to heal for mechanical reasons. This appeared to afford a culture medium for the growth of the streptococcus. From stimulation of the defensive mechanism in the patient during the attacks active growth appeared to be held in check and the symptoms disappeared in consequence, only to reappear later from recurrence of active growth and localization of the streptococci when the immunity was low. The improvement in the patient since the extraction of the tooth appeared to be due to the removal of this focus and to prolonged artificial stimulation of the defensive mechanism by means of autogenous vaccines, which, it was hoped, would lead to the destruction of all the streptococci in the muscle and dental nerves, and result in the ultimate recovery of the patient. The isolation of the streptococcus from so many places would probably make recovery difficult.

Dr. George W. Wheeler, of New York, stated that streptococci were usually classified, according to their effects on blood agar plates, as hemolytic or nonhemolytic. The nonhemolytic varieties had been further classified according to their fermentation reactions with different sugars, but wide variations were found by these methods, due to variations in the organisms themselves and to chemical changes in the sugars during the process of sterilizing the media. None of these differential methods gave any clue as to what the streptococci would do when they were in the animal body.

Doctor Rosenow's work began where these methods ended; his original idea being that organisms growing in the human body had certain delicate, transient, biological activities which were soon lost when the bacteria were grown on artificial media. In order to demonstrate these activities, the organism must be transferred from the human body to animals, the original culture from the patient being used for inoculation, and the lesions in these animals studied. Animal inoculation with recently isolated strains, grown under certain definite conditions, showed that the lesions produced in the animals were often similar to those in the patient from whom the organisms had been obtained. Whether this was a mere coincidence or was due to a specific affinity which the organisms had for certain tissues, could be determined when a great deal of experimental evidence of this kind had been presented and carefully examined. Control animals were necessary in order to rule out the possibility of the lesions being spontaneous. The speaker said that in work which he had done, according to the methods described by Rosenow, with streptococci from nine cases of arthritis and endocarditis, lesions in joints were found in the animals in seventy-five per cent.; in muscles, sixty-three per cent.; in the heart, fifty-five per cent.; while in other organs lesions were relatively infrequent; appendix, six per cent.; stomach, eleven per cent.; brain and cord, six per cent.

Dr. Joseph Head, of Philadelphia, observed that the mouth was such an excellent culture oven that any germ might occasionally be found in it. Obviously only a small percentage of the germs introduced into the mouth found lodgment within the tissues and became pathogenic. In making his bacterial examinations for autogenous vaccines, he cauterized the surface of the infected spot with an electric cautery until it turned slightly white, and then extracted blood from the tissues through the cauterized spot with a hot platinum spear. Out of 400 such examinations he found streptococci in ninety-five per cent., Bacillus influenzæ and Micrococcus catarrhalis in about seventy-five per cent., while the pneumococcus appeared in about twenty-five per cent. The pus taken from a pus pocket in one case had eighty per cent. of Pneumococcus mucosus in the material; the rest contained streptococci, Bacilli influenzæ, and Micrococci catarrhales. After giving ten doses of a vaccine made of these, the mouth healed and the pneumococcus was not discovered again in the various pockets. The work of Rosenow concerning the pulp infection from the circulation was valuable because it gave a quietus to those who thought it unwise to take out a live infected nerve when it was evident to all thoughtful observers that a living pulp might be a great source of systemic disease.

Dr. Oscar Berghausen, of Cincinnati, wished to congratulate Doctor Rosenow upon the work he had done. Last summer he had had the opportunity of seeing a case of generalized herpes of the extremities and of the lips, and he had isolated a definite organism, Streptococcus pyogenes. In such cases there was a bad prognosis, most of them being fatal inside of one or two years. In this case, an autogenous vaccine was administered and was followed by recovery in about two months. The patient was relieved for eight months, when a slight recurrence took place.

Dr. E. C. Rosenow, of Rochester, Minn., preferred using the terms "green producing" and "hemolyzing streptococci" instead of Streptococcus viridans and Streptococcus hæmolyticus, because there appeared to be numerous variants of each strain, particularly of the former, and because one might be transmuted into the other. He appreciated highly the splendid work of Cole and Dochez and their associates at the Rockefeller Institute, on the classification and immunological observations on pneumococci; pneumococci showed in his hands, as with these worker's fixed characters when grown in the usual way, but when pneumococci were placed under special environment they lost their specific glutinating reactions and took on new features; they might even be converted into hemolyzing streptococci.

The demonstration of living streptococci in the muscles in the case reported during the quiescent interval was of importance, and in accord with similar findings in ulcer of the stomach, chronic rheumatism, cholecystitis, etc., because it showed that not too much should be expected from the removal of the primary focus in diseases which were characterized by exacerbations and quiescent intervals, and served to explain the nature of the exacerbations and remissions.

The Epidemiology of Lobar Pneumonia.—Dr. A. R. Dochez, of New York, presented a study of pneumococci isolated from patients with lobar pneumonia which had shown that the majority of these organisms fell into definite biological groups. In view of these constant differential characters of the pneumococcus, it had been deemed advisable to study the pneumococci occurring in normal mouths. It had been commonly assumed that infection in pneumonia was autogenic and occurred from invasion of the lungs by pneumococci habitually carried in the mouth. If this was so, they should find the same types in the normal mouths as occurred during disease. Examination of a series of normal individuals showed this not to be the case. The two types of pneumococcus responsible for the majority of the severe cases of lobar pneumonia were not found in the normal healthy mouth, except in instances where the patient harboring the organism had been in intimate association with lobar pneumonia. When such a condition existed the organism found in the normal mouth invariably corresponded in type to that found in the lung of the patient. These studies made it probable that the majority of the cases of pneumonia depended either on direct or indirect contact with a previous case.

Specificity of Pneumococcus Types; Fatal Infection Due to One Type in a Horse Producing an Antiserum of High Titre to Another Type.—Dr. A. P. Hitchens, Dr. E. K. Tingley, and Dr. George Hansen, of Glenolden, Pa., said that the horse in question had been under treatment for several months with a pneumococcus corresponding in serological reactions with Neufeld type 1. The last injection was given about one month before death and the bleeding subsequent to this showed that the potency of the serum of this horse was such that 0.00001 c. c. of the serum would protect a mouse against a fatal dose of pneumococci of the homologous type.

Blood culture three days before the death of the horse showed the presence of a pneumococcus not corresponding in type with that with which the animal had been injected. The pneumococcus recovered was still under examination. It did not correspond with type 2 and was not the mucosus. It did, however, bear strong resemblance to some strains of pneumococci obtained from equine infections. Autopsy of the animal showed pulmonary consolidation and inflammation of the mucous membranes lining the respiratory passages.

Dr. Edward B. Vedder, Captain M. C., of Washington, D. C., was unable to understand why he had been asked to discuss this paper, except upon the theory that, never having done any work with pneumonia, he would be unhampered by the limitations necessarily imposed by exact knowledge. Those who had worked with a subject were badly handicapped. They would like to make positive and definite statements, but the wider their work had been, the harder become such categorical statements, since they must always be qualified by the observation of stubborn facts that apparently ignored the hypothesis that was supposed to govern them. They had known all about pneumonia for a number of years. They learned a long time ago that many, perhaps a large proportion of normal persons carried the pneumococcus in the sputum. Of course it was plain that if they became suddenly chilled, or their resistance was greatly lowered, that they would manifest pneumonia. This was a very comfortable theory. Pneumonia was nobody's fault, and they did not have to do anything except die when it came their turn. Now Doctor Dochez and his associates came along and told them that this was wrong. If Doctor Dochez was right, what were they to do? Some of them had begun already to make antipneumococcus serums one, two, and three, for treatment. But this method of treatment seemed a little discouraging in view of the fact that it would be a long time before the practising physician would recognize Pneumococcus No. 1 from Pneumococcus No. 2 when he met it on the street. This was a difficulty which could be obviated by cooperation with the laboratory. But this entailed delay, and if one or two days elapsed while the diagnosis was being made, they could not expect the results from the serum to be very striking. Perhaps a polyvalent serum was the answer.

In any case, prevention was much more important than cure, and Doctor Dochez's work opened up a most hopeful vista. It meant that every case of pneumonia was due to and might be traced directly or indirectly to a previous case of pneumonia. From a sanitary point of view pneumonia must be treated just like any other infectious disease in which the infecting agent was transmitted by the buccal secretions of those affected, and the present widespread prevalence of pneumonia was probably due directly to their present policy of *laissez faire*. Time was lacking to go into the details of sanitary measures which should be taken for the prevention of pneumonia. But when the various boards of health came to life they might expect to see something like the following measures enforced: 1. Notification of all cases of pneumonia. 2. Prompt visitation by a health officer, collection of specimens, and laboratory diagnosis of the type of organism present; *a*, in the patient; *b*, in the contacts. 3. Isolation of the patient and of any contacts who harbored the type of pneumococcus found in the patient. 4. A negative culture requirement before the patient or carriers were permitted to mingle with the community. This might appear rather stringent to some of them at first thought, but when they remembered the great mortality of pneumonia it was evident that if there was any chance of limiting its incidence they must take advantage of it.

Dr. Judson Daland, of Philadelphia, desired to express his personal thanks to Doctor Dochez for demonstrating so clearly that the ordinary pneumococci found in the mouth were not responsible for pneumonia, and therefore the disease should be considered still to be usually transmitted by contact, and to demand isolation. Doctor Rosenow's contribution was along the lines with which he had made them familiar during the past several years. In the case reported, however, he had shown by animal experimentation that streptococci recovered from an infected root of a tooth were able to produce inflammation of the dental pulp with hemorrhages; and from this pulp he had recovered living streptococci. The evidence he presented proved that in some cases infection of the pulp of a root, which could easily evolve into periapical abscess, might be hematogenous in origin. Hitherto, most observers had believed that infected root canals and periapical abscesses were chiefly due to accidental infection when these canals were opened in consequence of caries, or when they were emptied of their contents, and that periapical abscesses also occurred by contiguity, i. e., periapical abscess in one root infected another in the immediate neighborhood. This question was of unusual importance because of the proved relationship of periapical abscess to many systemic diseases, and lay open to suspicion, not only the roots of capped or devitalized teeth, but also teeth that had shown no caries. In such cases, however, they naturally expected that pain in the infected root would lead to diagnosis of acute infection by way of the blood; and that such a history of pain in a root made the root a source of infection. Naturally, the value of these observations would be increased by confirmatory evidence; as this case had been carefully observed by Doctor Rosenow and the cultural and experimental results had been obtained by him, they were worthy of their acceptance because of the experience which he had had with such questions in many parts of the body, an experience which now extended over several years.

Dr. E. C. L. MILLER, of Richmond, Virginia, stated that Dr. Frederick M. Hanes, of Richmond, had been doing some work with pneumonia along these lines. He had kept mice and diagnostic serums on hand and had treated some patients with the curative serums. However valuable this work might be from a scientific and experimental standpoint it was evidently not practical. It could be done only by an expert. He wished to inquire what had been done to make it available for the general practitioner.

Typhoid Fever.—Dr. A. L. GARBAT, of New York, said that their experiments with reference to the complement fixation test after prophylactic typhoid vaccination might be summarized by stating that a positive complement fixation test after prophylactic typhoid immunization was not a regular occurrence, as it was during or after typhoid fever. This point might be of aid in deciding for or against the diagnosis of typhoid fever in an inoculated individual still having a positive Widal and ill with a suspicious fever and negative blood culture. A positive complement fixation test was obtained usually after three injections with a polyvalent vaccine; two injections with this same vaccine or three injections with the single strain vaccine (Rawlings) gave hardly any complement fixation.

On account of the many difficulties in the way of stool examinations in typhoid fever, they had attempted direct examination of the bile removed from the duodenum. This had the advantage of avoiding the great number of contaminating bacteria in the stool; no special media were essential and the bacteria were present in great numbers. They had found that cultures of the duodenal contents (bile) removed by means of the duodenal tube seemed to be a more trustworthy and simpler method for the detection of typhoid bacilli than stool examinations. The serum from convalescent typhoid patients had been employed with distinct benefit in three very severe acute typhoid cases.

Dr. A. H. SINCLAIR, of Honolulu, Hawaii, was prone to believe that after the use of the typhoid vaccine, when typhoid fever had occurred, there must have been some fault either with the technic or with the vaccine. He did not believe that any patient who gave a positive Widal after typhoid could again contract the disease for many years thereafter. The isolation of the bacillus from the blood or from the stools was certainly superior in cases recommended for the applicability of the complement fixation test.

Dr. A. ZINGHER, of New York, had used at the Willard Parker Hospital, during the past eighteen months, intramuscular injections of fresh whole blood obtained from convalescent scarlet fever patients. The blood was either citrated or noncitrated. Distinct beneficial effects were noted in toxic cases after injections of blood obtained from patients who were in the third to fourth weeks of convalescence. In a recent case, a very striking improvement was seen from 300 c. c. of fresh blood obtained from a three months' convalescent donor. If it should prove that convalescent blood had therapeutic value even as late as six months after the disease, then the opportunity for employing the treatment would become much greater. Convalescent blood could be used not only in diseases that resulted in a more or less permanent immunity, like scarlet fever, typhoid, and measles, but also in diseases followed by only a short protection, like erysipelas and pneumonia. The blood in these cases should be obtained from donors not more than two to three weeks convalescent. A striking recovery followed in a six year old child suffering from a severe attack of erysipelas, whom he had injected with 210 c. c. of fresh convalescent blood (seven days).

He had used intramuscular injections of normal blood in late septic cases of scarlet fever. In these the toxemia of scarlet fever was no more in evidence. Injections of normal blood, which could be readily obtained from relatives, were given in quantities of 120 to 240 c. c., repeated every four days. Such blood was not given for any specific action, but for its general stimulating and nutritive value, which helped to tide the patient over a critical period.

Dr. WILLIAM EGBERT ROBERTSON, of Philadelphia, had treated a number of patients in the wards of the Episcopal Hospital by using subcutaneously serum obtained from convalescent typhoid and pneumonia patients, which was then administered to patients at that time ill with the respective diseases. Fifty c. c. of the serum was given as a dose and repeated several times, but the results did not warrant continuance. Much better results followed in erysipelas, where, after raising blisters, he had injected the serum thus obtained directly into the vein of the same patient or of other patients with erysipelas. Some of these serums were inactivated, while others were not, but as far as typhoid and pneumonia were concerned, no apparent benefit resulted. Doctor Robertson asked the reader of the paper whether his patients were fed by the high calory method, or whether milk alone was permitted, as these latter were virtually starvation cases, since the majority refused to take milk in any amount. Doctor Robertson said that it had been his experience with a large number of cases carefully studied bacteriologically by Dr. C. Y. White, pathologist to the Episcopal Hospital, that the well fed patients proved very exceptionally to be ultimate typhoid carriers, while the virtually starved patients, or those fed on milk, frequently became carriers. It was nothing more than an assumption, but it seemed logical to believe that those well fed acquired a greater resistance and a higher antibody formation.

Dr. A. L. GARBAT, of New York, said that all the cases at the German Hospital were placed upon the high calory method of feeding, and the physicians had practically abandoned the starvation treatment. Whether typhoid carriers were more frequently those with the high calory value or those under the so called starvation treatment, he did not know.

Standardization of Antimeningitis Serum by Animal Protection Tests.—Dr. GEORGE H. ROBINSON, of Glenolden, Pa., stated that variable ability to produce agglutinins and complement fixing bodies had been noted among horses under antimeningococcic treatment. An animal protection test seemed desirable as a measure of the potency of the serum. A sixteen hour old culture of meningococci on serum dextrose agar was necessary for the test. Suspended in fresh guineapig serum, diluted three times with 0.85 per cent. salt solution, most strains were virulent for white mice. If antimeningococcic serum was injected two hours previous to the injection of the cocci, considerable protective power could be demonstrated. The amount of serum used had been invariably 0.5 c. c. Culture was used in 0.5, 0.25, 0.12, etc., amounts.

By this method the amount of protection afforded by different serums very closely paralleled the extent of treatment the horses had received. Agglutinating and complement fixing power showed no correlation with protective power. The test was specific in that different strains of meningococci could be distinguished, as well as the gonococcus. As a routine measure all freshly isolated strains of meningococci were tested with a polyvalent serum and those against which the serum did not protect were incorporated into the treatment of the horses. The polyvalency of antimeningitis serum was of extreme importance.

If the amount of immune serum necessary to protect against one m. l. d. of living culture was considered as a unit, a uniform standardization of antimeningitis serum was obtained. Such a standard meant more to the physician and was a better test of the therapeutic efficiency of a serum than tests *in vitro*.

Dr. HAROLD L. AMOSS, of New York, believed that a discussion of Doctor Robinson's paper was difficult because of the new method used. One of the most important features of any discussion was the influence toward the standardization of the methods employed. Doctor Robinson had used for his experiments a very irregular strain (Isadore) instead of the accepted typical parameningococcus. The speaker was glad that the subject of meningitis had been reopened, because it was evident that there was much to be learned about the preparation and standardization of antimeningitis serum. Therapeutic application had been kept in mind at the Rockefeller Institute, where with Dr. Martha Wollstein, he had been engaged in the preparation of a polyvalent serum. In other words, particular care had been exercised to corroborate their laboratory tests with the therapeutic tests. Animal protection tests had been found to be the least specific of all methods of standardization. He was very much interested in Doctor Robinson's clear cut results in protection tests obtained by diluting the suspension of living meningococci with complement. Recently he had made some protection tests, using young guineapigs, and had found that a univalent antiparameningococcus serum would protect young guineapigs against one infective dose of homologous parameningococcus, and against an irregular strain, though more serum was required for the latter. The same amount of serum did not protect the animal against a lethal dose of a typical or normal meningococcus. He referred to this experiment to show that in his experience the protection tests roughly paralleled the agglutination tests. The reaction and opsonization were not as specific as the agglutination reaction. In human cases of meningitis, though treated with antimeningitis serum, the meningococci persisted in the spinal fluid. The strains of meningococcus isolated from these cases were not agglutinated in the serum used. When a more polyvalent serum, and one which agglutinated the particular strain, was used in treatment, the organisms disappeared, the fever abated, and recovery was uneventful. As agglutination tests paralleled other tests and were more specific than the latter, agglutination should be used in the standardization of antimeningococcic serum. The power to agglutinate in high dilution all known varieties of the meningococcus gave them the best idea of the value of antimeningitis serum.

Dr. JAMES W. JOBLING, of the Vanderbilt School of Medicine, Nashville, Tenn., recalled that the existence of parameningococcus strains was not recognized when they began the preparation of the antimeningococcus serum. They realized, however, the necessity of using many strains of organisms. Their results with the complement fixation method were unsatisfactory, therefore it was discarded. According to the work done by Amoss, it was possible that some of these results were due to the fact that they were using strains of the parameningococcus. They were not convinced that the death of guineapigs receiving intraperitoneal injections was due to infection. The clinical picture and the post mortem findings suggested rather an intoxication. Adopting this idea they had attempted to isolate the toxin and use it to standardize the serum, but the results were so untrustworthy that this method was also discarded.

Dr. Harold L. Amoss, of New York, again referred to the meningitis problem that confronted them. An important point was the great value of time in the administration of antimeningitis serum. It had been observed that many hospitals were casual in their specific treatment of acute infections. He believed that the serologists could assist a great deal in this matter by putting forth every effort to make an early diagnosis, by procuring serum immediately, and by delicately impressing upon clinicians the extreme value of early administration.

Clinical Significance of the Wassermann Test.—Dr. Arthur F. Coca, of New York, said they all knew that the Wassermann reaction was a biochemical test; i. e., it was performed with reagents whose chemical constitution was practically unknown, some of them being relatively very unstable bodies. The Wassermann "mixture" was subject to considerable variations, depending upon the particular method or modification of the original technic used and also upon the manner of standardizing the different reagents, as well as upon the quality of the antigen preparation available. On account of the above mentioned technical variations, as well as on account of factors heretofore uncontrolled, there existed a considerable want of uniformity in the results of the Wassermann test. There had yet to be recorded a series of parallel tests carried out by different observers on the same serums in which the results agreed throughout.

As has been pointed out by Uhle and MacKinney, the disagreements were more common in just the cases in which the need of trustworthy information was greatest. The results of the Wassermann test were further vitiated by the fact that it was being performed by an ever widening circle of superficially informed and uncontrolled "technicians." It had been clearly demonstrated that the positive Wassermann reaction was not specific for syphilis. It occurred not only with some regularity in other conditions, but also sporadically in many others. Analysis of its relations to the therapeutics of syphilis showed that in the great majority of instances the result of the test did not influence the course of specific treatment.

The use of the Wassermann test as a legal criterion of eligibility for marriage must be unconditionally opposed.

Analysis of Cases Changing to Wassermann Positive After a Negative Period of Twelve Months or Over.—Dr. Louis A. Levison, of Toledo, had collected sixteen cases fulfilling the conditions mentioned in the title. An analysis of the results of the Wassermann tests in these cases showed that a negative Wassermann, even though obtained over a considerable period of time, could not be considered as a criterion of cure. It was, however, the best index at the present time of the patient's condition, when considered in conjunction with the absence of clinical manifestations. Carefully considered cases over a much longer period of time would be necessary to determine the final position of the Wassermann as a prognostic agent. Treatment of whatever nature might help to keep the patient Wassermann negative, only to relapse when this was discontinued. In this series all the cases were late or advanced when competent treatment was supplied. They received mercury either in small and inefficient amounts, some not at all, at the time when treatment could have been of value. Many cases coming under his observation which had been treated intensively from the very start with salvarsan and mercurial injections, had gone over one year with negative Wassermanns, and this group, while not considered here, stood in sharp contrast to this series of late cases.

(To be continued.)

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Textbook of Human Physiology. Including a Section on Physiologic Apparatus. By Albert P. Brubaker, A. M., M. D., Professor of Physiology and Medical Jurisprudence in the Jefferson Medical College; Formerly Professor of Physiology in the Pennsylvania College of Dental Surgery, etc. Fifth Edition. Revised and Enlarged. With One Colored Plate and 359 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xii-776. (Price, $3.)

This well known textbook of physiology, now in its fifth edition, has been subjected to careful revision and in many sections has been entirely rewritten. Among the subjects which have been added, enlarged, or revised, are the metabolism of the food principles; carbohydrate metabolism; the electric currents of the heart and their graphic registration by the electrocardiogram; animal heat; internal secretion; localization of functions in the cerebral cortex; and the autonomic nerve system. In its new form the book should be of added service to the medical student and practitioner. The publishers have also contributed to the success of the work by the excellence of the technical details of printing and binding.

The Mortality from Cancer Throughout the World. By Frederick L. Hoffman, LL.D., F. S. S., F. A. S. A., Statistician, The Prudential Insurance Company of America; Chairman, Committee on Statistics, American Society for the Control of Cancer, etc. Newark, N. J.: The Prudential Press, 1915. Pp. xv-826.

The able statistician, Frederick L. Hoffman, LL.D., has presented in this notable and comprehensive volume the available statistics of mortality from cancer. He treats of increase in cancer, its mortality in different occupations, its importance as affecting life insurance, and of the geographical incidence of cancer throughout the world, its frequency in American States and cities, as well as in foreign countries. He concludes with general observations on the cancer problem. The book contains 554 pages of statistical matter. It presents a full bibliography of writings relating to cancer. The author concludes that the menace of cancer throughout the civilized world is much more serious than has been generally assumed to be the case; that the mortality from cancer is increasing at a more or less alarming rate, and that this increase implies most serious consequences, present and future; that practically all forms of cancer are on the increase, that cancer frequently decreases with diminishing distances from the equator; and that even a very low cancer death rate is not necessarily evidence of the intrinsic untrustworthiness of the returns. With regard to heredity and family history, some additional observations reemphasize earlier conclusions that the available evidence in this respect is in the negative. The evidence as regards a possible parasitical origin of cancer is held to be inconclusive. The book is of the highest value from the statistical standpoint, for it would be constitutionally impossible for the author to issue any publication lacking in statistical accuracy. It is so inclusive and painstaking that it becomes at once an authoritative reference book for students of the cancer problem. We are constrained to add that from the point of view of the pathologist and histologist, it is a fundamental anachronism, in any serious discussion of disease, to retain in use such a vague word as cancer. Even the author admits the absence of a concise definition of the term. He regards cancer as including tumors (*sic*) of all kinds, whether malignant, benign, or ill defined. Cancer thus defined is a term of popular convenience rather than a scientific designation of disease manifestation, and statistics relating to it possess as much value, and as little, as similar statistics of other general pathological states such as inflammation, insanity, rheumatism, indigestion, and the like. Because of the varying and uncertain implications of the term as employed, the statistics are necessarily unconvincing. The psychologist, neurologist, and sociologist will all take exception to the author's casual dismissal of worry and anxiety as etiological factors of malignant neoplasms, especially of the glandular type. Even the author admits the prevalence of neoplastic diseases under conditions of urban tension.

The book is well written, is almost encyclopedic, is characterized by painstaking and accurate research, and has the delightful quality of stimulating the reader to a critical study of the author's point of view, and to a wholsome intellectual opposition to many statements in his interesting pages.

Practical Massage and Corrective Exercises. By HARTVIG NISSEN, President of Posse Normal School of Gymnastics; Superintendent of Hospital Clinics in Massage and Medical Gymnastics, etc. Revised and Enlarged Edition of the Author's Practical Massage in Twenty Lessons, with many additions. With 68 Original Illustrations, Including Several Full Page Halftone Plates. Philadelphia: F. A. Davis Company, 1916. (Price, $1.50.)

This little book of 212 pages is written, as stated in the preface, with the earnest "hope it will be of value to those who wish to learn in a practical way to treat suffering humanity with mechanotherapy." The author has ignored the time honored recognition of the invaluable fact that the underlying and essential principle of successful therapeutics is correct diagnosis. With haphazard diagnosis any skillful treatment is more apt to be misapplied than efficacious. It is rare that a patient is capable of arriving at a correct diagnosis of his own condition, nor is the author, who is not a physician, qualified to reach a sound analytical decision as to the appropriateness of remedial measures.

The necessity for our comment is to be found in many instances. On page 183, under the heading, appendicitis, we find these words: "If these cases had been treated by massage from the first day of the symptoms, I do not hesitate to say that the appendicitis would have been avoided." Again, on page 203: "I claimed that I would cure any 'lumbago' sent me, in from two to six treatments. . . . In less than a week after this I had six lumbago cases sent to me, each of which were cured in two treatments." The natural inquiry of the reader must be, Were these cases lumbago, or only so called?

The consideration of the treatment of the various diseases by mechanotherapeutic measures sounds like the unwarranted statements made by irregular practitioners, except only in the last paragraph of the book. "*Massage should not be used* in any case of high fever, cancer, ulcers, hemorrhages, infectious diseases, or diseases where the inflammatory products have assumed a quality injurious to the system, nor in most skin diseases."

As the author has been lecturer and instructor of massage and Swedish massage at Harvard University summer school for twenty-four years, we are still more astonished at the contents of the last 104 pages of the book, much of which is at variance with the writings of the medical faculty of the university. The first 108 pages devoted to practical massage and Swedish movements are highly commendable.

Interclinical Notes

An American author has recently favored us with the neologism, peripenic; this violates two rules of derivation in two syllables. The perfectly obvious correct form is circumpenile.

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In the double number of the *Outlook* for July 26th, there were sympathetic editorial discussions of the late Elie Metchnikoff, and of Dr. Simon Flexner's opinions on infantile paralysis. There was an admirable portrait of the Rockefeller Institute expert.

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An excellent paper in the *Outlook* for October 4th is A Word about Criminals, written by George S. Dougherty, chief of detectives in New York city. Mr. Dougherty believes that the ex-convict should have a chance to make good in some new job, and states that it would be cheaper to keep him in jail for life than to treat him as we do now. The peculiarities of the different classes of criminals, as set down in this paper, are extremely interesting; early training seems to have more to do with a criminal career than heredity. The ideals of conduct continually held before a child are what determine his future, or at least his attitude toward society.

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One of the poets contributing to the Conning Tower of the *New York Tribune*, recently wrote of swimming in the village creek, and of digging his toes into the "dirt" alongside. The black loam on the bank of a creek is not dirt; on the contrary, nothing could be cleaner or more appropriate in its place. Perhaps we may excuse the young versifier, who lacked a rhyme. Mr. Robert W. Chambers, however, has no excuse whatever for making exactly the same mistake in a short story in the October issue of *Hearst's Magazine*, where he writes of the dirt instead of the earth which made up the walls of the war trenches.

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In *Commerce and Finance* for September 25th, the editor tells a story of the smuggling into China by the Minister of Justice, no less, of half a million dollars' worth of opium; he remarks: "It would not appear from this that the suppression of the opium trade has been so much of a success as it has been declared or that the people have been freed from the habit to the extent supposed." Our readers will recall, perhaps, that we expressed ourselves very much in the same way when, some months ago, an enthusiastic opium prohibitionist declared that millions of Chinese, on the issuing of an edict, had instantly ceased the use of opium.

Meetings of Local Medical Societies

MONDAY, *October 9th.*—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo (annual); Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society (annual).

TUESDAY, *October 10th.*—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Wyoming (annual); Ontario County Medical Society (annual); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Medical Society of the County of Oneida.

WEDNESDAY, *October 11th.*—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Medical Society of the County of Dutchess (annual).

THURSDAY, *October 12th.*—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Medical Society of the County of Alleghany (annual).

Friday, *October 13th.*—New York Academy of Medicine (Section in Otology); Society of Ex-Interns of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Society of Alumni of St. Luke's Hospital; Clinical Society of the German Hospital and Dispensary.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending September 27, 1916:

Fricks, L. D., Surgeon. Relieved at New York and ordered to proceed to Boston, Mass., to assist in the control of poliomyelitis.

Grubbs, S. B., Surgeon. Directed to proceed to Washington, D. C., for conference relative to the transfer of the Boston Quarantine Station to Federal control.

Hommon, H. B., Sanitary Chemist. Directed to proceed to Salem, Va., and places in that vicinity in connection with studies of industrial wastes.

Kempf, Grover A., Assistant Surgeon. Promoted and commissioned a passed assistant surgeon, effective August 16, 1916.

Leake, J. P., Passed Assistant Surgeon. Directed to proceed to Baltimore, Md., to obtain data for studies of poliomyelitis.

Lloyd, B. J., Surgeon. Directed to proceed to Port Townsend, Wash., to assist in bacteriological examination of passengers on ships from Asiatic ports to determine cholera infection.

Lumsden, L. L., Surgeon. Directed to revisit counties in which studies of rural sanitation have been conducted for the purpose of obtaining data.

McLaughlin, Allan J., Surgeon. Granted one year's leave of absence without pay from November 1, 1916.

Neill, M. H., Assistant Surgeon. Granted one month's leave of absence from September 23, 1916.

Phelps, E. B., Professor. Directed to attend the meeting of the American Chemical Society at New York, September 25-28, 1916.

Pierce, C. C., Senior Surgeon. Directed to proceed to El Paso, Tex., to supervise operations for the prevention of the introduction of typhus fever from Mexico.

Ridlon, J. R., Passed Assistant Surgeon. Relieved from duty at New York and directed to proceed to Baltimore, Md., for duty in preventing the spread of poliomyelitis in interstate traffic.

Smith, F. C., Surgeon. Granted twenty-one days' leave of absence from November 1, 1916.

Sydenstricker, Edgar, Public Health Statistician. Directed to proceed to Washington, D. C., for temporary duty in the compilation of data relating to health insurance; granted four days' leave of absence en route.

Sweet, E. A., Surgeon. Directed to proceed to Baltimore, Md., for conference relative to poliomyelitis situation.

Thompson, L. R., Passed Assistant Surgeon. Relieved from duty at New York and ordered to return to station at Cincinati, Ohio; granted one day's leave of absence en route.

Treadway, Walter L., Assistant Surgeon. Granted one day's leave of absence en route to station.

Williams, C. L., Passed Assistant Surgeon. Directed to assist in making bacteriological examinations of steerage passengers from cholera infected ports in the Orient.

Board Convened.

Board of medical officers convened at the marine hospital, Savannah, Ga., October 2, 1916, for the physical examination of an officer of the coast guard for promotion. Detail for the board: Acting Assistant Surgeon A. B. Cleborne, chairman; Acting Assistant Surgeon L. W. Shaw, recorder.

Births, Marriages, and Deaths

Married.

Boyden-Brix.—In Omaha, Neb., on Wednesday, September 20th, Dr. Henry B. Boyden, of Grand Island, Neb., and Miss Eve Brix.

Dryfus-Ullman.—In New Haven, Conn., on Wednesday, September 20th, Dr. Milton L. Dryfus and Miss Minna Ullman.

Fetter-Mayo.—In Ashland, Ky., on Saturday, September 23rd, Dr. Samuel Pritchard Fetter, of Portsmouth, Ohio, and Mrs. John Calhoun C. Mayo.

Grace-Thomas.—In Burlington, Vt., on Tuesday, September 26th, Dr. Edward S. Grace, of New Britain, Conn., and Miss Isabella Thomas.

Powers-Jordan.—In Boston, Mass., on Wednesday, October 4th, Dr. Edward P. Powers, of Roxbury, Mass., and Miss Alice R. Jordan.

Robbins-Lynch.—In Boston, Mass., on Thursday, September 21st, Dr. Edmund H. Robbins, of Manchester, N. H., and Miss Mary Helena Lynch.

Savage-Eddy.—In New London, Conn., on Monday, September 25th, Dr. C. Grant Savage, of Westerly, R. I., and Miss Caroline May Eddy.

Sullivan-McGuire.—In Tiverton, R. I., on Monday, September 18th, Dr. James E. Sullivan, of Providence, R. I., and Miss Laura N. McGuire.

Williams-Tougas.—In Agawam, Mass., on Wednesday, September 20th, Dr. Abram C. Williams, of Springfield, Mass., and Miss Martha M. Tougas.

Died.

Adcock.—In Hickman Mills, Mo., on Thursday, September 21st, Dr. D. Claude Adcock, of Warrensburg, aged thirty-six years.

Biddle.—In Islesboro, Me., on Monday, September 18th, Dr. Alexander Williams Biddle, aged sixty-five years.

Carswell.—In Jacksonville, Fla., on Thursday, September 14th, Dr. Samuel T. Carswell, aged thirty-eight years.

Everhart.—In Baltimore, Md., on Sunday, September 17th, Dr. George Hauer Everhart, aged forty-nine years.

Gudden.—In Oshkosh, Wis., on Friday, September 15th, Dr. Bernard C. Gudden, aged fifty-nine years.

Hanscom.—In Somerville, Mass., on Wednesday, September 20th, Dr. Sanford Hanscom, aged seventy-five years.

Hibbard.—In Rome, N. Y., on Sunday, September 17th, Dr. Gilbert C. Hibbard, aged eighty-one years.

Kephart.—In Cresson, Pa., on Monday, September 18th, Dr. Thomas A. C. Kephart, of Altoona, aged forty-seven years.

McLeod.—In Milwaukee, Wis., on Thursday, September 21st, Dr. John Alexander McLeod, aged sixty years.

McNamara.—In Denver, Col., on Tuesday, September 19th, Dr. John W. McNamara, aged thirty-nine years.

Miller.—In Jordansville, N. Y., on Thursday, September 28th, Dr. Adam Miller, aged ninety-eight years.

O'Reilly.—In Philadelphia, Pa., on Monday, September 18th, Dr. Thomas B. O'Reilly, aged forty-seven years.

Peters.—In Harrisburg, Pa., on Tuesday, September 19th, Dr. William C. Peters, aged fifty-seven years.

Poindexter.—In Prairie Home, Mo., on Monday, September 18th, Dr. John W. Poindexter, aged sixty-five years.

Rogers.—In Atlanta, Ga., on Friday, September 15th, Dr. William L. Rogers, aged sixty-three years.

Rubin.—In Kansas City, Mo., on Tuesday, September 19th, Dr. Barney Rubin, of San Bernardino, Cal., aged fifty-six years.

Shearer.—In Sinking Spring, Pa., on Sunday, September 24th, Dr. James Y. Shearer, aged eighty years.

Strock.—In Dyersville, Iowa, on Saturday, September 16th, Dr. David Strock, aged seventy-five years.

Thompson.—In Weber, Mass., on Saturday, September 16th, Dr. John J. Thompson, aged fifty-eight years.

Van Wert.—In New Castle, Pa., on Monday, September 18th, Dr. Floyd L. Van Wert.

Webster.—In Dayton, Ohio, on Thursday, September 21st, Dr. Frank Webster, aged sixty-two years.

Wilson.—In Bethlehem, Pa., on Tuesday, September 12th, Dr. John H. Wilson, aged eighty years.

Woofter.—In Weston, W. Va., on Thursday, September 21st, Dr. Adoniram J. Woofter, aged sixty-eight years.

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Original Communications

THE POSTFEBRILE TREATMENT OF ANTERIOR POLIOMYELITIS.*

By Dexter D. Ashley, M. D.,

New York.

In this epidemic there has been a great cry for more efficient treatment, especially in the acute febrile stage, a cry that has been met by frantic efforts upon the part of the medical profession, calling numerous councils of its most eminent members from far and near to catalogue and systematize our armamentarium for combating this dread disease which is robbing our homes of our loved ones or leaving many maimed and crippled for life.

The laity have been led to understand that treatment was of almost no avail in the acute, convalescent, or chronic stages. It is the impression of the writer that there are not a few among the profession who are doubtful as to the efficiency of postfebrile treatment. That many so called remedies are of questionable utility, is widely believed, and rightly so; many results have been unduly accredited to therapeutic agents, which should have been credited to the natural or spontaneous recovery which is to be expected in due time, when aided by good nursing.

On the other hand, there are not a few among us who consider the efficiency of the postfebrile treatment to be surrounded with many questions. Many have very hazy understanding as to when such treatment should begin; of what it should consist at different periods; and how long each treatment should last; with the idea of attaining the greatest restoration of function in the paralyzed parts. We must admit that our armamentarium is limited.

As all are aware, the acute stage is generally conceded to extend from the onset to the subsidence of pain and tenderness, a period varying from four weeks to three months, a time sufficient to establish grave deformity. It is apparent that orthopedic measures should be instituted by the physician in attendance during this period to combat or prevent deformity. To repeat, all too frequently a tendency to deformity is started at this time that is irreparable. In this paper the writer hopes to accentuate three points:

First, the folly of no treatment in the postfebrile stages, while the patient still has pain in the nerve and the muscles are exquisitely tender.

Second, the importance of early treatment to combat deformity.

Third, the harmful effect of too much treatment, in all stages.

From our knowledge of the pathology of the disease we know that during the time immediately after subsidence of the fever, there must be given a time to absorb the hemorrhage and perivascular infiltration which have compressed vessel and nerve cells to the point of occlusion on the one hand and death on the other. It is manifest that irritation of these damaged, diseased nerve cells would be increased by a peripheral irritation or excitement.

This is the time to support the parts—to prevent stretching by weight of bed clothes that would produce drop toe, to prevent stretching of weak muscles and capsular ligaments and nerves by early sitting, standing, or assuming sprawling positions in bed resulting in the drop shoulder and the flail joint, the overextended hand or knee, the flexed knee or thigh, crooked spine, pendulous abdomen, etc.

This is the period of light diet, good nursing, warm dry packs, sheet baths, rest in a bed—firm, not too hard and not sagging—support of paralyzed parts, by nonconstricting braces, plaster of Paris, sand bags, etc.

There must be no massage, no electricity, no muscle training, no strychnine injections to irritate so long as pain and tenderness are in the muscles, pointing to an active disease still existing within the cord. At this stage any such measures are harmful in the extreme, and should not be administered until pain and tenderness have subsided, a time, as said before, varying from four weeks to three months.

In severe paralysis, especially, maintain the patient in the horizontal or inclined position for six months or longer. A Bradford or Whitman frame will permit daily excursions in the open air, when the patient may be turned over and placed at an angle to the horizontal position.

The value of prolonged recumbency is a debatable question. The patient's health should be closely observed and the horizontal or inclined position discontinued if the general health demands it. The writer is of the opinion that the disadvantages of recumbency have been exaggerated, when we consider the marked gain in weight by these patients and other children that demand the recumbent position as in treatment of the tuberculous spine.

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*Read before the Poughkeepsie Medical Academy, September 25, 1916.

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In the convalescent stage beginning seldom before four or six weeks and lasting for six months to two years after the acute attack, more therapeutic measures may be commanded. In severe paralysis the recumbent position is most highly recommended, as it prevents serious deformity of the spine. At this stage, if the patient assumes a position of deformity when standing, he should have a brace to enable him to walk, to support the drop shoulder, the crooked spine, etc.

This brace should support without constricting the partially paralyzed muscles. The narrow bands, denting the weak muscles, are to be condemned. Use a broad webbing or leather cuff. Great care must be exercised through frequent observations to discover and combat any tendency to deformity by application of an efficient brace, shoes or sleeping frame. As in the postfebrile stage, the limbs must not be permitted to dangle or assume positions that will stretch weakened muscles or take on contractures that would necessitate lengthening by surgical procedures to correct the deformity.

Massage at this period offers the greatest encouragement, and this massage should be given daily, or twice a day. The parent is instructed to give the massage. It is the writer's opinion that much harm is done by too long and too vigorous massage. It was the teaching of Professor Lorenz that five minutes of massage to a limb was sufficient. More was harmful, being fatiguing to the patient and breaking down rather than stimulating or building up.

To the mind of the writer the object of massage is to stimulate and bring warmth by inducing an increased blood stream to the part and emptying veins and lymphatics. It is really feeding these muscles, and they should have two meals a day. They will not thrive on one large meal or even three meals a week. The masseur whom you send to give massage to your private patients, generally spends an hour upon these patients—to earn his money—and he does more harm than good by breaking down more than can be built up, leaving the patient almost prostrated by fatigue.

In this connection Doctor Lovett, of Boston, has warned us of the ill effects of fatigue, which must be avoided if we would not harm our patients. He calls attention to the fact that muscles are generally only partially paralyzed, the proportion of partial to complete being nine to one, and these are likely to be *permanently injured* by fatigue, an eventuality that should be carefully guarded against in administering massage.

Heat is another therapeutic remedy easily applied and should accompany the bath once a day. For the same reason as massage, it stimulates the blood stream. Hot baths of gradually increasing heat—the mother or nurse holding her hand in the water as more hot water is added; hot dry packs, warm, woolen clothes, two pairs of stockings, no restricting garters, flannel binder around the waist for the pendulous abdomen. Cold inhibits muscular movement and is to be used only after a hot bath for a moment and followed by alcohol and water half and half and a vigorous rubbing or massage.

Electricity in competent hands as a test of the degree of paralysis has a value. The late Doctor Hoffa, of Berlin, taught that we should not depend upon the electrical reaction. He made an exploratory incision over the belly of the muscle in question. Pink or reddish muscles are only partially paralyzed. This is important to know when contemplating tendon transplantation. The employment of electricity is fraught with danger; if used too strong and too long at any one sitting, it makes the weakened muscles contract again and again, fatiguing and terrorizing the patient. In the mind of the writer it is a good placebo, when administered with a weak current, having the same therapeutic value as another form of massage. Its best and legitimate use will be to bring the patient for frequent regular examination once in seven to ten days in order that the doctor may better keep the child under observation and combat early any tendency to deformity. This is a hard thrust, and may not meet with approval, but such is the conviction of many competent observers.

Muscle training should be in skilled hands. Much harm has been done by the so called muscle training, where the strong muscles were made stronger and the weak muscles made weaker by too much work, the strong muscles continually increasing the deformity, as in spinal curvature. The idea is to convey an impulse from the brain to the extremity through another route by assisting in the action or movement of the partially paralyzed muscle. In competent hands, exercising great care and patience, this is one of our best therapeutic agents.

After two years, we consider the patient to have recovered as far as can be expected and he enters the chronic stage, though, after this time, should the patient have received no previous treatment as indicated above, after correcting fixed deformities, we may expect considerable development of the partially paralyzed muscles. By a thorough muscle training in some cases a marked improvement and surprising recovery after this time may be seen.

Not until after two years should any serious surgical operation be attempted, such as tendon or muscle transplantation, nerve grafting, astragalectomy, resection, arthrodesis, etc., since up to this time a valgus deformity of the feet may be developed into a resistant varus deformity by recovery of the apparently paralyzed inner muscle group—as has occurred in the writer's practice. A slight flexion of the knee by transplantation of the hamstring tendons may be converted later into genu recurvatum. Not wishing to enter into the whole field of surgery relating to these patients, I would refer you to any good book in orthopedic surgery, also to a symposium by Rogers, Ryerson, Davis, R. T. Taylor, and Wallace, in the *American Journal of Orthopedic Surgery* for July, 1916. A small reprint on the subject by the writer may be had upon request.

Altogether these cases are not so hopeless as we are led to believe upon first inspection. The writer remembers a little girl who was stricken in the epidemic of 1907. When first seen there seemed to be almost a total paralysis of the lower extremities, one side, one arm, and the other arm being partially paralyzed. The child's head had to be supported. The consensus was that it would have been a blessing had she died. Why she did not die was a wonder. Hers was a clinical case, irregular in attendance. This patient was seen within the last three months walking without braces, with some deformity of the feet, and weak in the legs and one arm. She holds her head up like other children. She has a bad scoliosis which was marked when she was first seen. She wears a spinal brace and goes to school.

Do not be discouraged. Patient, persevering, careful work with these patients will be rewarded.

346 Lexington Avenue.

EPIDEMIC POLIOMYELITIS;

Its Nasopharyngeal Aspects,

By W. Sohier Bryant, A. M., M. D.,
New York.

The experimental work on poliomyelitis of the past six years has given abundant proof of the facts which I observed clinically in 1909-10 (New York Medical Journal, December 17, 1910) that the virus or microorganism of poliomyelitis occurs, first, on the mucous membrane of the nasopharynx and is given to other victims through the excretions of the nose and throat. There is a focal infection of the pharynx which serves as a culture plate for the organism, from which it finds its way through the lymphatics into the nervous system. After the acute stage of the disease is passed and the virus can no longer be found in the cerebrospinal fluid, it may still be observed on the mucous membrane of the nasopharynx both experimentally in monkeys, and in human cases, so that the subject may possibly become a chronic carrier. The virus is known sometimes to remain on the mucous membrane for so long as six months.

In consideration of these facts, the abortive and the carrier cases are most important. There are various types of abortive cases; my attention, as would be natural, has been directed toward the nasopharyngeal type. In this type the symptoms are nasopharyngeal inflammation of any grade whatever. Minor grades are indicated by disturbances of lymphoid tissue only, which often cannot be determined by inspection alone even with postrhinoscopy and rhinoendoscopy, but must be diagnosed by manipulation through the nose with a fine cotton applicator, with which are determined the sensitiveness and the mechanical friability of the mucosa, and with the aid of hydrogen peroxide, the character of the secretion, thereby determining the presence of pus, blood, or serum, as shown by effervescence. In 1909-10, I noted very many of these nasopharyngeal types, each of which had a certain amount of local inflammation, in communities (Hudson River Valley) where epidemic poliomyelitis existed. The number of cases of pharyngitis fluctuated in accordance with the existing number of cases of poliomyelitis. I also noted in the families of poliomyelitis patients that the other members showed nasopharyngeal irritation. Some of these showed definite symptoms of the disease, while others cleared up. Most of them were probably suffering from different degrees of poliomyelitis. I make a special point of this nasopharyngeal type, because it seems largely to have escaped attention. It should be emphasized that during epidemic poliomyelitis, the significance of nasopharyngitis is enormously enhanced. This condition suddenly becomes most important, since it may be the first symptom of a very dangerous disease. At the present writing (August) there is a noteworthy epidemic of pharyngitis associated with the epidemic of poliomyelitis in the city of New York, and an epidemic occurrence of pharyngitis has been noted in two nearby communities where poliomyelitis is prevalent. These cases are characterized by rapid onset often accompanied with much general reaction which passes away in about three days, leaving a reddened and thickened mucous membrane. It is impossible to know positively (except by laboratory inoculation) whether and how many of these cases are nasopharyngeal abortive types of poliomyelitis, but the probability is that the greater proportion of them are such. Stevens (*Intercolonial Medical Journal,* 1908) found in many instances that a slight cough preceded the onset of poliomyelitis and states that in some epidemics nasopharyngeal symptoms have been frequent. Anderson and Frost refer to sore throat and inflammation of the tonsils in some instances in their series of abortive cases. In the present epidemic, Sheffield (*Medical Record,* August 19, 1916) has reported that out of thirty-three cases, the majority began with headache and sore throat, the tonsils presenting congestion either simple or with small grayish white deposits.

Abortive cases and carriers are computed to be four to five times as many as are patients with distinct paralytic symptoms; the abortive pharyngeal cases are probably in a much greater ratio. Different writers also state that poliomyelitis occurs after or in combination with other diseases, such as whooping cough and measles, in that way escaping detection. It is safe to assert that during the present summer there has been a great number of unrecognized nasopharyngeal and other abortive and carrier cases. The unsatisfactory result of quarantine is proof of the statement. The infection of the mucous membrane of the nasopharynx is so general and so far spread that the quarantine net cannot catch the people. The whole community is under a certain amount of suspicion. The statement has been made repeatedly that the epidemic will probably end when all the persons susceptible to the disease and not completely sheltered from it have been attacked, so that there is no more human material for the disease. This sounds like an expression of fatalism: All who can have it, must have it —unless they can retire into some ideally perfect state of seclusion. But even among the apparently perfectly secluded, sporadic cases have developed in which no possibility of direct contagion existed, so that the problem of the carrier is acute.

What are we going to do with these very light nasopharyngeal and other abortive cases and carrier cases? It is through them that the disease is spread, since each is likely to be an unobserved focus of infection. Many of them are not discovered and quarantine is unfortunately practically impossible. Serum treatment is out of the question for great numbers of abortive cases and cannot, in any circumstance, disinfect the healthy carrier.

The bearing of the nasopharynx in regard to prophylaxis, or to the relief of existing cases, or to the prevention of carrier cases has not been put to practical application. I suggest here the management of the nose and the throat with the end in view of making the pharynx a poor culture surface for the virus.

In the first place, care of the nasopharynx should be made a routine matter; the public should attend to the condition of the nose and the throat in the same manner that it attends to the care of the teeth. Health authorities and family physicians should urge regular examination of the tonsils, adenoid, and nasal passages, for the treatment of infected mucous membranes. The key to the prevention of epidemic lies in such care, not in hurried action under stress of fear after the epidemic has arrived. It is to be noted that the majority of the victims of poliomyelitis are the very little children, who, more than any other class, lack the advantages of systematic care, and who very often have obstructed noses and hypertrophied lymphoid tissue of Waldeyer's ring. These very little children are mechanically (as well as constitutionally) much more subject to the extension from the pharynx of the virus of acute poliomyelitis than are older persons, since the lymphatics of the small child are shorter but of the same calibre and consequently more easily traversed. Furthermore, in young children and even in adults, an open or partially open craniopharyngeal canal is present oftener than is generally supposed. This canal, which connects the pharynx with the cranial cavity by way of the pharyngeal and cerebral hypophyses, renders young children mechanically less resistant, as does also a constant pharyngeal pituitary easily accessible to infection. Consequently, at all times, special attention should be paid to the nasopharyngeal condition of children.

The foregoing remarks are a plea for the prevention of epidemics by the universal care of the nasopharynx. Since, however, an epidemic does exist, the great problem is to prevent its spread by persons outside of quarantine. As practical measures, I suggest, first, that during an epidemic persons coming into contact with cases of poliomyelitis, parents, physicians, nurses, even under quarantine, positively require nasopharyngeal treatment, as condition indicates, to keep them—although apparently immune—from becoming carriers by receiving the microorganism in the throat and nose and in turn disseminating it to others. Second, children in the same family of the patient should receive specially careful attention; it is my belief that there are far more secondary cases than is usually stated. Third, all cases of nasopharyngitis, however light, should be most carefully watched and their treatment undertaken without delay. Fourth, prophylaxis requires that the public at large have the nasopharynx put into proper condition; but such is the disadvantage of the occasion that treatment at this time must be restricted to application measures, as it is unwise in the presence of contagion to cause any loss of continuity of the mucous membrane of the pharynx, as would occur in adenotomy or tonsillotomy. Consequently, many cases that really need operative treatment should wait over until the epidemic has died out. Fifth, in the suspected case and in frank and abortive cases, the management of a local infection which has become a focal infection with extension and complications, is best furthered by special attention to the primary seat of infection, since the dose of the virus in extended complications is kept up from this point. That is, in poliomyelitis, the microorganism first shows itself in the nasopharynx and persists there; this is important, since the clinical history shows that the general resistance of the nervous system is greater than that of the nasopharynx, since the virus leaves the nervous system first; if this dose from the pharynx was lessened, the nervous complications would subside with proportionate speed. I offer the following comparison as an illustration: In secondary cerebrospinal meningitis from a mastoid abscess, it is obviously impossible to remove the affected nervous system, but it is possible to cut out the mastoid abscess, thereby benefiting though not necessarily curing the patient. Similarly, in poliomyelitis, it is impossible to remove the affected nervous system, but it is possible to lessen the focal infection and thereby lessen the dose of the virus which is being constantly thrown into the affected nervous system from the pharynx.

The management of a primary or focal infection is a comparatively simple matter, since it is not associated with a specially violent reaction. The local resistance is sufficient in most cases to protect the patient from further extension into the nervous system, a fact which emphasizes the importance of securing competent local resistance.

Treatment according to the foregoing outline consists of the use of sprays, application through the nose, and insufflation of powders through the nose. Sprays are used from the nose and the throat, up and back; application by applicators from below to the tonsils. Most unfortunately no specific treatment is known; it is therefore necessary to use those agents which are advantageous in nasopharyngeal infection from other organisms, of which the following is a partial list: Silver salts, colloidal and nitrate; iron salts; phenol; corrosive sublimate; essential oils; iodine solutions; kaolin; calomel; quinine sulphate; charcoal; and a number of useful proprietary articles. This treatment is similar to that best imployed in diphtheria, whose life history of local and focal infections is similar to that of poliomyelitis.

TREATMENT.

A description of the technic of one of the methods of treatment suitable for prophylaxis and for the purpose of lessening the dose after the infection may be of interest: Spray the nose with a solution of one per cent. cocaine with one in 8,000 adrenaline, to shrink the turbinates and slightly deaden sensibility. With a small cotton carrier apply hydrogen peroxide through the inferior meatus of the nose, to the back wall. If there is much effervescence of the hydrogen peroxide, make several applications until effervesence has subsided and wipe the foam from the mucous membrane. If incidentally in this application the adenoid tissue appears to be very thick, apply nitrate of silver (ten per cent., children; twenty-five per cent., adults) with a small dry applicator to the region of the adenoid and the pharyngeal pituitary, being careful not to use enough to permit its running down the pharynx. If the adenoid tissue, on the contrary, feels smooth and thin, use a saturated aqueous solution of ferric alum (ammonioferric sulphate). For prophylaxis, repeat the treatment after four days. In cases of poliomyelitis of whatever degree, the question of repeating the application is determined on the reaction. If after twelve hours there is no reaction, repeat the treatment; if reaction is present in any considerable degree in twelve hours, let twenty-four hours elapse before repeating. In the interim, use a mild nasal spray of alkaline acetonic saline solution containing aromatics, every two to four hours.

As a detail of treatment of victims of poliomyelitis who show bad adenoids and infected tonsils, adenotomy may be indicated for the benefit of local drainage and may be most important, since the chief seat of infection is removed by this measure.

The microorganism of poliomyelitis is known to resist heat, cold, drying, glycerin, and weak phenol (0.5 per cent.). Sunlight soon kills it. In view of this fact, there is a hope of prophylaxis and treatment in phototherapy and radiotherapy; in them lies a chance of destroying or inhibiting the organism on the living mucous membrane.

In regard to epidemics in general, it may be possible that some time we shall get physicians and the public educated to realize that a bad nasopharynx is always a nuisance and a menace in the community. Perhaps, then, routine treatment of the nasopharynx will become general and we shall find that such treatment is a means of preventing epidemics, not only of poliomyelitis, but also of cerebrospinal meningitis, diphtheria, scarlet fever, influenza, and measles. This method of prevention, which is in itself a general benefit, should be urged before all other measures.

19 West Fifty-fourth Street.

INTRACRANIAL MURMUR OF LONG DURATION AND SPONTANEOUS CESSATION.*

By Frank K. Hallock, M. D.,
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The following case is of interest on account of the well marked objective character of the murmur, its peculiar behavior, its freedom from associated symptoms and the difficulty of diagnosing the nature of the abnormality. A condensed statement of the previous history is as follows:

Case. Patient, forty years old, American, married, had one child nearly fifteen years ago, of neurotic type, but now growing steady. Patient's father died of cardiac disease in middle life; mother had chronic Bright's disease, but was fairly well. Mother's sister had nervous breakdown, but recovered. Patient had one sister very highstrung. Beginning at three years of age, patient's life history was an almost uninterrupted series of illnesses and disturbing experiences. Scarcely a year had passed without some manifestation of nervous instability, the majority of attacks being a mixture of somatic and psychoneurotic elements occurring in all possible combinations, but not to the psychotic level.

At thirty years of age, the patient consulted Dr. M. Allen Starr, who pronounced the case one of hysteria with aneurysm of the basilar artery. At thirty-four years, six years ago, she came under personal observation. The fear of symptoms was eliminated, self confidence established, and an increasingly better balance had enabled her to go through subsequent upsets without mental panic.

Examination. General physical examination negative; thorax, abdomen, pelvis, blood, and blood pressure normal. Neurological examination also negative; special senses perfect, no motor or sensory symptoms. As far as the intracranial murmur was concerned, there were no special symptoms that could properly be associated with it. Mentally, patient was of high intelligence, native good sense, and reliable judgment, but with exaggerated self consciousness and very suggestible as regards personal symptoms. Altogether she was well nourished, sound organically, possessed of full nervous energy, but profoundly unstable in an autonomic sense. Throughout her life, disturbance of the vasomotor balance had been a basic factor in the great majority of the illnesses.

The importance of a serological examination was not fully appreciated when the woman was first seen six years ago, and since then with improved health she would not submit to it nor to an x ray of the head and neck. So far as the history and evidence went, there was no suspicion of specific taint, near or remote.

HISTORY OF THE MURMUR.

From earliest recollection the patient has had a pulsating sound in the head, variously described as "pounding," "whistling," "steam escaping," etc. This description suggests tinnitus aurium, but the sounds were never referable to the ear, and all tests of the auditory apparatus were negative. As a very small child she imitated a circus acrobat hanging by her knees until her head was badly congested. The etiological significance of this act is not clear, as neither the patient nor her mother can recall whether the head sound preceded or followed the head congestion. It is certain that no great importance was attached to the performance, as the child did not know the murmur was abnormal until so informed by a physician when she was fourteen years old.

The murmur continued without change until May 11, 1909, when it suddenly stopped for three days. There was no apparent reason for its cessation nor for its sudden reappearance. This was in her thirty-third year. For the next four and a half years there was no alteration in the character of the head sound. Then ocurred one of her periodical nervous upsets, with marked digestive and vasomotor disturbance accompanied by attacks of migraine and a slight subjective change in the sound of the murmur. This change was not noticeable by the stethoscope, but was described as groaning and varying in tone. The headaches were transitory and with her general improvement the murmur was nearly the same as before.

The following spring, 1914, in her thirty-eighth year, she sailed for Naples. During the trip over and while on land the head sound continued to be well defined, as usual. The return passage was on a vessel noted for its noise and vibrations and amid the commotion of sounds and shaking the patient lost consciousness of the murmur in her head. Only once was she positive of its presence; the rest of the time she was uncertain whether it was there or not. On landing, she became fully aware that the sound had gone. Her condition at this time was excellent and her nervous system was especially stable. For some time there continued to be a slight ringing sensation throughout the head, but violent coughing and energetic movements did not bring back the murmur. One month later, during a delayed and disturbed menstrual period, certain head movements brought back the sound for the moment and then the ability to produce it ceased and has never returned. This was exactly two years ago.

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*Read before American Neurological Association, Washington, D. C., May 8, 1916.

FACTS CONCERNING THE MURMUR.

The systolic bruit can be plainly heard by stethoscope at all points on the cranium, but is most marked in the left occipital and postauricular regions. On the left side of the head the sound is loud enough to be heard by the naked ear held close but not touching the scalp. Its character, objectively, is that of a steady, pulsating, whirring, rushing sound synchronous with the pulse; subjectively, the patient states that it sometimes varies from this description and becomes bubbling, steam escaping, whistling, or frothy; when the head is held steady the sound continues to be uniform, varying slightly as the head is moved moderately in certain directions; ordinary exercises and body movements do not modify the sound to any extent; turning the head sharply to the right stops the murmur completely, both objectively and subjectively; it can also be diminished by extending the head vertically upward; rotating the head to the left or flexing it downward does not interfere with the sound.

These facts regarding the effect of head movements upon the murmur had always remained constant, but at its final disappearance, two years ago, a slight change was noticed. As previously stated, the murmur ceased after the sea voyage. A month later, during the menstrual period, the patient discovered that bending the head forward at a sharp angle and slightly to the left of the median line brought back the sound. It was of the usual character, but much fainter. Extending the head back to the normal position caused it to cease, as did also turning the head to the left. Heretofore flexion and rotation to the left had not affected the sound.

Compression of the carotids and superficial vessels of the neck did not influence the murmur. The fundi have always appeared normal and there never have been signs of cerebral pressure; no vertigo, vomiting, stupor, or loss of consciousness. Occasionally there have been transitory attacks of tinnitus aurium, described as water dropping sounds, but never any diminution of hearing nor other auditory symptoms. These attacks usually occur during vasomotor disturbance when the extremities are blue and cold and the head is congested.

DIAGNOSIS.

Any attempt to formulate a diagnosis in this case must of necessity be more or less speculative. In a review of the literature of cerebral aneurysms and of affections and anomalies of the cerebral vessels, I have not, thus far, chanced upon a report that is particularly helpful in explaining the problem before us. Von Hoffman (*Wiener klin. Wochenschrift*, 1894) and J. P. Karplus (*Arbeit a. d. Neurol. Inst. Wien*, 1902) emphasize the importance of the vasomotor factor in the production of cerebral aneurysm, and such a factor in the present case certainly is somewhat applicable. To summarize the case as well as possible, however, I may venture the following assumptions:

1. The well defined systolic bruit was due to a structural arterial abnormality existing from childhood.

2. Owing to failure of compression of the carotids to affect the murmur, the blood current involved in producing the friction sound was carried by a deep seated artery.

3. The effect of certain head movements and the anatomical course and relation of the vertebral artery to its bony bed suggest the possibility of this artery on the left side being capable of compression or other alteration of its lumen.

4. The section of artery which was the seat of the structural abnormality was not in the cervical portion of the left vertebral artery, but at or after its entrance in the cranium, or more likely in the basilar artery. This is pure conjecture.

5. This intracranial murmur would ordinarily be diagnosed as aneurysmal or its equivalent, but in addition to a constricted, dilated, or sacculated portion of artery, we can also picture the possibility of a sharply tortuous, angulated, or kinked section, either free or in relation to some bony or soft growth or projection.

6. Whatever or wherever we conceive the abnormality to be, the fact that the friction sound ceased for three days in 1909, and entirely disappeared two years ago, seems to indicate that it was not of a marked organic or serious nature and that, perhaps, along with the associated blood current, it was capable of a functional range of unusual character or degree such as would obtain in a person of chronic and profound vasomotor instability.

In these later years, with a more equalized and better balanced vascular system, it is a fair inference that there is a somewhat lessened flow of blood in the cerebral vessels and a slight diminution of the fluid volume within the cranium. This, if true, would favor cessation of the murmur. Further speculation will not avail, and autopsy alone can tell the true story.

PELVIC INFLAMMATION.*

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The debate on what is and what is not inflammation, what is to be included in and what excluded from our conception of the process, proceeds merrily apace, nor does it seem likely that, until the end of the chapter, or until, following Thoma's quixotic advice, we agree to expunge the term from our vocabulary, there will be absolute agreement. In the chapter he contributes to Aschoff's *Pathologische Anatomie*, Lubarsch frankly admits that it is not one process, but a combination of processes, characterized by cell and tissue alteration, escape of cellular and fluid constituents of the blood into the tissues, and tissue growth; only when all three are associated can we speak of inflammation. He points out that vascular disturbances are not primary, and quotes with approval Ribbert's definition that inflammation is the sum of all those processes which, induced by various injuries to the tissues, bring about a direct action of the cells and fluids of the body upon those tissues. Ribbert, however, carries his definition so far that he includes general systemic disturbances, the results of injury among the inflammatory phenomena. Adami wholly agrees with Lubarsch that this is neither necessary nor commendable, and adheres to the definition that inflammation is the local reaction to actual or referred injury.

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*Read before the Delaware County Medical Society of Pennsylvania, June 15, 1916.

A foremost British pathologist, Professor Muir, takes a somewhat similar but more negative point of view. Inflammation is not a process, but a complex of processes. In a thoughtful lecture, delivered before the Harvey Society, Opie, basing himself largely upon his studies of the enzymes of the wandering cells, concludes that inflammation may be defined as the process by means of which cells and serum accumulate about an injurious substance and tend to remove or destroy it.[1] For the purposes of this article, we consider it, following Adami, as the series of local changes which constitute the reaction to injury or irritation of a part.

The causes of inflammation are microbic, traumatic, thermic, chemical, and nervous. The types of inflammation are inflammation resulting in healing by "first intention," inflammation leading directly to the formation of granulation tissue, acute fibrinous inflammation of serous surfaces, suppurative inflammation, hemorrhagic inflammation, membranous inflammation, and catarrhal inflammation.

Pelvic inflammation is usually caused by infection or trauma. The traumatic form, however, is nearly always associated with infection so that it need not be considered as a separate type.

The atria of invasion in pelvic infections are the vagina, cervix, the uterine surface, tubes, and peritoneum, each one a distinct, clean cut tissue, easily identified. When these are infected what are the routes of transmission from the primary focus? The routes of advancement are:

1. Lymph spaces.
2. The lymph vessels.
3. Veins and arteries, particularly the former by thrombophlebitis.
4. By continuity of tissue.

We will first take up the infection which occurs with parturition, and there are many different types depending upon the tissues involved in the infection. Where is the most common type? In the vagina, is the logical answer, and considering the number of lacerations which occur in the perineum and vagina, in a zone which is fearfully difficult to keep aseptic, it is a wonder that infection does not occur more frequently.

The reason it does not is because nature has prepared that field by the cofferdamming infiltration and edema which precede parturition. The field is prophylactically taken care of, and offers a high grade of resistance; therefore, the cellular tissue around the vagina, or around the perineal laceration is rarely infected.

The cervix is the next atrium of invasion, and because it is so richly supplied with lymphatics it admits infection readily. The cervix is more richly supplied with lymphatics than any other portion of the genital tract. When the infection enters the cervix, it passes through the lymphatics out into the cellular tissues of the broad ligament. If the infection is streptococcic in type, it not only passes into the lymph channels, but right on through the lymphatic glands into the circulation, and the patient dies of infection of the cellular tissue of the broad ligament, and the subperitoneal tissue behind and in front of the peritoneum; it is never in the peritoneum. When we cut into the peritoneal cavity all we see are a few flakes of lymph and no pus, and the peritoneum cuts like a piece of soggy muslin. The patient with this type of infection will inevitably succumb.

When the staphylococcus is the infecting organism, the pathology is entirely different, since the staphylococcus passes through the lymph spaces slowly, and is often arrested *in loco,* circumscribed abscesses are formed, and the patient has a localized collection of pus in the broad ligament or in the cellular tissue of the peritoneum.

On the second day, she has a chill, with a temperature of 104° or 105° F., she complains of severe pain in the abdomen, and the chill may recur the next day and the pain increase in severity. Every day or so we examine the vagina, and find the uterus fixed in a mass and immovable. The Germans say it is *Eingemauert,* which is "set in masonry." Later on there will be felt upon vaginal examination, an exquisitely tender mass pointing into the cul-de-sac, and our attention may be first called to this by the patient complaining of lancinating pain in the rectum when her bowels move.

Will the management of a case such as has been described differ from the operation on a tubal abscess? Very greatly indeed. In one we find an abscess of the cellular tissue of the broad ligament without a capsule, and in the other we have an abscess enclosed in the tube and practically encapsulated. We cannot enucleate a sac when there is none present, and we shall have our hands full if we try. There is no lining membrane present any more than in a phlegmon of the arm. Early drainage is required, and is best accomplished by opening the Douglas pouch and letting the fluid flow out through the vagina. When the infection is carried into the broad ligaments, with the enormous veins present during gestation, a thrombophlebitis may occur with the formation of septic emboli which are carried through the patient's system. We are now speaking of the type of thrombophlebitis which occurs from infection of a laceration of the cervix, after parturition or abortion, since laceration of the cervix is by no means uncommon in abortion, but infections of that type are much less frequent in abortions than in labor.

Thrombophlebitis may occur as a result of infection of the veins on the placental base. If the thrombus is not carried through the patient's system, she may recover, but only fifteen per cent. do recover as shown by statistics.

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[1] Adami, *Keen's Surgery,* vi, pp. 17 *et sequentes.*

Bunn and Trendelenburg have advised operation and excision of the veins and twenty patients have been reported from their clinics, of whom thirteen died and seven recovered. The operation does not appeal to me as reasonable.

If the thrombus does enter the general circulation, the patient is doomed, and when we have seen a case we never forget the picture. It occurs with the same premonitory signs as postoperative thrombus. We have delivered a patient; the next day there is no fever, and we tell the family that everything is progressing nicely. The following day, we drop in and the temperature is probably 99.2° F., but everything else seems normal. So the patient progresses up to the fifth and even as late as the twelfth or fifteenth day. She may be eating her breakfast, or may wake up suddenly in the night with a racing heart and a pain over her heart, her liver, or kidneys, and perhaps a little blood in the urine is noticed. We hurriedly arrive, examine her from head to foot, but the only symptoms we find are the wildly pumping heart and the pain. There is no pain in the pelvis, unless the veins in the broad ligament are affected, because the thrombus in the veins of the placental base gives no pain. The uterus is freely movable and the signs of infection are negative. She will die either in this attack, or in a subsequent one in two or three days. It is one of those terrible calamities which we are powerless to combat, and occurring at a time when we think the patient has recovered. If the infection is less virulent, and occurs on the placental base, the microorganisms do not penetrate the membrane, but may be transmitted through the lymphatics into the broad ligament, causing edema and swelling of the broad ligament, and associated with chill. This type is rare because there is such a sparse lymphatic supply of the uterus above the cervicocorporeal junction.

The next variety of infection comes from the surface of the uterus. The manifestations are so varied as to enable us to differentiate them into sapremic, septic, pyemic, and gonorrheal. A great deal of controversy has arisen in the last few years as to the wisdom of curettement in these cases. Formerly it was held that curettage was the treatment in all cases of sepsis following parturition or abortion. This was an exceedingly dangerous teaching and resulted in many deaths.

Lately, as is usual, the other extreme has been reached, and some authorities believe that all these cases of sepsis should be treated expectantly. No more lurid, empty, or vicious doctrine has ever been expounded; as a matter of fact, the treatment depends entirely upon the type of infection. The sapremic form is the result of decomposition of retained products, such as blood clot, portions of placenta, or decidual membrane, and arises from the presence of saprophytes. The absorption of products of decomposition produces a condition of putrid intoxication. At the onset it may appear exceedingly grave, but it is more easily controlled than the septic forms. Sepsis is far more grave, more difficult to combat, and more destructive in its effects, than either the sapremic or gonorrheal forms. It is instigated by the streptococcus or the staphylococcus. The same germs may cause the production of pyemia.

The saprophytic form is indicated by the profuse and offensive lochia, and by finding within the uterus, upon digital examination, some decomposing material. The examination should be made very gently, since if decomposing material is not present, and the infection is due to sepsis, we do not wish to break down the barrier which has been erected by nature to prevent the infection from being picked up by the blood and lymphatics. If decomposing material is present, it should be removed. When the uterus is clear and contains no extraneous material, if we do a curettement, we shall practically seal that patient's death warrant, because we open up avenues for new absorption. If we had that type of infection in the leg, we should not go in with a curette, and scrupulously scrape away all the cofferdamming that nature had erected to guard against absorption of the infective material. If so much depends upon determining the type of infection, it is certainly worth while to attempt, with every means at our command, to find the cause in obscure cases.

The symptoms induced by septicemia will depend on the condition of the patient, the character and virulence of the infection, and the time of its introduction. Very soon, within two or three days of delivery, the patient will show an elevation of temperature which will gradually increase with evening and morning variations. Pain and tenderness in the lower abdomen are present. The pulse runs from 110 to 140, and the temperature from 101° to 107° F. A great deal of mischief can go on in the pelvis of a woman, however, with a temperature going no higher than 101°. The lochia may be absent, or thin and free. It may be odorless or have a stale, sickening smell. Persistent high temperature, pulse over 130, and absence of focalization may be taken as unfavorable signs. The cervix, vagina, and external genitalia may be swollen and covered with exudate. An early blood examination is important, not only for the purpose of determining the particular organisms, but for eliminating the possibility of other forms of infection, such as malaria and typhoid, and for determining its virulence and the antagonism or resistance of the patient as shown by the leucocytosis.

The infection is at first a limited one and is localized at the seat of injury. If, however, the microorganisms are not quickly destroyed, they and their toxins enter the lymph and blood channels, causing a general blood infection or intoxication and areas of infection at more or less distant points. The broad ligaments, the pelvic connective tissue, and Fallopian tubes are soon involved, and enlargements are felt on examination of the pelvis. This is quite different from the history of a gonorrheal infection which travels along the mucosa only.

These patients are not curetted; they are kept perfectly quiet, immobilized, absolutely at rest, with the head of the bed elevated, receiving instillation of normal salt solution by the rectum according to the method of Murphy, the vagina kept clear, and nothing at all done to the uterus. It is just about as effective to give intrauterine douches in such a case as to direct a hose upon the lamp that set the house on fire.

Mixed vaccines or serums may be employed.

Localization is an indication for operation. The pus may be evacuated through the anterior, posterior, or lateral fornices of the vagina. When a tube or ovary is involved, the appendages should be removed. When the broad ligament and uterus are broken down, hysterectomy is indicated. In peritonitis, an incision through the posterior vaginal fornix should be made and a gauze drain inserted. The Fowler-Murphy treatment should be employed, and if the peritonitis is very extensive, other incisions may be necessary for drainage; these should be made in the flanks and lumbar regions, as indicated by the amount of pus.

GONORRHEA.

The next type of infection is the Neisserian. It comes from below, and involves first the vagina, second the urethra, third it involves the endometrium, and fourth it extends from the endometrium into the tube.

In gonorrheal salpingitis the disease travels along the mucous membrane of the endometrium, and eventually infects the lining membrane of the tubes. The broad ligaments and pelvic connective tissue are not involved, except in very rare instances, and a circumtubular abscess results in the same manner as a circumurethral abscess occurs in the male. We know, however, what a rare occurrence that is unless the patient has had instrumentation. So, while it is true that the bacillus may occasionally enter the lymph or vascular channels, causing an arthritis or endocarditis, yet this is exceptional. The moment the tube is attacked by any type of infection, except tuberculosis, it adheres to anything that it comes in contact with at its fimbriated end, and seals the end to save the peritoneum.

In the gonorrheal type of inflammation, the mucosa is bathed with pus cells, and in the submucosa are great numbers of plasma cells. Some authorities believe that the large numbers of plasma cells are pathognomic of gonorrheal inflammation. The mucous lining becomes eroded and owing to the inflammation in the submucosa, little folds of membrane are raised up at the uterine end, which retain the pus in pockets or fossæ.

Circumtubal inflammation and subsequent stricture result in exactly the same manner as circumurethral inflammation and stricture in the male. If stricture does not occur, the pus may escape through the uterus, and the tube empty itself in very much the same manner as freeing of the nasal passages occurs after a cold.

In gonorrheal salpingitis considerable time, as a rule, elapses after the endometrium is infected before the gonococcus invades the tubes and the peritoneum, and as the infection is subacute in character there is little constitutional disturbance. The patient who suffers from pain and tenderness over the lower portion of the abdomen, with a certain amount of distention and swelling, tenderness on motion, painful evacuation of the bowels, and tenderness during coition, makes it evident that there is inflammatory trouble which has more than likely reached the peritoneum by the Fallopian tubes. The normal tube is scarcely palpable. When it becomes thickened with salpingitis, it may be recognized as a more or less well defined and thickened cord, extremely sensitive to pressure.

TREATMENT.

In treating these cases it is preferable that operation should be postponed until the subsidence of the more acute attack, unless it is evident that free effusion has taken place into the peritoneal cavity, or that Douglas's pouch contains collections which are readily accessible through the vagina. In the latter case operation is usually only palliative, and an abdominal operation is usually required after the acute symptoms have subsided.

The final question to consider is what class of cases should eventually be operated in and what is the safest time after an acute infection to operate?

The chief terminal results of an infection are sterility and pain. Therefore the question of operation depends largely upon the patient herself. In some instances the patient is entirely cured. In a larger group there is more or less constant tenderness and sterility. In these cases it is the degree of pain which usually decides the question.

In a third group of cases the lesions are so pronounced and the pain and distress so severe that operative relief becomes imperative. These are the infections which leave permanent gross lesions, and in which we find present tubal and tuboovarian abscesses associated with extensive adhesions.

The question of operating for sterility alone must be answered by the patient. The results have been most successful in some cases. The patients whom operations benefit are generally not suffering with a Neisserian infection, since they rarely or never become pregnant. If we find a streptococcus or staphylococcus infection of the tube, the mucosa becomes edematous and swollen, but there is no circumtubal infiltration, and hence stricture does not take place, so that the tube becomes patulous again when the inflammation subsides. The fimbriated end remains tightly sealed, however, and the tube may slowly dilate, causing a hydrops. If the infection has been very virulent, stricture may have closed off the uterine end, and a large sacculated hydrops occurs. In many cases the fimbriated end may be freed, the edge sewed back, making an ectropion, the tube will return to normal, and the patient may become pregnant.

In that type of tube which contains pus there is only one method of treatment, namely, removal of the tube, and it may be necessary to sacrifice one or both tubes. In these cases, if an ovary is in a healthy condition it should be left, dissecting off the tube only, as it is impossible to determine what influence castration may have upon a woman's subsequent mental life. It is not necessary to remove a wedge shaped piece of the uterus when the tube is removed, any more than it is necessary to remove a wedge shaped piece of the cecum when the appendix is removed, and if we find the wall of the uterus diseased a subtotal hysterectomy should be the operation of choice.

The other infections which occur are the luetic infections, tuberculous infection, pneumococcus infection, and colon bacillus infections.

The infections due to the colon bacillus annoy us very much. How do they occur? A child two or three years of age gets a vaginitis, due to the colon bacillus, which easily infects the tender soft young cells of the vaginal mucous membrane. The discharge is usually noticed at this time by the mother, and the child is usually brought to the doctor while the disease is still limited to the walls of the vagina. If treatment is not started at once the infection will surely pass on up through the uterus and that patient will continue to have an offensive discharge for twenty or thirty years. Pus will discharge constantly. While the infection is localized to the vagina, it can be cured.

In my experience, one drug stands out above all others in the treatment of this condition, and that is the Bulgarian lactic acid bacillus in solution and used as a vaginal douche two or three times daily. A cure is generally obtained with astonishing promptness.

In conclusion I wish to say that it is derogatory to our judgment and hazardous in the extreme to adhere strictly to radical or conservative principles in the treatment of these diseases. In the radical class are those who cut for good or ill. They obtain wonderful successes, but make terrible mistakes. The most splendid triumphs, the worst mistakes, and the saddest failures come from the radical mind. As an operator he is brilliant, relying more upon skill than upon judgment, taking desperate chances, and skimming gayly within a hair's breadth of the deadliest catastrophes.

The conservative is often a valuable factor in surgery. He is a brake on the wheel, smothers the torch of the fantastic, and snatches the mask from pretense. He attaches exaggerated importance to books and minimizes the value of new methods of communicating ideas. He is a fatuous well meaning person, and fatuity is often reason proof.

The treatment, therefore, should not be allowed to rest in the abstract realms of thought, but each disease should be met as a concrete definite entity, with that spirit which dominates, inspires, and sanctifies the science of medicine; that spirit which bases treatment upon the diseased condition caused by the infecting organism, and has for its object the prolongation of life and the mitigation of human suffering.

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CHRONIC RENAL INFARCTS,

Nephrectomy; Case Report,

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Much has been written in the last few years about acute renal infarcts, more particularly since Brewer's classical description, in 1907, of the so called acute hematogenous infections of the kidney. These cases, as is well known, are hyperacute and demand prompt surgical interference in order to save life. It is also a fact that in autopsies upon patients who have died of diseases entirely independent of the urinary tract, chronic infarcts of the kidney have been often noted, which, so far as the records show, had given no symptoms during life.

A casual survey of the literature discloses no mention of chronic renal infarcts as a clinical entity. I believe it is reasonable to assume that these conditions occasionally present themselves as clinical problems whose solutions are difficult. With this idea in mind it seems fitting and proper that the following brief case history should be placed upon record:

Case. The patient, man thirty years of age, native of Russia, single, teamster by occupation, presented himself for examination and treatment, March 27, 1916. Family history negative. Personal history: Healthy childhood, never had severe illness. Five years ago, contracted gonorrhea, for which he was treated for one year and apparently cured. One and one half year ago, which was one and one half year after the supposed cure of his gonorrhea, he acquired a tendency to frequent and urgent urination, being obliged to urinate at first once at night and later two or three times at night and every hour or two by day. At this time there was no pain. One year ago, which was six months after the onset of the trouble, he began to suffer a dull pain referred to the left loin, accompanied by occasional sharp twinges referred along the course of the left ureter to the bladder. This pain had been getting progressively worse and in the last month had seriously interfered with his work. He was conscious of the lumbar pain during all his waking hours, and it was aggravated by any sudden movement or jouncing of the body. The frequency and urgency of urination had remained about the same.

Examination made at several sittings with three or four day intervals between disclosed the following: The patient was a robust, well nourished individual of the "beefy" type; mouth and throat negative; heart and lungs normal; external genitals normal; no urethral discharge; the two glass urine test showed both glasses perfectly clear; there was a soft structure in the bulbous urethra catching loosely on 26 F. bougie; prostate and vesicles normal to touch, but somewhat tender; a smear from the prostate and vesicles was free from pus cells; posterior endoscopy showed a well marked congestion of the whole posterior urethra; colliculus was enlarged, red, and granular, and bled easily; the left kidney palpable and definitely tender to palpation and deep heavy percussion; the right kidney could not be felt; bladder urine obtained by catheter was free from abnormal elements and sterile; cystoscopy showed a normal bladder, both ureter orifices normal; catheters passed readily to the kidney pelvis on either side; the kidney urine showed no abnormal elements other than a small amount of blood from the traumatism of catheterization; phthalein appeared on each side, eight minutes after intramuscular injection; von Pirquet and Wassermann tests negative. Radiographs of the entire urinary tract were negative, except that the left kidney appeared to be considerably enlarged.

As a result of instillations and topical applications the condition of the posterior urethra was much improved and the frequency of urination materially relieved, but the pain in the left loin persisted, and the patient demanded that something, if necessary, an operation, be done for his relief.

He was admitted to the Brooklyn Hospital, May 5, 1916, and an exploratory operation was performed the following day; under ether anesthesia the kidney was delivered through an incision in the loin and was found to be greatly enlarged. On palpation there were felt several hard lumps. The kidney was split, when the lumps became more apparent than before; there were four, ranging in size from a hickory nut to an English walnut, and about the consistence of a uterine fibroid. The markings and color of the medulla and cortex were apparently normal.

After consulting with several members of the staff who were present at the operation, there was doubt as to the nature of the lesion, and it was decided that nothing could be done short of nephrectomy, which did not seem warranted. The nephrotomy wound was closed with two rows of mattress sutures of plain gut, and the operation was completed in the usual manner. The patient did very well until the afternoon of the fourth day, when he had a severe secondary hemorrhage, the blood pouring through the ureter to the bladder. This was apparently controlled by a compression bandage and a large dose of morphine. The following day, the pulse was slower and there was apparently no active bleeding. At 6 o'clock on the morning of the sixth day, his pulse suddenly rose to 160, his hemoglobin went down to 20, and he presented all the signs of very severe hemorrhage. He was at once removed to the operating room and a rapid nephrectomy performed. His condition was critical for the next two days, after which he went on to an uneventful convalescence.

The specimen was sent to the laboratory for examination. Sections of the hard lumps noted at the operation showed them to consist of infarcts with definite plugging of the vessels surrounded by areas of coagulation necrosis. We might consider the possibility of these microscopic findings being incidental to his first operation. This idea, however, may be dismissed, since we know the hardened areas from which the sections were taken were in the kidney at the time of and preceding the nephrotomy.

The patient left the hospital two weeks after the nephrectomy, was sent to the country for two weeks, and on his return reported that his lumbar pain was gone, and that except for occasional discomfort which he referred along the course of the ureter, and his feeling a little weak, he was perfectly well. He considered himself cured.

It is interesting to speculate on the possible cause of this condition, but it is of course entirely speculation. As noted in the beginning of the report, there was no valvular heart lesion. We think of the teeth and tonsils as being the original seat of the trouble, and again the gonorrhea of four years ago may have been the primary focus of infection.

It occurs to the writer that this condition may account for some of the cases which we not infrequently see, in which the patient complains of lumbar and renal pain and in which the urological findings are practically negative, as they were in my case.

Given a patient presenting such a train of symptoms in whom other well recognized lesions may be excluded, I believe it is fair to consider this condition in making a diagnosis. If, added to the symptomatology, the x ray shows a large kidney which is tender to palpation and deep percussion, and all other objective findings are negative, it would be to my mind presumptive evidence that renal infarcts are the cause of the trouble. While I doubt if many cases arise which would suggest the advisability of a deliberate nephrectomy, yet the symptoms might be sufficiently severe to demand this procedure as a last resort.

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EXTRAUTERINE GESTATION.

Diagnosis and Treatment,

By Earl P. Lothrop, M. D., F. A. C. S.,
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Conservatism is the logical result of experience in abdominal surgery and, when associated with careful clinical and laboratory studies, favors accuracy in diagnosis. This is true in the diagnosis of extrauterine gestation and in the differential diagnosis of this abnormality from other abdominal lesions which simulate it with wonderful accuracy. It is the purpose of this paper to indicate the symptom group which excites suspicion of this condition, those signs which justify suspicion, and the pitfalls to be avoided in the final determination. The general literature has been consulted, but a résumé has not been attempted. On the contrary, the paper is suggestive rather than didactic, with illustrations taken from a group of eighty-three cases of which the writer has personal knowledge.

For convenience of description, three stages of extrauterine gestation are recognized:

1. Before rupture of the sac.
2. During or at time of rupture.
3. After rupture.

It is assumed that extrauterine gestation is primarily tubal, and that symptoms of rupture or abortion may occur at any time before the fourteenth week; that differential diagnosis between rupture and abortion is not easy, and for practical purposes hairsplitting theories should be avoided; that ovarian gestation, of which there are a few authentic records, is very rare and may safely be omitted from a paper of this character.

DIAGNOSIS BEFORE RUPTURE OF SAC.

This is rarely made for the following reasons:

1. There are no pathognomonic symptoms of this stage.

2. In the early weeks of pregnancy women rarely consult a physician unless unusual symptoms develop. The exceptions are those who are especially anxious for or afraid of conception, e. g., women who have been sterile a long time and are anxious for a child, or those seeking escape from an unwelcome pregnancy.

3. Patients subject to recurring attacks of salpingitis or appendicitis are not alarmed by an attack of pain with early pregnancy, and tradition has it that some pain is normally incident to this condition.

As before stated, there are no pathognomonic signs of an unruptured tubal gestation sac. The history of one or two skipped periods, some soreness and swelling of the breasts, one sided pain, paroxysmal in character, and uterine bleeding along with shreds of tissue may excite suspicion. If examination reveals a small tender mass in the tubal region, the diagnosis may seem more probable, but we are not justified in making a diagnosis of unruptured sac with these data alone. An accurate investigation of the patient's pelvic history should be undertaken to exclude the possibility of:

1. *Gonorrheal salpingitis.* This, to my mind, is the most frequent cause of error, the symptoms being frequently those which we have mentioned above as suspicious of extrauterine gestation. It is wise to

obtain the husband's venereal history and to examine the patient's vaginal discharge for the Neisser organism. Shreds of decidua, if found, are suggestive, and the discovery of the entire decidua is most fortunate, but rarely is this evidence available. The presence of fever is not a trustworthy differential point, because both conditions frequently have a range of temperature from 99° to 102° F.

2. *Retroverted gravid uterus,* with prolapse of an ovary and tube. I recall a history which is very much to the point: A woman, aged thirty-three years, multipara, had skipped one period; three weeks later, severe pelvic pain developed with collapse. For eleven days there were recurring attacks of pain and shock. Examination showed a retroverted uterus and a small tender mass on the left side. The tentative diagnosis of tubal gestation was made. Under anesthesia the uterus was found to be gravid, and the small tender mass to be the left ovary in prolapse. The uterus was replaced and later on the woman was delivered of a live baby.

3. *Hematosalpinx* at times may cause confusion. It is not to be differentiated from acute or chronic pyosalpinx by physical examination. Our records show three cases of hematosalpinx complicating gestation in the other tube, but none which occurred alone, although cases are reported in the literature with severe hemorrhage and shock.

Familiarity with the patient's previous pelvic condition may make the diagnosis more probable, but usually the operator should thank his intuition rather than his judgment if the diagnosis is correct. Undoubtedly this will be disputed by many practitioners, but I recall the experience of one physician who made five such positive diagnoses and in one case was right. In our series, five cases were operated in before rupture occurred, and the citation of one or two histories may be of interest.

CASE I. Mrs. R., aged thirty years, married several years, had Neisser infection shortly after marriage and one attack of salpingitis. Three years previous, a uterine gestation occurred, which terminated in abortion. Had missed one period. Two weeks later was seized with violent pain in the left lower abdomen. After three days of intermittent pain, was examined and a small fusiform swelling of the left tube discovered. Temperature 98.6° F., pulse 80. Breasts were tender and uterus slightly enlarged. Operation showed left tubal sac, unruptured, and right salpingitis with sealed tube. In this case there was a definite history of gonorrhea and of salpingitis, and the only thing that one could positively say was that it looked suspicious.

CASE II. Mrs. F., aged thirty-one years, nullipara, married several years; menstruation regular; gave the following history: Recurring attacks of pain in lower right abdomen for sixteen years. Three days ago, an unusually severe attack began. There was no history of a missed period or any abnormal flow. No increase of pulse or temperature. Abdominal examination revealed tenderness from McBurney's point to the symphysis. Pelvic examination revealed a small mass to the right of the uterus, which was quite tender. At operation an unruptured gravid right tube and a chronically inflamed appendix bound down by adhesions to the fimbriated end of the right tube were removed.

CASE III. Mrs. M., aged thirty-five years, multipara, two living children, three miscarriages. No history of pelvic inflammation. Had missed one period. Two weeks from that time pain developed through the abdomen and rectum. Four weeks from the missed period a similar attack occurred and flowing began. Examination showed slight breast signs and slightly enlarged uterus; no mass nor fluctuation in the pelvis, but general tenderness. Curettage and vaginal incision revealed a right tubal sac, unruptured.

In our series of unruptured tubal gestation sacs, I am frank to admit that the diagnoses seemed to be most probable, and in these five cases operation justified the suspicion, but there have been others whose records are not at hand, in which the histories were just as positive and aroused an equal suspicion, in which the diagnoses were incorrect.

DIAGNOSIS AT TIME OF RUPTURE.

Ordinarily there is no suspicion of this abnormality until the time of rupture, and the accuracy of diagnosis at this time seems to depend upon the severity of the symptoms rather than upon the grouping of the symptoms, e. g., in our series only eight were identified in the first four days, eighteen in the first ten days, while sixty-five were between fourteen and 365 days. When rupture occurs with great loss of blood and rapid development of anemia, the diagnosis is much more suggestive than when the rupture occurs with but small loss of blood. The character of the pain, while frequently excruciating, is not unlike that observed in other types of acute abdominal disturbance, e. g., ovarian cyst with twisted pedicle, gonorrheal salpingitis, hematosalpinx, ruptured ovarian hematoma, ruptured varicose broad ligament veins, etc., but the fact that its onset is sudden, that it is paroxysmal in character, and often associated with blanching of the patient and evidences of shock, should be regarded as valuable evidence when associated with uterine discharge and a history of pregnancy. When rupture occurs with great loss of blood and pronounced shock, pelvic examination is frequently of little value. There is no mass to be felt, and while the blood is fluid there is but slight evidence of bogginess in the cul-de-sac. In a small percentage of cases pain and hemorrhage are absent. In fourteen of our cases vaginal bleeding was the first abnormal symptom, and pain had not occurred up to the time of operation. In these cases pelvic tenderness was present, but no real pain. In fifteen there was a history of pain without uterine bleeding. In one there was a history of flowing beginning at a regular period without pain. In fifty-three there was a fairly typical history of skipped menses, signs of pregnancy, development of pain, and vaginal discharge. It would seem that the symptoms of extrauterine gestation are not always typical, but it is fair to say that at time of rupture the symptoms are pronounced enough to excite a very strong suspicion which in the great majority of cases the history and examination will verify.

The number of patients in our series seen in the state of collapse was ten, and in passing it might be noted that the severity of the prostration or shock is not always in proportion to the amount of blood lost as Waldo (*Transactions of Am. Assn. of Obstrs. and Gyn.*, XXIII) has shown. There seems to be more shock and prostration in the rupture of an interstitial, and less shock in tubal abortion. Witness, Mrs. S., twenty-seven years, nullipara, with a history of skipping two periods, seized with severe abdominal pain without uterine discharge. Brought into hospital very pale, pulse weak, rapid; subnormal temperature, slight enlargement of uterus, with mass in left tube near uterine end. At time of operation, a ruptured interstitial gestation sac was discovered, with a small amount of blood in the abdomen.

Another case was that of Mrs. C., aged twenty-nine years, nullipara, skipped two menstrual periods; twenty days later, at 7 p. m., was seized with sharp pain in lower right abdomen. Vaginal examination elicited pelvic tenderness, but no mass. At 8.15 p. m. became blanched, semiconscious, and almost pulseless. Vaginal examination showed no fullness in the cul-de-sac. After salt solution and morphine, was operated on at 11 p. m., and the abdomen was found full of blood with a ruptured sac in the middle of the right tube.

The degree of shock in these two cases was very similar. The amount of blanching was obviously greater in the latter case. That shock and apparent exsanguination alone do not indicate a ruptured extrauterine sac is illustrated by the history of Miss B., twenty-eight years old, nullipara, whose past history was unimportant save for an attack of tonsillitis two weeks previously. Menses regular and period just due; seized with excruciating lower abdominal pain and vomiting; began to flow; six hours later, entered hospital, exsanguinated; pulse weak and thready; lower abdomen to umbilicus dull on percussion; upper abdomen tympanitic. Bimanual examination revealed fluctuation—no breast symptoms. Operation revealed abdomen full of blood and a large ruptured ovarian hematoma.

Many patients with the onset of pain have neusea, vomiting, upper abdominal distention, which they mistake for an attack of indigestion, and our histories show a number treated for supposed indigestion with recurring attacks. Unquestionably some patients with extrauterine gestation, with slight pain and slow bleeding, discharge the fetus and membranes into the abdomen and make a spontaneous recovery, or else the only suspicious sign the examiner finds is a small hematocele which may disappear without recurrence of symptoms.

Proof of this statement will be found in the operation records of any hospital. If the fetal sac ruptures, death of the fetus will ensue and the remains of gestation may be found accidentally when operating for some other condition. The following case is illustrative:

Case V. Mrs. B., aged thirty-nine years, one child, two miscarriages. Never been well since birth of child seven years ago, complained of constant pelvic pain, backache, and attack of right sided pelvic pain. Examination showed lacerated perineum, retroversion, and tender appendages. Operation revealed chronic appendicitis and right salpingitis. At the fimbriated end of the left tube was evidence of an old abortion. Patient could not give data from which the time of occurrence could be computed.

Case VI. Mrs. G., aged thirty-eight years, multipara, three children, two miscarriages. Ill nine months; pain in right lower abdomen, attacks of flowing sometimes lasting six weeks, at other times regular menstruation; four distinct attacks of indigestion; pain in the right side; nausea; fever. Examination showed large boggy mass in cul-de-sac. Operation comprised cul-de-sac incision, release of large amount of dark grumous bloody material with some clots. Section: Hematoma of left tube and ovary, which proved to be an old tubal gestation sac, right salpingitis, and ovarian cyst.

In reviewing histories we observe that most cases present suggestive symptoms at the time of rupture, but only a small proportion are diagnosed with their first attack of pain, most of them having had several attacks of pain and persistent symptoms for many days. In support of this statement, the number of days elapsing between the time of onset of pain and the date of operation are offered: In sixty-one cases this could be determined with relative accuracy and varied from one to 365 days. Thirty-seven were operated on within thirty days; fifteen between thirty and sixty days; five between sixty and 100 days; one, 150 days; one, 180 days; one, 270 days; and one, 365 days. This statement, in view of the fact that only ten of the cases of our series were seen in a state of collapse, would indicate that in nearly every case there is sufficient time for careful study of the history and present condition before making a diagnosis. There are some points in the diagnosis of tubal gestation at the time of rupture which our records suggest. Except in cases of marked shock and clear history, the diagnosis at this time must in general depend upon the history of supposed pregnancy, sudden onset of pain, some degree of shock, uterine bleeding, passage of decidua, and absence of fetus in the discharge. The two latter symptoms are rarely verified. It is not possible to determine the portion of the tube in which the pregnancy is situated or whether tubal abortion has occurred. The possibility of salpingitis must never be forgotten.

DIAGNOSIS AFTER RUPTURE.

After hemorrhage ceases, a tumor usually forms on one side of or back of the uterus. The patient recovers from shock and may exhibit a variety of symptoms, basically those due to presence of a foreign body in the peritoneum or broad ligament. If the former, signs of peritonitis, local or general, may appear with distended intestines walling it off above. The tumor may push the uterus forward, crowding the bladder and rectum. Pain, shock, and hemorrhage may recur from time to time, with increase of size of the tumor, or fatal syncope may supervene. If the bleeding has taken place in the broad ligament, the symptoms are less severe, and peritonitis is generally absent. At this time diagnosis is usually plain. The history of pregnancy, pain, shock, flowing, development of tumor, and exsanguination of the patient can scarcely be confounded with other conditions. If untreated, a condition of invalidism may result, or death from hemorrhage or septic peritonitis may occur. Sometimes after rupture, the fetus continues to grow, having either the original site of the placenta for its source of blood, or in cases of complete detachment, finding another point for placental implantation favorable for development.

In our group, two fetuses were alive at time of operation; one a few weeks old with placental attachment in the fimbriated end of the tube, the other four and one half months old, the tube ruptured and the placenta finally attached to the posterior surface of the broad ligament.

If the fetal sac ruptures, the fetus dies and, if small, may be absorbed; otherwise, unless removed by operation, it becomes encysted, either to remain as a lithopedion or to undergo suppuration and be discharged into the bladder, rectum, or vagina.

Diagnosis of the last named condition may not be clear if a complete history is not obtained, and may be made only when parts of the fetus are discovered in the discharge. Lithopedia may be palpable or the history suggestive, but more often they are first discovered after the abdomen is opened. In the present day x ray examination will help in the diagnosis. When the fetus is free in the abdomen and living, the diagnosis seems to offer but little difficulty. The fetus can sometimes be felt through the abdominal wall. The uterus is enlarged, but not in proportion to the duration of pregnancy. Any doubt as to its size can be settled with a sound. The breast symptoms are normal, the uterine discharge ceases, fetal heart tones and placental bruit appear. The usual course of pregnancy follows until labor begins, when pains without uterine discharge occur and the fetus dies. The only condition which may simulate this, that I know of, is double ovarian cyst crowded together behind the uterus. With this there are symptoms of pregnancy save fetal heart and placental bruit. We mistook one such case for a gravid uterus with a dead fetus.

Before concluding this section of my paper, may I rehearse some other statistical facts disclosed by the analysis of eighty-three cases? These are not absolutely pertinent to the subject, but are offered as a matter of interest. The ages of our patients range from twenty-one to forty-one years, fifty-four occurring betwen the ages of twenty-one and thirty-six, nineteen between the ages of thirty-six and forty-one years, and in ten cases the age was not correctly given. We found gestation going on in the right tube in forty-three cases and in the left in forty. The number of tubal abortions was fifteen; unruptured five. Of the ruptures, two were interstitial. Fifty-nine occurred in the middle of the tube; two at the fimbriated end. In our series of eighty-three cases there was one death from shock a few hours after operation. One patient died two years later from obstructive ileus. Carefully gathered statistics by various authors seem to show that tubal abortion is the usual result, and that many cases which we have been accustomed to classify as rupture of the tube proper, are really tubal abortion. It would seem wise to adopt Williams's classification of extratubular and intratubular rupture and abandon the term "tubal abortion." Two were a combination of tube and ovary which might have been tubal or ovarian, but could not be classified properly from macroscopic study. In fifteen cases the other tube was diseased. In twenty-one there was a chronic appendicitis. Three cases had been operated in for tubal gestation on the other side, some time previous, one three months, one four months, and one three years. One patient gave a history of an attack of pain six months previous, with tenderness in the abdomen relieved by a discharge of pus into the rectum, forty-two days before operation without symptoms of pregnancy, was taken suddenly with severe pelvic pain lasting for several hours, tenderness which continued for two weeks, then a second attack of pain in the same place. Examination showed a mass to the right of the uterus. Operation found a ruptured tubal gestation sac and an appendix bound down with adhesions to the rectum.

SUMMARY.

There are no pathognomonic signs of an unruptured tubal gestation sac. Such diagnoses are rarely confirmed by operation. At the time of rupture, there is usually sudden pain followed by flowing; a feeling of faintness or callapse may accompany these symptoms. After rupture, the history of repeated attacks, together with the finding of a pelvic tumor may guide us correctly. In all cases the possibility of gonorrheal salpingitis should be carefully considered.

TREATMENT.

When the most probable diagnosis is unruptured extrauterine gestation, abdominal section is indicated. Bandler suggests curettement and examination through a vaginal opening, a procedure found most useful in practice, but the removal of the tube through this incision is not always easy or satisfactory. When rupture occurs, unless the patient is in extreme collapse, immediate operation is demanded. With extreme collapse, at this time it is wise to give morphine and salt solution and wait until the patient recovers from shock. With great pallor and anemia, I prefer not to wait very long, but think it wise to open the abdomen, clamp off the bleeding tube, and then wait for salt solution to raise the blood pressure to the safety point. It is a noticeable fact that the pulse rate will improve under anesthesia in cases showing marked shock. and while it is appreciated that the hemorrhage differs from the ordinary postoperative hemorrhage due to broken or slipped ligature, yet we have never regretted opening and placing a clamp on the bleeding tube. Cases with mild symptoms and slow bleeding with the development of hematocele, when seen late, may be treated conservatively. Some subside without recurrence of symptoms; some become infected and are drained later. Such cases can be kept under observation and operation be performed later if there is a recurrence of hemorrhage. Undoubtedly many of these cases occur which are never recognized as such, making either spontaneous recoveries or later developing into pelvic abscesses. It is not my purpose to urge this method of treatment, but we all meet with patients who refuse operation and this termination should be remembered. When broad ligament hemorrhage occurs, two methods are applicable, puncture, evacuation, and packing, or section with ligation of the vessels and complete removal of tube and ovary. The latter method is the more surgical, although attended by much bleeding at the time of operation.

If a viable fetus is discovered, in either the broad ligament or peritoneal cavity, there is often a question whether to remove it at once or wait until after its death. This seems to depend somewhat upon the stage of development and the position of the fetus. A few have been delivered at a viable period and lived, but the prognosis is not good. Defective nutrition and cramped quarters do not favor normal development. Although many authors favor waiting until the child is dead and the fluids are absorbed, it seems that most men favor delivery *per abdomen* about the eighth month. The removal of the placenta offers difficulties.

One of our cases went to maturity and was operated in 365 days from date of onset of pain. The removal of the fetus was easy, but the placenta was so firmly attached to the intestine that complete removal was extremely difficult and the patient had many painful adhesions afterward with recurring obstructions, one of which finally caused her death.

In the ordinary cases the tube should be removed, the free blood aspirated, and such blood clots, as can be safely separated, removed. When much blood clot is found attached to the small intestine, obstruction must be thought of, and when it occurs, immediate enterostomy be performed. In one of our cases three obstructions developed after the second extrauterine impregnation, and were finally relieved by short circuiting the proximal portion of the ileum into the sigmoid. The question as to whether double salpingectomy should be done, is still an open one. There seems to be some connection between salpingitis and extrauterine impregnation, but the question is not settled.

In conclusion, let me urge that every case of supposed pregnancy in which develops sudden pain, flowing, or shock, be considered extrauterine until proved otherwise. That these cases are frequent needs no emphasis; that they are often overlooked is evident. Ever present suspicion of the condition would lead to early recognition and proper treatment.

153 Delaware Avenue.

STATUS LYMPHATICUS.*

A Report of Two Cases,

By William Ledlie Culbert, M. D.,
New York.

One of the most tragic experiences in surgery is the unexpected loss of a patient on the operating table from thymus enlargement, or from what is usually called, for want of a more definite term, status lymphaticus. To recall some of the conditions to mind, I cannot do better than to quote from Warthin's classic article in Osler's *Modern Medicine*. He says:

> It is of course evident that the condition of thymic death is that classed by many writers as the chief feature of the status lymphaticus. It is, however, a question whether the latter represents a definite primary pathological entity; it is much more probable that the clinical and pathological features usually regarded as characteristic of lymphatism constitute a cachectic complex, secondary, perhaps, to a number of primary morbid processes, such as syphilis, rhachitis, some latent infection, autointoxication, etc., that are characterized by an excessive demand upon the lymphoid and myeloid tissues of the body. At a certain stage in the process the lymph nodes may be enlarged, and it is to this stage that the term status lymphaticus is usually applied.
>
> The thymic enlargement is most probably to be regarded as a purely compensatory condition, secondary to some primary lymphotoxic or myelotoxic process. The sudden death in status lymphaticus is dependent primarily and wholly upon the thymic enlargement, and the latter condition becomes therefore the most important feature clinically. Moreover, thymic enlargement, leading to thymic death, may exist without any of the other clinical features ascribed to status lymphaticus. Nevertheless, the latter term serves a good purpose in designating the cachectic complex of thymic enlargement associated with adenoids, enlarged tonsils, enlargement of the superficial lymph glands, rhachitis, etc.

Of the two patients whose case histories I will narrate the first was the son of a physician, in a neighboring town; the second was a ward patient in the service of Doctor Rae at the Manhattan Eye, Ear, and Throat Hospital. Both these patients had well marked general tuberculous adenitis; in addition, the first had an enlarged thymus, which was undoubtedly the cause of his death; the second also had an enlarged thymus.

Case I. W. F. L., seven years of age, born in the United States, the youngest of seven children, all healthy. Parents, both living, well, and strong. There was no family history of tuberculosis or chronic disease. He was first brought to my office by his father on June 6, 1915, with the history that he had always been well and able to hold his own with his playmates in their games and contests. Four years before, when he was three years old, the glands of his neck became swollen without apparent cause, but subsided in due course and remained quiescent until four months previous to consulting me, when he had an attack of tonsillitis, at which time the glands of the neck, especially on the right side, again became swollen, the condition continuing and progressing up to the time of the visit.

The child was a mouth breather and presented a large mass, the size of his fist, on the right side of the neck, the centre fluctuating, and he looked pale and anemic. Examination of the nose revealed nothing abnormal. The tonsils, however, were unhealthy looking and were much enlarged, meeting in the middle line when the tongue was depressed; the crypts were large and gaping. A large adenoid mass was present. A chest examination showed the heart and lungs to be apparently normal, but I did not like the child's appearance and did not wish to operate until he was in better condition; so advised that he be taken back to his home, kept out of school, allowed to play in the open air, and made to lead a simple hygienic life. I further directed that a little vaseline be instilled in his nose several times a day, that he receive proper breathing exercises, take a tonic which was prescribed, and report back to me in a couple of weeks.

The father had desired to have the boy's tonsils removed as soon as possible, but on account of the cervical adenitis I was unwilling to perform the operation for fear of setting up a more acute condition. On June 16th, ten days later, the father appeared again at my office without previous notice, saying that the boy was much better and that he would like to have him operated on, that day. The boy's general appearance was improved, and the tonsils had subsided slightly, but the lump in the neck had remained unchanged, except that the centre was more fluctuating. Consequently, it was decided to dissect out the glands on that side, and to take care of the tonsils and adenoids later.

The boy was admitted into the hospital and walked into the operating room, climbed on the table without assistance, and took the anesthetic quietly. This was administered by an expert anesthetist, very little ether being given. I proceeded at once to dissect out the glands of the right side, through the usual incision. Everything progressed rapidly and satisfactorily. The glands formed a large mass, involving the deep vessels of the neck as well as the sternomastoid muscle and the spinal accessory nerve. Two large ones were broken down and were filled with caseous pus and necrotic tissue. I had finished dissecting around the deep vessels of the neck and was just about liberating the spinal accessory nerve when the father, who was sitting near the child's head, remarked: "How finely he is taking his anesthetic; his pulse is splendid." Less than two minutes later, the anesthetist noticed that the child was not breathing, and the pulse could not be felt.

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*Read before the New York County Medical Society at its March meeting, 1916.

Hypodermics of strychnine and camphor were given, also a saline enema, artificial respiration and the pulmotor were brought into use, but all were without avail. The child died within forty minutes of the beginning of the anesthesia.

Recognizing that there was something unusual in the child's sudden death, which suggested a thymic death, I obtained the father's permission and the body was taken to the laboratory, where Doctor Law made the radiograph. Quickly developing the plate, he recognized the presence of an enlarged thymus. I then asked the father's permission for an autopsy. This being granted, and our pathologist being away at the time, the body was taken to the morgue and, again with Doctor Law's assistance, the breast plate was cut away, revealing a large mass spreading over the anterior surface of the heart. This was carefully dissected up from below and was easily removed, except at and above the sternal notch. The gland measured twelve cm. in length, 4.5 cm. in width, and 2.5 cm. in thickness.

The second case has a rather long history, covering a period of several months and a stay in several hospitals. For this history and physical examination I am indebted to Dr. R. L. Hutton, attending physician to the Manhattan Eye, Ear, and Throat Hospital.

Case II. S. A., five years of age, of Turkish parentage; both parents and five other children living and well. Family history negative as regards tuberculosis or other disease. The child had had no illness prior to May, 1915, when the parents noticed a small lump on each side of the neck, which seemed to gradually increase in size, but were never painful, nor did they break down or discharge. Later, smaller lumps were noticed in both axillæ and groins. In the same month, the child caught scarlet fever, and was removed to Willard Parker Hospital on the 22nd. The scarlet fever was complicated by otitis media, adenitis, and nephritis, necessitating a stay in the hospital until October 3rd, practically five months.

Two days later, the child was admitted to St. Luke's Hospital and remained there from October 6 to 25, 1915. Doctor Hutton obtained for me a full history from the St. Luke records, but I mention only the most salient points, and draw attention especially to Doctor Gould's physical examination, which I cite later by his permission.

The chief features observed while in St. Luke's were the general glandular enlargement (especially marked in the cervical and axillary groups), discharging ear, nasal discharge, and an irregular fever, running up as high as 103.2° F. There was little anemia; hemoglobin, seventy per cent. The red blood count was 4,500,000; white cell count, 11,500 to 13,500; with moderate lymphocytosis, forty and forty-two per cent., small and large lymphocytes together. There was pus in the urine, but no casts. "Physical examination of the chest showed slight dullness and harsh breath sounds posteriorly in both suprascapular regions; elsewhere normal resonance, voice and breath sounds. Over the upper portion of the sternum and for about one half inch on either side of it, there was dullness (mediastinal?)." The liver and spleen were enlarged. The ear examinations showed chronic suppuration with a large polypus and granulation tissue filling the fundus of the canal.

During the child's stay in the hospital, his condition improved and there was little fever at the time of his discharge. When he was first admitted to St. Luke's, one of the larger discrete glands in the right axilla was excised and examined. The interior of the gland was found to be caseous, and the pathological report was tuberculosis. Wassermann and von Pirquet tests were negative.

On November 5, 1915, about ten days after leaving St. Luke's Hospital, he was brought to the clinic of the Manhattan Eye, Ear, and Throat Hospital, for treatment of his left ear and the glands of the neck, and was admitted to the hospital, under my care. The symptoms presented then were similar to those in St. Luke's examination, detailed above. The ear discharge was perhaps more profuse, and the parents stated that the glands of the neck were more enlarged. There was a profuse purulent discharge from the nose, and the tonsils also were enlarged. The temperature on admission was 101.6° F., during the child's stay in the hospital, covering a period of a little over four weeks, the temperature continually rose and fell, varying from 99.2° to 104.4° F. The Wassermann was negative. Cultures from the nose and throat showed Staphylococcus albus; no Klebs Loeffler were found. The blood examinations and blood counts, of which a number were made, showed practically the same condition as at St. Luke's. The urine examination showed a decided amount of pus. One additional feature calls for attention —the presence of two badly decayed teeth in the left lower jaw.

An x ray of the chest gave a shadow of an enlarged thymus.

At both the Willard Parker and St. Luke's Hospital a radical mastoid operation was advised, but was not performed on account of pus in the urine. At the Manhattan, a radical mastoid was also advised, as well as the removal of the then much more inflamed cervical glands, but neither was done, not only on account of the pyuria, but because of the enlarged thymus which the radiograph indicated.

On December 4, 1915, the child was removed from the Manhattan to the Sea Breeze Hospital.

In conclusion, I would like to draw attention to the importance of:

1. A thorough physical examination of all children who present themselves for operation, especially those for removal of adenoids and tonsils; more particularly when they show any deviation from the normal should we look all over the body for enlarged glands, bone deformities characteristic of rhachitis, and areas of sternal dullness. Pribram, of Prag, draws special attention to enlarged papillæ at the base of the tongue and an omega shaped epiglottis.

2. If any stigmata are present to make us suspect an enlarged thymus, operation should be refused, or, at least, deferred until a full laboratory investigation can be made, including, of course, skiagraphs.

16 East Fifty-fourth Street.

CYSTOSCOPIC RECTOVESICAL TRANSILLUMINATION.

By P. S. Pelouze, M. D.,
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Digital examination of subvesical structures per rectum is at best uncertain. The examining finger is a short instrument and a pathological condition must be placed low down to be thus discovered; also, it must be distinctly palpable as to contour and consistence to give information of certainty. To decide beyond a doubt that we are dealing with disease, is at times impossible, and anything that aids in diagnosis in this region of more or less uncertainty has a distinct value. For this reason I am led to describe the application I have made of the old method, transillumination, to these structures.

If we insert the cystoscope into the bladder, dilate the viscus with water, introduce an electric bulb into the rectum, and turn out the cystoscopic light, we find it possible to transilluminate the intervening structures. So thoroughly can this be done that the tiny bloodvessels of the base of the bladder are distinctly seen, and changes in tissue thickness and density can be accurately determined, and the ureter followed for a little distance. While I have not had the opportunity to study such a case since first using the method, I feel perfectly sure that stones in the lower end of the ureter could be distinctly seen.

Owing to the small field of distinct vision offered by the cystoscope, and the close proximity of the rectal light, a large surface cannot be observed at one time, but by moving the rectal light in various directions and following the illuminated portion with the cystoscope, the size and mobility of the rectum permit of a study of the entire base of the bladder and well up on the posterior wall.

In the normal bladder, the light becomes visible in the median line about 1.5 cm. behind the so called urethral uvula, and can be seen as it passes up along the posterior bladder wall. When moved laterally, it becomes dim and disappears behind the ampulla and seminal vesicle; if held directly under the ureteral orifice, the distinct widening of an ellipse of intense light can be seen during the expulsion of urine, the surrounding muscle fibres and ureteral wall showing much greater light obstruction.

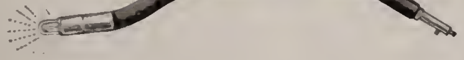
FIG.—Rectal lamp and carrier.

For the purpose I have had made a curved shaft for carrying a large transillumination lamp. This curve was found necessary because the straight shaft not only restricted lateral motion but pushed too sharply into the base of the bladder. The lamp gives a very brilliant light, and, being surrounded by an air chamber, there is no danger of producing a burn.

The technic is extremely simple, offering no difficulty whatever to one moderately skilled in the use of the cystoscope. With a little practice, it is hardly necessary to light the cystoscopic lamp for purposes of orientation, but this can easily be done from time to time more accurately to locate a given area.

Obviously the real value of this procedure is in the determination of infiltrations of tissue from vesical, prostatic, or rectal gowths, and the diagnosis of stones in the lower end of the ureter. Whether it will be of much value in conditions involving the seminal vesicles is a question, as these organs vary so much in shape and size that we hesitate to diagnose inflammatory changes here from shadows alone. A perivesiculitis, however, passing toward the median line would give a shadow so very different from that of its fellow as to confirm other findings, or, if the inflammation is bilateral, the obliterating or narrowing of the normal illumination in the median line will be of value.

1831 CHESTNUT STREET.

OBSTETRICAL ABDOMINAL HYSTEROTOMY,

With a Report of Twelve Cases,

BY ALFRED M. HELLMAN, B. A., M. D., F. A. C. S.,
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Although it was eighty-nine years ago that Richmond performed the first Cæsarean section in America, the value of this procedure seems still to be undefined in the minds of some. Certainly the laity is still of the opinion that it is the gravest of obstetrical procedures. Controversy of late has led me to believe that every one with experience in this line should report his results, so that the value and safety of the operation may be made clear to the practitioner and through him to the laity. My twelve cases were as follows:

Four were for disproportion between head and pelvis, at term; all four mothers and four children made uneventful recoveries. One case was for labor complicated by ventrosuspension and a transverse position of the child; the mother was out of bed on the eleventh day, and the child did perfectly well. Three cases were for placenta prævia at or close to term; mothers and babies made uneventful recoveries. One case was for congenital occlusion of the vagina with slightly contracted pelvis; I have reported it elsewhere—the mother and child did well. Two Cæsarean sections were for eclampsia, at term; both mothers died of continued convulsions within twelve hours of the operation, but the babies did splendidly. These maternal deaths cannot be ascribed to the operation. The Cæsarean section cannot be called the cause of death any more than the digitalis administered to the failing heart in pneumonia can be called the cause of death in that dread disease. One hysterotomy was for eclampsia at six and a half months; the child breathed for six hours and then expired, while the mother made an uneventful recovery.

In only two of the cases were there any complicating features. In one of those operated in for disproportion, after the woman had been in labor thirty-six hours with membranes ruptured, there was considerable fever with pains in the lower abdomen, both lasting for two weeks. But at the end of the third week, the patient returned to her home in perfect health. The patient with congenital occlusion of the vagina, after reaching home, passed three of the chromic sutures used to close the abdominal fascia through a small opening in the abdominal wall.

The technic is simple, provided always that perfect asepsis and sufficient assistance are to be had. The first two cases were operated in by the large incision above and below the umbilicus. In all other cases the method described by Davis was followed. I give the technic in detail because I think this method gives the best results. The vagina is wiped out with tincture of iodine full strength, and the patient catheterized. The entire abdomen and lower part of the chest are covered with iodine, and sheets and towels are spread as in any laparotomy, and just when ready to operate, pituitrin, one c.c., and aseptic ergot, one c. c., are given hypodermically. An incision is made, starting at the upper edge of the umbilicus extending upward along the midabdominal line for about three inches. When once we are in the abdominal cavity, the intestines are packed away rapidly and walled off from the uterus with sterile moist pads. A three inch incision is now made at the very top of the uterus, midway between the inner ends of the tubes. The membranes or placenta are torn through with the finger and the baby delivered, feet first. The cord is clamped and cut and the baby handed to an assistant, who stands ready to receive and revive it, because these infants are regularly born in a state of acapnia. Up to this step three minute or less has been consumed and we may now take our time. Either end of the uterine wound is grasped with a single pronged bullet forceps and held taut by the first assistant. The operator then passes his hand into the uterine cavity and removes the placenta and membranes entire. Now we are ready for suturing. A No. 2 plain catgut running suture is used to sew muscle to muscle of the cut uterine edge, care being taken to avoid the endometrial lining and peritoneal covering of the uterus. Then the peritoneum of the uterus is sutured with a No. 1 or 2 running twenty day chromic suture. The corners are reinforced by one or two interrupted sutures. All pads are removed and the abdominal wall is sutured in layers. Less than thirty minutes will have been needed, and the patient will be in perfect condition and have suffered a minimum loss of blood.

This method is easily the best so far devised. It has distinct advantages over other and older methods. Everything is plainly in view, the incision is made into the high part of the uterus where in succeeding labors there will be least strain, and there is no possibility of adhesions between uterine and abdominal scar. The low incision, extraperitoneal or transperitoneal presents many more technical difficulties; the exposure is not as good, the bladder and ureters may be injured. None of these difficulties are encountered in the high incision. An infected case where a laparotomy must be done is the only indication for the extraperitoneal incision.

As for the vaginal Cæsarean operation, the difficulties are still greater. In 1906, Palmer Findley reached the following conclusions:

1. It takes less time to do an abdominal than a vaginal Cæsarean section.
2. Greater cleanliness is assured.
3. Abdominal incision is wholly under control of the operator.
4. Patient can be sterilized, if needed. Tumors, etc., can be removed.
5. More likely to obtain a viable fetus.
6. Rupture of uterus more likely if low incision is used than high.
7. Bladder and ureters will not be injured by high incision.

I can see no reason to withdraw any of these conclusions; I should simply like to add that abdominal Cæsarean section returns the parts much more nearly as they were before than does the vaginal. The convalescence is less painful and much more likely to be smooth.

The prognosis is in general good, especially good when it is the method decided upon before labor sets in, and when no vaginal examinations are made late in pregnancy and no trial of labor is allowed. Obviously, the absolute prognosis in any particular case must depend on the condition for which the Cæsarean section is performed, and above all, "the mortality of the section in general," as Reynolds puts it, "is proportionate to the amount of labor that has been endured before its performance."

When considering the indications for Cæsarean section, the need of individualization is as imperative as in any field of medicine or surgery. When we say such and such is an indication for Cæsarean section, we mean, first and above all, that in the condition mentioned section must be given due consideration as a possible means of giving the mother a painless childbirth with speedy convalescence, and we must hope for a living child. Hence we consider as indications for Cæsarean section:

1. Relative disproportion between fetus and pelvis.
   a. Contracted or deformed pelvis.
   b. Monster or overgrowth of fetus (dead or alive).
2. Tumors obstructing labor.
   a. Of the bony pelvis, as in exostosis.
   b. Of the uterus, as fibroids or cancer.
   c. Of the ovary, as cyst or tumor.
   d. Of the sigmoid or rectum.
   e. Displaced kidney acting as a tumor.
3. Placenta prævia, especially if central at term. Under this head may be included accidental hemorrhage.
4. Eclampsia—to empty the uterus rapidly without much shock.
5. Certain malpositions, as impacted face or cross presentations. This latter is frequent after ventrosuspension.
6. Deformities of uterus and vagina.
   a. Atresia vaginæ.
   b. Double uterus.
7. Severe cardiac conditions. Here sterilization is usually added.
8. Instead of high forceps on the floating head in noninfected cases.
9. Once a Cæsarean, always a Cæsarean.
10. Gunshot wound through gravid uterus (suggested by Zincke).
11. Moribund or dead mother with living child.
12. Tonic contraction of uterus and dry labor (suggested by Davis).
13. Prolapse of cord with undilated cervix (suggested by Davis).

From this limited experience of my own, from assisting others, watching the results of my colleagues, and a careful study of the literature, I am convinced that obstetrical Cæsarean section is a simple, sane and safe procedure in uninfected cases, and that in proper surroundings with proper assistance the indications for this procedure can be greatly broadened to the advantage of mother and child. It gives the mother an almost painless labor, a speedy convalescence, and perfect health when all is over, with freedom from the troubles and complications of cystocele, rectocele, lacerated cervix, and prolapse, not to mention what we see frequently enough after difficult instrumental deliveries, fistula from vagina into rectum or bladder, or incontinence of feces or urine. For the child it practically does away with the possibility of fractures, palsies, cerebral injuries, and disfiguring marks of forceps. It is time that the general practitioner, the family doctor, who has been called the "obstetrician of America," learned that there is a safe method of delivery in complicated but uninfected cases, that is free from the mutilating effects of forceps, version, and the like, and it is time that this same truth was brought home to the laity.

2 West Eighty-sixth Street.

Wassermann Reaction in Scarlet Fever.—G. F and G. R. Dick (*Journal of Infectious Diseases*, August, 1916), as a result of their investigations, came to the conclusion that positive Wassermann reactions in scarlet fever, obtained with acetone-insoluble portions of alcoholic heart extract, are strongly suggestive of syphilis.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXIV.—How do you treat ivy poisoning? (*Closed.*)

CLXXV.—How do you treat furunculosis? (*Answers due not later than October 16th.*)

CLXXVI.—How do you treat Colles's fracture of the radius? (*Answers due not later than November 15th.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXIII was awarded to Dr. A. W. Nelson, of Cincinnati, Ohio, whose paper appeared on page 700.

PRIZE QUESTION CLXXIII.

THE TECHNIC OF CIRCUMCISION.

(*Continued from page 703.*)

Dr. Willis H. Hall, of Carina, Cal., remarks:

No matter what condition calls for this operation, the method is practically the same; the object is to dispose of most of the prepuce so that the end result is good as regards appearance and function. To attain these results I have found the following procedure satisfactory:

As to the anesthetic, in children and in young persons, a general anesthetic is to be preferred, to guard against the needless struggles which ensue from fright when a local anesthetic is used, as children are easily frightened and will not remain quiet even if there is no pain. In those who are older a local anesthetic may be used to advantage. My choice is novocaine one per cent. sterile solution to which is added just before use adrenaline chloride twenty drops to the dram, the solution being sparingly instilled to prevent excessive deformity of the parts. Quinine and urea hydrochloride, cocaine, beta eucaine have all been used with satisfaction.

Previous to injection a constricting band should be placed around the penis near the root. An ordinary elastic rubber band is sufficient, and should not be too tight, only enough to retard the venous circulation. The parts should then be thoroughly but gently washed with warm water and tincture of green soap, followed by alcohol and a very thin coating of tincture of iodine. The syringe should be sterile and the needle sharp. The patient should feel only the first puncture and the line of the injections should follow the line of intended incisions. Test with the needle point to ascertain when anesthesia is sufficient to begin the incisions. If a general anesthetic is used, the washing is postponed until the operator is ready to go to work. In any case the operative field should be protected by sterile towels.

In case of a paraphimosis, it should be reduced, and the operation conducted as usual. In some cases there is a great swelling which obliterates the usual landmarks. The penis becomes twisted on its own axis, from tension on the frenum. In this case there will be a sulcus at the site of the frenum and the incision is started on the side away from the sulcus.

In making the dorsal incision, it is well to insert a grooved director beneath the tissues and then divide with scissors, one blade sliding in the groove director to avoid damage to the glans. The incision should be made about two thirds of the distance from the urethra to the corona, as the skin will retract on account of its elasticity. The dorsal incision having been made, it is well to retract all tissues over the glans, breaking up adhesions. If phimosis or adhesions prevented the washing of these parts previously, it is well to wash them at this time. The next step is to sever the redundant prepuce by making an incision in the line of the corona, from the dorsal incision to the frenum, first on one side and then on the other, afterward trimming the deep layer of the prepuce to correspond with the retracted outer layer, so that the deep layer is left about an inch long. The next step is the suture of the two layers of the prepuce with fine catgut or silk; interrupted sutures giving better satisfaction than the continuous suture. By coapting the two layers with properly placed sutures, healing takes place more rapidly than if there is a gap left to become infected and produce irritation. The constricting band may be removed and the parts well washed in flowing hot water or normal saline. This cleanses the parts and helps to limit the swelling caused by the operation as well as to control hemorrhage.

The dressing most satisfactory to me is gauze saturated with pure olive oil, sterile and applied freely. The gauze dressing is applied in two parts, the first consisting of a square of gauze with a small hole in the centre, which is enlarged with the finger to a size which will pass partly over the glans but not over the corona. The second piece of gauze is like the first, except that the centre opening is larger and should slide over the first piece like a collar; the fullness is turned toward the distal end of the penis, so that when complete the fullness of the two pieces of the dressing lies in two different directions. This second piece of gauze thus covers the glans and the meatus, and may be turned back when the patient urinates, the first piece of gauze remaining undisturbed.

With care this dressing may be kept clean till time to change it, which should not be for five days, when union should have occurred. With proper care the wound should be clean. In most cases a second similar dressing should be all that is required.

Where there is subpreputial chancre or chancroids or a badly infected urethra, not many primary unions occur, there being usually one spot which has become infected, and the treatment should be that of the source of the infection. If it is infected from a chancroid, it is best to consider the infection a chancroid and treat it as such.

Dr. J. Otis Carrington, of Malden, Mass., says:

We must remember that the skin of the penis is loose and capable of enormous distention owing to extravasation of blood from uncontrolled bleeding points which may lead to hematoma. Great care must be exercised to estimate accurately the amount of prepuce to be removed so that the glans penis is just covered when the organ is flaccid and contracted.

Local infiltration with novocaine one per cent. is necessary, except in infants and young children, where general anesthesia is employed. Local infiltration should follow the lines of incision elected and should be made both into the skin and beneath the mucous layer of the prepuce. Novocaine four per cent. must be held in the preputial cavity or applied within the cavity on a pledget of cotton for five minutes. The entire preputial cavity and prepuce should be thoroughly washed with soap and water and some nonirritating antiseptic fluid.

When the preputial orifice is narrow, but not abnormally long or redundant, a longitudinal incision along the dorsum of the penis suffices. Pass a broad, flat grooved director between the prepuce and glans, one blade of probe pointed scissors being passed along the groove. The incision should extend a short distance beyond the corona. If the lining membrane of the prepuce is redundant—it usually is—clip the excess away, leaving a cuff of one quarter inch with which to unite the two layers of prepuce, using a continuous suture of fine catgut. Dress with sterile gauze.

When the prepuce is abnormally long, the redundant portion must be removed. All adhesions between the lining membrane and glans should be separated by retracting the prepuce as far back as the corona. Now, draw the prepuce forward over the glans and gauge very carefully the amount of redundant tissue to be removed. Then grasp it in front of the glans with a pair of clamp forceps, applied obliquely from above downward and forward. The portion in front is cut away with a bistoury, leaving a cuff of mucous membrane one quarter of an inch broad. Remove enough skin so that the glans may be well exposed, but be careful not to expose the sensitive papillæ of the corona. On removing the forceps, slit the lining membrane of the prepuce that still covers the glans up along the dorsum. The excess is cut away with scissors, making allowance for the cuff. Arrest bleeding by fine catgut ligatures. Pass four sutures of nonabsorbable material, silk or silkworm gut, uniting the cut skin margin to the cuff; one in the median line of the dorsum, one in the median line of the inferior surface at the frenum, and one on each side half way between these points. A few additional sutures will approximate all the margins.

Hemorrhage should be carefully controlled at bleeding points by hemostatic forceps and ligatures of No. 0 catgut. Apply a band of folded sterile gauze over the line of sutures and retain them by strips of zinc oxide adhesive plaster applied over the gauze. Do not apply the dressing too snugly. The penis should be held upright in a ring or dressing attached to a waistband.

Erections are painful, very annoying at night, and may tear the suture line and cause considerable hemorrhage. The sutures should remain in place from five to seven days. Rest by recumbency for two or three days hastens healing and diminishes painful erections. Sodium bromide grains xl, in a glass of water on retiring is valuable to control nocturnal erections. A clean, wholesome environment and nonstimulating food and drink should be given.

Do not apply permanent dressings. To do so is to invite decomposition, irritation, and possibly infection through urine retained in the meshes. Furthermore, a permanent dressing becomes hardened, heavy, bloody, and foul from the oozing of blood. Change the dressings as frequently as necessary to maintain cleanliness, insisting each time upon the use of sterile dressings.

Dr. A. Julius Gordon, of Newark, N. J., announces:

The operation of circumcision may be best discussed under the following heads:

1. Anesthesia.
2. Preparation.
3. Procedure.
4. Aftertreatment.

Anesthesia.—In very young infants I have obtained the best results by employing general anesthesia by ether or chloroform. In adults, except those of a decided neurotic taint, local anesthesia has yielded good results. I use either a solution of cocaine (0.25 per cent.) or a one per cent. novocaine solution. I make my first injection about an inch behind the corona and at varying intervals anesthetize the subcutaneous tissues just up to the corona. After waiting from five to seven minutes I am ready to perform the circumcision; no further injection is then required, except in some cases the further injection of a drop or two into the frenum.

Preparation.—The inguinal regions, scrotum and penis are thoroughly scrubbed for five minutes with green soap and water. The soap is washed off with sterile water. and the areas described are then washed off with a weak solution of bichloride of mercury. A sterile urethral catheter is then tied around the base of the penis, to act as a tourniquet to prevent bleeding. The penis is draped by placing one sterile towel on each surface of the base and holding these in position with towel clasps.

Procedure.—The prepuce is grasped by two small hemostats, one on the dorsal surface and the other on the ventral surface, close to their margins. The prepuce is then put on the stretch. A large curved artery clamp is then placed transversely across the prepuce close to the corona. Then, with a sharp scalpel, the foreskin above this large clamp is cut away, keeping the blade of the knife close to the clamp. The clamp is then removed, and the redundant mucous membrane is seized with two small clamps in exactly the same way as the skin was. A dorsal slit is then made with a sharp pair of scissors, and the redundant mucous membrane is removed by cutting around the circumference of the penis, up to within an inch of the corona. Great care should be taken not to cut the mucous membrane too short, and it is best left "untrimmed" once it is cut.

The rubber catheter is now removed from the base of the penis and any bleeding is stopped, with either a hemostat or a catgut suture. The mucous membrane and skin are now grasped with a pair of forceps, and catgut sutures (No. 00 or 0 catgut) are passed through these tissues. The sutures are put in about a quarter of an inch apart. The sutures are tied very loosely, not too tight because of the danger of edema and sloughing. The ends of the sutures are left long for the iodoform dressing. A strip of iodoform gauze, about one half to one inch in width, and of sufficient length to be wrapped around the penis, is then applied as a dressing to the operative surface. The iodoform is greased with sterile petrolatum, and is held in place by tying the long ends of the sutures. A sterile dressing is then applied and the operation is finished.

Aftertreatment. The patient, if at home or in the hospital, should be in bed for twenty-four hours. I usually give thirty grains of the triple bromides as a standard dose in order to prevent painful priapism, which frequently occurs. The dressing is changed the second day after operation and is then renewed every day or other day as the case requires. In seven to ten days the iodoform gauze usually drops off owing to the absorption of the catgut, and the wound is completely healed, except for a few raw spots, which clear up quickly when dressed with boric acid ointment.

Dr. Walter W. Sale, of Covington, Tenn., describes how:

The day before the operation is to be performed, I have patient shave all hair from mons pubis and scrotum, give him a few bichloride of mercury tablets and tell him how to make a one in 5,000 solution. I have him wash his penis, testicles, and lower abdomen two or three times the day before operation, and again about an hour before the operation. Immediately before operation I cleanse the above mentioned parts with the same solution, dry, and sponge with ninety-five per cent. alcohol. I then paint entire skin of penis with tincture of iodine; cut a small hole in a sterile towel just large enough to allow the penis to pass through, making a tight fit. The towel covers all except the field of operation.

For an anesthetic I use a two per cent. solution of cocaine as it takes a very small amount. First I inject about two drops under the skin of the dorsum of the penis midway between the distal and proximal ends. This does away with practically all pain that might be caused afterward.

I now begin at the median line on top and infiltrate the skin around the penis along the line that the incision is to be made. This requires only a few drops, maybe twelve or fifteen. This being finished, I massage the penis for a few moments by rolling it between my fingers and thumb. This gentle massage causes an even distribution of the cocaine solution and therefore thorough anesthesia.

I begin the operation by making a skin clip in the middle of dorsum in line with, and about one sixteenth of an inch behind the corona, taking care not to cut the mucous membrane, as the point of my operation is to remove the skin and mucous membrane separately.

I now slip the blade of a pair of pointed scissors into the skin opening and complete the incision on one side, following the curve of the corona to the frenum. A similar procedure is carried out on the opposite side, making the two incisions meet.

The foreskin now draws and shrivels, making the removal of the mucous membrane easy.

For the removal of the mucous membrane I first attach five hemostats at the edge of the foreskin, two at the top, one at each side, and one in the middle of the frenum, an equal distance apart, except the two at the top, which are very close together. I then make a dorsal slit between the two hemostats at the top to one fourth of an inch of the insertion of the mucous membrane behind the corona. I then pick up the two top hemostats on one side and have an assistant hold one at the middle of the frenum. I put just enough tension on these three hemostats to enable me to make a straight incision from dorsum to frenum. When I reach the frenum I direct my incision outward, and remove the membrane without cutting the artery of the frenum. This is almost a certain guarantee against hemorrhage of any consequence. The opposite side is removed in the same manner. I now hold the penis at site of incision firmly between my fingers in order to stop bleeding, if any takes place. I then paint the entire raw surface with pure tincture of iodine, and suture. I consider the suturing and suturing material very important.

The most important part of every operation is the result, and for a perfect result in a circumcision operation the skin and mucous membrane must be held in perfect apposition. Add a stitch so long as there remains a gap between skin and mucous membrane, regardless of number.

For suturing I use No. 0 plain catgut. I never have to remove a stitch. I remove the dressing on the third or fourth day. By this time the skin and mucous membrane are united perfectly and all the sutures hold without the slightest tension.

Dr. A. B. Pemsler, of New York, among others gives these details:

If adhesions are present the foreskin is pulled back and they are broken up. This step is very important in order that a good result be obtained. After this is done the parts are thoroughly cleansed with tincture of green soap, followed by an antiseptic dressing. In an adult it is even advisable to shave the pubic hair in order to obtain as clean a field as possible.

In suturing, I usually use silk. I leave the ends long. My dressing consists of a sterile gauze strip, which I place around the wound and keep in place by tying with the ends of the sutures left for this purpose. This dressing may be used only with adults who can be instructed to avoid wetting the dressing In children I apply the ordinary sutures, a dry sterile dressing, and instruct the nurse to wash the part with a solution of boric acid after the child urinates. The sutures are removed in about a week.

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Abstracts and Reviews.

THE MANAGEMENT OF POLIOMYELITIS.*

With a View to Minimizing the Subsequent Disability,

By ROBERT W. LOVETT, M. D.,
Boston.

Dr. Robert W. Lovett said that in regard to poliomyelitis he had no startling facts to bring forward, no new discovery, no revolutionary therapeutic measures; but it seemed to him that the data already accumulated were sufficient to warrant renewed study to see if encouragement could not be found for greater hopefulness in the outlook and for greater efficiency in the treatment. There were in New York city today several thousand children paralyzed during the last few months, and in the rest of the country several thousand others, and the problem of treating these children in the best possible way was not only a surgical and humanitarian one of great present interest and importance, but an economic question of no mean dimensions. The best brains in the country had been organized for the study of the epidemiology and pathology of this disease and the task was being taken seriously.

Although the work of such men was the more important, because prevention was better than cure, it was none the less imperative for clinicians to take their own problems just as seriously and to inquire into the efficacy of the present methods and the possibility of improving them. It was their business to see that the wreckage left behind these epidemics was efficiently and economically cared for.

Orthopedic surgeons largely prescribed braces, with perhaps massage or electricity, or muscle training as probably of use, and had been much interested in the operative question. The neurologists had been less enthusiastic about braces, but had on the whole favored electricity, about the value of which there was no controversy. The general practitioner had often ordered braces and had felt that electricity and massage were of use; but on the whole all had regarded the affection as an undesirable one to treat and a tiresome thing to have anything to do with, except in its operative aspect.

In surgery the treatment of poliomyelitis was one of the most gratifying and satisfactory problems for the reason that nowhere did the close analysis of each case and the application to it of commonly accepted anatomical and physiological principles yield more satisfactory results; the problem in every case, after the acute attack, was one in functional anatomy, exact, clean cut, and clear; the final functional results were in most cases largely influenced by the precision, efficiency, and persistence of the treatment, especially in the early stages; and certain phenomena of the disease, clinical and pathological, warranted holding out to these patients a much larger degree of hopefulness than had previously been possible. This statement could be substantiated in figures. Operations were performed, first, to improve existing function; these operations were tendon transplantation and nerve transplantation. The second class were done to secure better stability in badly paralyzed joints; to this class belonged artificial ankylosis, the use of silk ligaments, tendon fixation, and the removal of the astragalus with backward displacement of the foot.

It was unwise to operate in poliomyelitis, except to correct deformity, until after the lapse of two years; many surgeons believed this period better deferred for three or four years, or even to later childhood; but if, for instance, the change of tendons to rebalance the foot was deferred too long, bony deformity might be acquired and deterioration of stretched muscles might occur. A quantitative examination, such as the Martin-Cannon muscle test afforded, might in the individual case give much information as to the proper time for interference, so that in some cases two years would be long enough to wait, while in others it might be wise to defer operation in an attempt to develop certain muscles in younger children. The more destructive operations, necessitating the removal of bone, might better be deferred; extensive operation in young children was not desirable, even in the case of tendon transference. It was also manifestly sound surgery to see that as many operations as possible were avoided by careful treatment.

Anterior poliomyelitis was to be regarded as an infectious disease accompanied, in a certain proportion of cases, by paralysis. Paralysis was accidental and incidental; the infection was the central fact. In this paper, however, the paralytic form was under consideration. The clinical expression of the processes effected by the invasion into the system of the infectious agent was a widely distributed and erratic motor impairment, accompanied in most cases at the outset by great tenderness over the affected area. There was a mechanical anemia of the motor cells in the affected areas of the cord; these cells might recover, or go on to necrosis. The edema of the affected part of the cord interfered with motor function in the edematous area. Hemorrhages, if in the neighborhood of motor cells, might abolish their function. If the patient lived, the perivascular infiltration and edema subsided gradually or quickly and the hemorrhagic products were absorbed, leaving behind the areas too much damaged to recover, which were converted into focal scleroses. First there was an acute hemorrhagic myelitis; second, a convalescent myelitis with returning power, and, third, a cord, in the motor area of which were scleroses, all stages accompanied by more or less motor impairment. No one treatment could be advocated for all these stages, and there must be a clear distinction between the different phases of the process in considering therapeutics.

The stage of onset covered the period from the beginning of the illness until the disappearance of tenderness, which was evidence of an active process still existent in the cord. In exceptional cases, where tenderness was absent, this stage might be counted as lasting from four to six weeks. The stage of convalescence began with the disappearance of tenderness and lasted about two years. The chronic stage apparently began on the average of about two years from the onset and continued through life.

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*Abstract of paper read at Academy of Medicine meeting, Oct. 5, 1916.

The method of Professor Martin and Professor Cannon, of Harvard University, was a quantitative standard of examination; it consisted in ascertaining the strength of twenty-two different muscle groups on each side of the body in their resistance to the pull of a spring balance. Through this method an accurate study of the phenomena presented by the affected muscles was possible and led to the conclusions set forth in this paper.

Partial paralysis was more common than total. Total paralysis, when it existed, did so below the knee. Therefore they were not dealing with a hopeless loss of power, except in a small percentage of the muscles, but with a weakening which was of various grades. It should therefore be the aim to conserve, stimulate, and improve such weakened muscles with a view to bringing them as near to normal as possible.

A factor of much importance in the matter of securing muscular improvement lay in the existence of possible spontaneous improvement which started as soon as the tenderness disappeared, and continued for a long time. It should always also be borne in mind that fatigue and overexercise, therapeutic and otherwise, were dangerous.

Treatment in the acute stage should lie in rest and in the absence of irritation and meddlesome therapeutics. Deformities might occur in two or three weeks after onset and should be prevented by the support of plaster of Paris splints, or some similar simple appliance. A warm saline bath immersion was agreeable and apparently beneficial toward the end of this stage. There was reason to hope that the intraspinous administration of the blood serum of recovered patients, as early as possible in the onset of the disease, was a therapeutic measure of value in diminishing mortality and limiting the paralysis.

During the convalescent phase they faced squarely the question of muscular care and development. The destructive process had ceased, the harm had been done, and the development of the possibilities of what remained was the problem. In this stage the amount of ultimate function was determined. Spontaneous improvement was more marked in the first six months than in the second six, and more marked in the second six than in the last six months of the two year period allotted to this stage. The gastrocnemius muscles gained in strength when walking was restricted and if the muscle was judiciously exercised. This pointed to a general rule governing the behavior of other muscles.

Soon after the acute stage was over, it was better to get the patient on his feet—that is, within two or three months of the onset of the attack. Prolonged recumbency was not favorable to circulation, and the nervous system of children was undesirably affected by prolonged confinement. It was important to remember, too, that when the patient was put on his feet, there was an instinctive effort to balance and hold himself upright, which exercised muscles otherwise not to be reached; but fatigue should be guarded against.

Braces, corsets, and other forms of apparatus were compensatory rather than therapeutic. They enabled the patient to get about while massage, muscle training, the avoidance of fatigue, and perhaps electricity hastened the repair of the local process. Braces prevented muscular stretching and the loosening of joints, and controlled deformity.

The three chief measures for improving the condition of the neuromuscular mechanism were massage, electricity, and muscle training. The effect of massage was largely local and harm could be done as well as good.

Faradic electricity was disagreeable, but probably mildly effective in exercising muscles which would not contract voluntarily. Galvanic electricity and the newer forms, such as high frequency, sinusoidal, static, Morton wave currents, etc., were supposed to work, in a way less definitely understood, in increasing muscular power and improving nerve conductivity; but until the case for electricity was definitely proved, it was better that it should not constitute the whole treatment and it should not be carelessly applied by laymen.

Muscle training more closely met the requirements indicated by the pathological conditions in this stage. It was an attempt to reconnect a cerebral motor impulse with a peripheral muscular contraction when the normal connection had been lost or impaired by injury to the motor centres in the cord occurring in the acute stage, so that cerebral motor impulses were checked or diminished at these impaired centres, and the muscular contraction occurred feebly if at all. This method aimed to force the efferent impulse to create a new path along the disordered nerve centre in the cord and also to secure contraction of the desired muscle. These attempts rested on a sound anatomical and physiological basis; unless the destruction in the cord had been excessive, there was a possibility that some new path, or combination of paths, could be established to carry a motor impulse in some degree around the damaged area. In muscles not totally paralyzed, there was every prospect to expect continuous muscular improvement from repeated attempts to drive a motor impulse from brain to muscle and a permanent improvement in conductivity. Muscles partially paralyzed in poliomyelitis required an extremely small dose of exercise.

Deformities as they occurred in this stage should be removed.

The impression the speaker wished to convey was that the use of braces was conservative and preventive, rather than therapeutic; paralytic poliomyelitis was more often a weakening of the affected muscles than a total paralysis, and conservation and improvement of such muscles should be the main treatment, and, to be effective, such treatment must be based on a thorough and accurate muscular diagnosis and must be carried out with optimism, persistence, and accuracy. Under these conditions the treatment was effective in influencing ultimate function.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD AND EFFICIENCY.

By Martha Tracy, M. D.,
Philadelphia,
Professor of Physiological Chemistry, Woman's Medical College of Pennsylvania.

INTRODUCTION.

Efficiency is a watchword of the present generation. In this day a man is keen to learn how his business may be conducted more efficiently, how he may accomplish more, make more money, get more work out of his operatives, with the least possible waste of effort or loss of time or energy.

The measures taken to secure greater efficiency in business do not always consider the well being of the individual worker, although the idea has dawned, and now here, now there, is gradually advancing, that the health of the man or the woman at the machine or at the desk is of far greater significance, from the point of view of accomplishment alone, than the factory owner or managing clerk was formerly accustomed to think. Those in control begin at last to see that they will get more productive effort out of men or women who are well and in good spirits and working among healthful surroundings than out of workers who are below par physically, and are dulled by the stifling atmosphere of unhygienic workrooms.

In her comprehensive brief, *Fatigue and Efficiency*, published by the Consumers League of New York City, Josephine Goldmark has shown that work fails to be productive if carried beyond a certain point of fatigue in the worker. Professor Münsterberg, of Harvard University, calls attention in the *Psychology of Efficiency* to the desirability of the task's being appropriate to the mental calibre of the individual, if efficiency is to be expected.

A phase of this efficiency problem which has not been fully appreciated by the public is that suggested by the title of these papers; the relation of food to efficiency. Perhaps the delay in appreciating and attacking this phase of the problem, or the lack of momentum in the attack thus far, is due to two causes. One is the fact that here is a matter—the proposition of the food any individual eats—which is distinctly personal. What I eat is my business and what you eat is your business, and no one has a legal right to say that you and I shall change our habits in this regard.

In other matters of health, influenced no doubt by their bearing on business efficiency, public opinion has concluded that it has a right to express itself legally, and so laws have come to be which limit hours of labor to such as shall be short of excessive fatigue; and the ventilation and hygienic conditions of workrooms become matters of statute. In regard to food, however, beyond taking measures to prevent the selling of poisons or adulterated food substances, the law does not go. The freedom of the individual to eat or to starve is sacredly preserved.

The second cause for the ignorance and indifference to this subject is to be acknowledged with regret, that those of us who have learned by scientific study the very close relation existing between the amount and kind of food eaten and the efficiency of the human machine have not made clear to the public, in practical and comprehensible terms, what we have learned.

The average practising physician has not, up to the present time, been adequately trained in the subjects of nutrition and practical dietetics, and is not able to give clear and explicit information and directions to patients in regard to the purposes and caloric value and digestibility of individual food substances. I recall an instance reported in my own office of an estimable family physician, who when implored by a patient to tell her definitely what she might eat to meet or to avoid the exigencies of her condition, would reply only, "A little mutton broth is good."

It is exceedingly desirable that a wider scientific knowledge of these subjects among practising physicians should be interpreted by them to their patients in practical terms applicable to everyday domestic use.

Though both scientific and popular literature now abounds with expositions of the subject, the greater part of the material presented is either so popular as to be inaccurate, or so elaborate and involving the use of tables of food values which are unwieldy for practical use by the physician, and quite incomprehensible to the patient and the public at large. The subject has not yet been presented in a manner which though scientifically accurate is sufficiently simplified to interest and captivate the public imagination.

In this age of increasingly wonderful machinery, the human machine, far more mysterious and wonderful than any engine built by man, should furnish a subject of fascinating interest to every man, woman, and child, and this interest should be readily translatable into management of that machine in such a way as to produce a maximum of efficient work.

Through the writings and addresses of such men as Professor Lusk, of Cornell University, Doctor Bolduan, of the New York board of health and of the New York Medical Journal, and others, a beginning of this campaign of education has, however, been made. Thus we may hope that the future will see both preventive medicine and curative medicine helpfully advanced through popular applied dietetics.

The intelligent and effective practice of dietetics requires an appreciation of the principles of nutrition and a fundamental knowledge of the chemistry of the essential foodstuffs. It is hardly possible to introduce this subject without brief reference to the great French chemist, Lavoisier, who in the years 1776-77 discovered and demonstrated the importance of the gas, oxygen, in the life processes of animals. By this discovery he opened up the modern era of the science of nutrition and laid the foundation for the far reaching experiments which, during the last century and a quarter, have established our knowledge of the body processes on an accurate scientific basis.

Lavoisier himself was guillotined during the French Revolution, in 1794, while begging for two weeks more of life in which to complete experiments already begun, and of which an abstract report only is available. But a long list of chemists and physiologists have carried on the work, and through painstaking and laborious experiments, made possible by the gradual development of new and constantly more accurate and delicate methods and apparatus, facts have been accumulated which today enable us to lay down with confidence certain well established principles of nutrition.

The earliest observers in this field noted that though a normal man may consume a large amount of food, he does not vary to an appreciable extent from day to day in size and weight, and since the material lost in the excretions from the kidney and bowels did not balance the weight of food eaten, there must be other material loss, presumably of gases, which were in these early days included under the term "insensible perspiration."

Lavoisier showed that about one fifth of the atmosphere surrounding the earth consisted of the gas, discovered by Priestley, which he called oxygen, and that when wood or other fuel substances burn in the air, what actually takes place is a chemical change, a combining of oxygen with the substance of the wood or coal, this material being consumed more or less completely, and invisible gaseous products being formed. During this chemical process of oxidation, the potential energy which was latent in the materials of the wood or coal is transformed into and set free as heat and light.

This investigator observed that as a candle would not continue to burn in a jar from which a fresh supply of air was excluded, so an animal, a mouse, could not continue to live in a similar closed space. He was the first to become convinced that the life of animals is dependent upon absorption or inspiration of oxygen, and that animal heat, like the heat produced by a burning candle, is derived from oxidation of the material of the body, and that the same gases are produced by this oxidation or combustion in one case as in the other. He wrote: "Respiration is only a slow combustion of carbon and hydrogen, similar in all respects to that which takes place in a lamp or lighted candle; and from this point of view animals which respire are truly combustible bodies which burn and consume themselves."

The animal body then could be regarded as a machine or engine dependent for its driving force upon the oxidation or burning of fuel which is supplied in the form of food, and which disappears as such within the body furnace, but by its combustion or oxidation, yields energy in the forms of heat and mechanical work. It became at once an interesting problem to measure and compare the fuel value of materials burned in an ordinary stove, with that of the foodstuffs which are the fuel of the animal furnace.

As is well known, it has been found convenient to measure the fuel values of different materials in heat units which are called calories, each large calorie being the amount of heat necessary to raise the temperature of one kgm. (2.2 pounds, about one quart) of water 1° C. (1.8° F.).

This fuel, or heat producing value of any combustible substance has been determined by oxidizing a definite weight of that substance in the bomb calorimeter. When one gram of coal—almost pure carbon—is completely burned in such a calorimeter it produces 8.08 calories—i. e., sufficient heat to raise the temperature of one kgm. of water 8.08° C. By union of oxygen with the carbon during the combustion, the gas carbon dioxide is produced.

The substance of foods which are the fuel supply of the animal, are conveniently grouped in the chemical classes, carbohydrates, fats, and proteins, to which we must add the nitrogenous compounds of rather vague nature now known as vitamines, and the inorganic substances—water and salts.

Carbohydrates include the sugars and starches. They contain the elements carbon, hydrogen, and oxygen, and when they are oxidized or burned, more oxygen combines with these elements, heat is liberated, and the gases, carbon dioxide and water vapor, are produced.

Fats include such compounds as butter, lard, suet, olive oil, etc. They also are composed of carbon, hydrogen, and oxygen, but they contain a good deal less oxygen in proportion to the carbon and hydrogen, and so require more additional oxygen to burn them, and they liberate more heat weight for weight, when burned, than do carbohydrates. They also yield on combustion, carbon dioxide and water.

Proteins, the so called albuminous substances, are found chiefly in eggs, milk, and cheese, meat and meat products, fish, poultry, and to a less extent in vegetables, especially cereals, peas, beans, and nuts. These compounds contain also carbon, hydrogen, and oxygen, and in addition *nitrogen,* and often phosphorus, sulphur, and iron. When oxidized they liberate heat and yield the gases, carbon dioxide and water, and also certain other compounds derived by oxidation of the nitrogen, phosphorus, and sulphur. Proteins, therefore, have a composition and a value to the body in addition to and quite different from that of carbohydrates and fats. We shall discuss them later.

When these food substances, the fuels of the body, are burned in the bomb calorimeter, it is found that they have the following heat producing or caloric values:

1 gram of carbohydrates .... = 4.1 calories
1 gram of fat .... = 9.45 calories
1 gram of protein .... = 5.65 calories
(about 30 grams = 1 oz.) or
1 oz. carbohydrate .... = 123 calories
1 oz. fat .... = 283.5 calories
1 oz. protein .... = 169.5 calories

and each gram of carbohydrate, or of fat, or of protein, burned, produces a definite amount of carbon dioxide and of water.

(*To be continued.*)

Lysine.—Data collected by Osborne and Mendel show that lysine, as found in casein, lactalbumin, and egg vitellin, is indispensable for the functions of growth.

DIET AND GROWTH IN INFANTILE SCURVY.*

By Alfred F. Hess, M. D.,
New York.

With Part of the Subsequent Discussion,

Doctor Hess had noted a gradual falling off in growth at about the seventh or eighth month in babies that had been fed on pasteurized milk, and had made an experimental study to find whether this might not be due to a lack of the elements essential for growth in this diet. Many of these infants did not show typical symptoms of scurvy, the disease being in an obscure or subacute form, which he considered the most common and the least frequently recognized. Tachycardia was, however, an early and typical symptom.

He found that growth in both length and weight was greatly affected in infants fed exclusively upon pasteurized milk, both finally ceasing. When orange juice, orange peel juice, or potato water was added to the diet, there was often a supergrowth, which continued until the normal weight and length for the infant's age was reached, when the growth became normal. After discontinuance of this antiscorbutic food, although the infants sometimes continued to gain for a month or two, there was a gradual flattening of the curve of growth. As soon as orange juice was again given, however, a sharp gain was manifested, showing that the babies were receiving some essential constituent of the diet that had been lacking.

Doctor Hess also found that putting these children on unpasteurized milk had the same effect as giving fruit juice with the pasteurized milk. He then investigated the effect of boiling on both milk and antiscorbutic foods, and found that orange juice and orange peel juice did not lose their antiscorbutic elements by being boiled, although milk did. He concluded that while pasteurized milk should be recommended, on account of the security that it afforded against infection, it should be considered as an incomplete food, lacking the elements essential to proper nutrition and growth. He thought it probable that this was why so many infants failed to gain at about the seventh or eighth month of life, and began to grow better as soon as fruits and vegetables were added to their dietary. He thought that during the early months of life the infant was protected by the antiscorbutic elements inherited from its mother, and recommended orange juice at the age of one month, so as to prevent the development of the scorbutic state.

The doctor admitted that there might exist a number of causes for lack of growth; insufficient food, lack of proper elements in the food, etc. He thought, however, that other elements than lack of growth were concerned in the production of infantile scurvy, and did not consider stunting and scurvy as the same; as the diet might possess growth-promoting qualities, and yet be unable to prevent the development of scurvy or afford a means of curing it.

Doctor Holt thought that Doctor Hess had proved the point that had been under discussion from time to time, whether pasteurized milk could be held responsible for scurvy. It had been his observation for several years that such was the case, and a number of instances had come under his observation during the last year to confirm his earlier position. While they all admitted the great advance which had been brought about by the introduction of pasteurized milk in securing safety in cases in which doubt existed as to the way in which the milk was produced and handled, the disadvantages of pasteurization had sometimes been denied and sometimes ignored—and, on the part of the dealers supplying pasteurized milk, disputed. Unless they who were interested in the production of good milk and certified milk made strong their disapproval of the general pasteurization of all milk, it would not be many years before they should be face to face with the fact that it was impossible to secure any but pasteurized milk. In one city in New England, the health department was about to issue an order that no milk but pasteurized should be sold in that city, regardless of the conditions of production or certification. In a number of instances, certification had been done by irresponsible persons, and was later shown to have been a fake. Physicians had been in part responsible for this; and even they, perhaps, had been negligent. He believed, however, that in the matter of pasteurized milk, they must admit that scurvy, every now and then, followed its use—and many other conditions. In some persons there was a predisposition to scurvy which they could not ignore; and while comparatively few children on pasteurized milk got scurvy, some did. When they saw groups of dealers banding themselves together to get legislation through State legislatures or health departments forbidding the sale of any but pasteurized milk, they should show that there were dangers in the use of the latter. They saw bad results from its use less frequently among the babies of poorer people, because this class gave food other than milk to their infants much earlier than had been customary among the better class of people. It had been his observation, that, while nearly all the cases of scurvy used to come from the use of proprietary foods, they now came from employing heated milk, either pasteurized or boiled. It was also his observation that the number of cases of scurvy in the community was increasing, and it was a good thing that the matter had been brought before the society; because the number of cases was large. They had four instances in the hospital last year, cases that had been under medical treatment until there was epiphyseal separation at both knees, both shoulders, and both ankles. A vast number of the profession had not had their eyes opened to the dangers lurking in pasteurized milk, and the antiscorbutic treatment to counteract this must be begun early and continued.

The amount of orange juice necessary in these cases was a point of interest. It had been his fortune to see a case develop in the wards in a baby who was taking a good many meals a day and getting a pretty large quantity of carbohydrate food. Nevertheless, scurvy developed.

If Doctor Adams were to select an epitaph to be placed on his tombstone, it would be, "He opposed the commercial pasteurization of milk." He had fought this, and was going to continue to fight it as long as he had breath in his body. What Doctor Holt had said, he hoped the society would back up; i. e., that commercial pasteurization was dangerous and detrimental to the health of children. No institution should be advised to use pasteurized milk, just because some sentimental and erratic persons in the community had banded themselves together and decided that all children would be killed with tuberculosis unless their milk was pasteurized. With Doctor Hess and Doctor Holt, he had, within the last ten days, had cases in children that had been fed on the best pasteurized milk delivered in Washington city. That dairy was constantly furnishing him with work on antiscorbutic lines, yet it passed as one of the best dairies in the entire country. He could not understand why Doctor Herrman had asked if the essential antiscorbutic elements were destroyed in the cooking, they were restored by orange juice. To put the children on raw milk and let the orange juice go would settle the question. He hoped that the matter would be thoroughly discussed, and would tell them of an instance in his own experience. He was attending a patient in a certain house, and the father asked the dairyman why he had not sent raw milk, as Doctor Adams had ordered. The dairyman said he had not done so because the milk was not fit to deliver raw. That was the whole secret. It was rotten milk cooked that was being foisted on the community. He hoped that the members would come come out strongly against the commercial pasteurization of milk. He was not opposed to home pasteurization under proper supervision, but was opposed to commercial pasteurization.

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*Abstract of a paper read at the Twenty-Eighth Annual Meeting of the American Pediatric Society, Washington, D. C., May 8-10, 1916.

Doctor **Blackader** wished to say one thing to emphasize the importance of this subacute phase of infantile scurvy. This winter he had two cases in which children were brought to his office at the request of the attending physician for obscure symptoms, partly nervous, and associated with defective growth. There was no sign that he could find of infantile scurvy—none of the classical signs; but he felt convinced, from the history, that these children were suffering from defective nourishment in some form. He was remarkably pleased with the rapid disappearance of all the symptoms under the use of orange juice and unpasteurized milk, at the time. It was something new to him, and he intended to bring it before the profession. He thought that it was an original observation, but he must give Doctor Hess credit for first describing this subacute form with defective vitality owing to insufficient nourishment.

Doctor **Hess**, in summing up, did not feel that the conclusion to be drawn from this paper was that pasteurized milk was not of any advantage. In fact, in his conclusions he prefaced his remarks by saying that it was of advantage. The conclusion to be drawn was rather that pasteurized milk was an incomplete food—that it was inadequate. If this fact was realized, and acted on, it would be a boon to pasteurized milk producers; because there would be fewer cases of scurvy after its use and better results would be obtained with this heated milk. All that was necessary was to give with it, either orange juice or potato water. They could make potato water instead of barley water by using one spoonful of mashed potato to a pint of water. The commercial potato flour had no effect.

Everyone realized that there was a predisposition to scurvy, whether infantile or adult, in certain persons. That was realized a few years ago, when they had so much scurvy aboard ships. It was known now, also, that this was true in connection with beriberi. Some persons got beriberi and some did not, although they had been on the same food and had been to the same places. As regards infantile scurvy, the susceptibility depended partly on the amount of essential substances that the mother had and the food that she took during her pregnancy, as well as upon how long the infants were nursed. Doctor Herrman had asked how it was that boiling the orange juice did not destroy its essential substances, whereas boiling the milk did so. That was well known of various substances. A great deal depended on the medium. Certain substances would stand boiling in a watery solution (for instance, orange juice), where they would not stand boiling in a medium rich in fats and proteids, such as milk. The brain substance made from the hypophysis lost its coagulability after boiling, if undiluted; but if diluted, it would stand boiling. So it had to do with the medium in which the essential substance was.

The symptoms of scurvy were hemorrhages of the periosteum, petechial hemorrhages, hemorrhages of the gums, subperiosteal hemorrhages, hemorrhages into the muscles, enlargement of the heart, tachycardia, and the other various symptoms that he had detailed in two previous papers. The control cases, of which there were as many as those that had pasteurized milk, obtained no orange juice; yet in no instance did any of them have scurvy. When either orange juice or raw milk was given in the cases with scurvy, there was a sharp reaction in weight and in the clearing up of the symptoms. As to what was a vitamine, that was difficult to answer. Funk, who devised the term, thought that he had it isolated; but he found that it was not pure. It was a nitrogenous substance; and this was a good name, because it helped to designate the substance essential in scurvy, beriberi, pellagra, etc. He wished that Doctor Coit would come over to their institution and satisfy himself in regard to the vitality of the children there. They were institution children; but they looked as well as those in their homes. It was a model institution, and had plenty of fresh air. The weight of the children had been taken every day for six months previous to the beginning of the test. It was not as if they came to the institution just as they would to a hospital. Doctor Freeman had asked whether the speaker had tried the effect of orange juice in cases other than those on pasteurized milk. No, not especially. He could look up the charts and see what happened, but he had not made that particular test.

[Initial cleanliness and early uninterrupted refrigeration are the essentials to be insisted upon in any milk supply. Rotten milk is never made harmless by pasteurization.—Editors.]

Food and Feeding in Childhood.—Dr. J. Epstein, of New York, in the *Medical Times* for October, 1916, states that, beginning with the second year, the period of infancy ends, suckling or bottle feeding is over, and the active life of childhood asserts itself. The gastrointestinal tract which during infancy is in an immature state with its physiological functions of digestion not yet fully developed, is now able to digest and absorb a variety of semisolid and solid food. At this age the child usually has a number of teeth already cut through and is able to masticate the food, preparing it for the action of the digestive enzyme. As the child grows older, the articles of food suitable for its digestion multiply, and the simple, uniform, monotonous diet of infancy which consists of milk only, is now changed to a mixed diet.

The diet during childhood may be divided into three periods.

1. Diet during the second year.
2. Diet during the third, fourth and fifth years.
3. Diet during school years.

The diet during the second year is practically a continuation of the diet of the first year and should be given with the same care. Milk still forms the basis of the food, with the addition of protein, carbohydrates, and fats from sources other than milk. Semisolid and later solid food may be gradually added to the diet and the feeding should be at four hour intervals.

The following is a suitable diet list for children during the second year:

1. At 7 o'clock a cup of milk.
2. At 8 o'clock orange juice or the juice from other ripe fruit.

Breakfast at 10 o'clock:

1. A well cooked cereal—barley, oatmeal, wheatena or farina with a pinch of salt and cream.
2. Buttered toast.
3. A soft boiled egg.
4. A cup of milk.

Dinner at 2 o'clock.

1. Soup—chicken, mutton or beef broth, with a little green vegetable and a boiled or mashed potato.
2. Meat—scraped or chopped, to be given during the second half of the second year.
3. Stale bread with butter.
4. Dessert—junket, baked apple or apple sauce.

Supper at 6 o'clock:

1. A well cooked cereal with cream.
2. Zwieback or crackers or stale bread with butter.
3. Cooked fruit.
4. A cup of milk.

At 10 o'clock a cup of milk.

Nothing but water should be given between meals.

After the second year the child is able to digest a larger quantity and a greater variety of food. As the child grows older it is more active and there is a corresponding increase in metabolism. More food is required to replace worn out tissues and to supply heat and energy.

The following diet list will be found suitable for children between the third year and school age:

Breakfast at 8 o'clock:

1. A well cooked cereal with cream.
2. Bread and butter or buttered toast.
3. A soft boiled or poached egg.
4. A cup of milk or cocoa.

Dinner at 12 o'clock:

1. Soup with green vegetables and a mashed or sweet potato.
2. Meat—beef; lamb, or chicken. Fish may be given occasionally.
3. Bread and butter.
4. Dessert—pudding, junket, custard, baked apple, or ice cream occasionally.

Supper at 6 o'clock:

1. Well cooked rice or other cereal with cream.
2. Milk toast or bread and butter.
3. Cooked fruit.
4. A cup of milk.

No food between meals, but water should be given.

The following must not be given to children: Tea, coffee, beer, wine, whiskey, fried food, corn, cabbage, cucumbers, pies, cakes, nuts, raisins, bananas, and candies.

The diet of school children must receive special attention. School days are an extremely active period of life, both physically and mentally; the budding mentality of the young child gradually develops itself and there is an extra demand on the nervous system which increases the metabolic changes of the body and the wear and tear of life. School teachers cannot have much success in teaching hungry children. No pupil can learn the three R's without three meals a day. In a hungry child all the normal processes of life are lowered and the mentality is dulled. The diet of a school child must be sufficient, satisfying, and not monotonous. Milk being easily digested, should be furnished with every meal as a drink. Cream is valuable and should be supplied whenever possible. Eggs and meat are important as they supply a large quantity of protein from which the tissues are built up.

The following is a good general diet list for school children:

Breakfast at 7.30:

1. Fruit.
2. A well cooked cereal with cream.
3. An egg, boiled, poached or in an omelet.
4. Bread and butter, or griddle cakes occasionally.
5. A cup of milk or cocoa.

Dinner at 12.30:

1. Soup with white vegetables and greens.
2. Meat—steak, beef, lamb chops, mutton or chicken.
3. Bread and butter.
4. Dessert—rice pudding, hominy or custard.
5. A cup of milk.

Supper at 6.30:

1. Cold meat or fish.
2. An egg in any style.
3. Bread and butter.
4. Cooked fruit or plain cake.
5. A cup of milk or buttermilk.

Protein, carbohydrates, fat, salts, and water are the principal compounds of which food is composed, and their chemical elements are similar to those of which the body is composed. When food is properly digested and absorbed it replaces tissue waste and supplies heat and energy on which the processes of life depend.

Cooking Meats for Children.—It is important that meats cooked for children should be prepared with care. If meat is plunged momentarily into boiling water or hot fat, the surface albumin is coagulated immediately and the juices are retained with their full flavor. Thereafter a cooking temperature higher than 180° F. (thirty-two degrees below the boiling point of water) is not only needless, but renders the meat less appetizing and less digestible.

Editorial Notes and Comments

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SHOULD THERE BE A CHAIR OF MEDICAL ETHICS?

Whatever may have been the disadvantages of the old preceptor system of medical instruction, it had many merits. One of these was the opportunity offered to the student of becoming imbued with the ethics of his profession. This was no unimportant part of medical training. The practice of medicine is above all altruistic; in all of his dealings the doctor is required to put himself last—to serve cheerfully where there is no reward, frequently ingratitude, and sometimes censure; to aid in disseminating information and advice which cut at the very root of his living; and to make the Golden Rule his motto in a world which is run on an entirely different system.

It is inevitable that among a body of men who perform the same service for the same community and yet who must not compete or advertise, there should arise a complicated ethical system. The principles of this the practitioner soon comprehends, but always there arise situations for which there seems to be no exact precedent; one doctor's idea of the right thing to do differs from another's and inevitably some one is offended. If this appears to be a difficulty to the seasoned practitioner, it is much more of a problem to the recent graduate who has had no definite instruction in such matters and may not have been fortunate enough to be thrown in contact with older practitioners who were able and willing to enlighten him. At first, he has only a certain amount of such information acquired in medical school, incidentally as it were.

Across the sea the General Medical Council of Great Britain has passed a resolution providing that in a medical curriculum, under medical jurisprudence or public health, or elsewhere, instruction shall be given as to the public duties of physicians and the recognized rules of medical ethics. This is especially appropriate just now in Great Britain on account of the complications arising from the war, which will be increased when peace is declared and the military surgeons return to their private practice, but it would have been a laudable resolution at any time.

The occupant of a chair of medical ethics obviously could not be dogmatic nor could he deal to any great extent in specific instances. His whole duty would be to lay down the basic principles of ethics, illustrating them with examples. He would also take under his care the instruction of the student in his future duties toward the community as a whole, his responsibility for the accuracy of vital statistics, for the safeguarding of society from contagious diseases, impressing upon him not only the necessity of obeying regulations to avoid trouble with the health officer, but the wider conception of his duty toward society. The future practitioner should be taught, for instance, that it is better to act upon his tentative diagnosis of scarlatina and exercise the necessary precautions to protect the community even if he thereby alienates the family. When we have our young physicians turned out from the schools imbued with such ideals of their profession, then indeed we shall feel that we are on the way toward our highest possibilities as an altruistic body of workers for humanity.

ANALYSIS OF LIVING MATTER BY ITS REACTIONS TO POISONS.

Recent years have seen great advances in our knowledge of the chemical composition of living matter, brought about by the application of the newer methods of chemistry; great as have been these advances, however, they have carried us but a short step farther in our understanding of the structure of living matter and they have been wholly unavailing for the explanation or even discovery of many of the properties of living cells. Microchemistry has failed to show the differences in detail existing between living cells, although it has shown some of the more general differences and resemblances. Some other method of approach must be adopted for the study of such details.

This other method is to be found in one of the newest of the medical sciences—pharmacology, or the study of the reactions of living tissues to poisons. The importance of this method may best be shown by the citation of a few examples from an instructive paper by Arthur R. Cushny (*Lancet,* September 9, 1916). Thus, an accurate understanding of the toxicity of the saponins for different cells might give us the means for estimating the relative importance of the lecithins in the lives of these cells. The chemical properties of some poisons, such as acids and alkalies, are so simple as to suggest their modes of action and the nature of the substances upon which they act in the cells; they are less simple of others, such as quinine and hydrocyanic acid, but their general effects upon the ferments might be used to determine the presence and importance of these bodies in the cells. Finally the chemical actions of many of the poisons are still so obscure that we have no clear conception of them, but this fact does not deprive them of all importance as aids in the study of the properties of living matter.

As to these more obscurely acting drugs, their specificity of actions and the sharp limitations of these actions to certain structures lead to the conclusion that the cells upon which they act must have properties similar in one or more respects. Thus the affinity of the members of the chloroform and ether groups for lipoids is related to their properties of influencing the structures of the nervous system, and, conversely, they may be used to determine the presence of nervous tissues. Morphine and strychnine seem to be limited in their actions to nerve cells—bodies or synapses—therefore the material with which they react is sharply limited in its distribution in the body. There is a whole group of alkaloids which have actions limited for the most part to the extreme endings of the nerves, and some of these are further limited in their sites of action to the endings of the nerves of only one type. Thus epinephrine acts only on the sympathetic endings, but affects all of these, while ergotoxin is also limited to the same endings, but affects only such as have motor functions. The use of these two poisons, therefore, shows a similarity between the structure of all sympathetic endings and at the same time shows that the motor and inhibitory endings of the same system of nerves have definite differences. The illustrations might be multiplied, but enough has been said to show the importance, in the analysis of living matter, of the study of the actions of poisons upon the living cells.

In seeking to interpret the reactions of a drug upon several apparently diverse structures, Ehrlich postulated the existence of specific groups, such as the haptophores and toxophores which, respectively, attached the drug to the cells and then brought about its action. Such a conception must be rejected in the explanation of the differences in action of two allied simple chemical substances on the same structures, and it seems that in such cases, if not also in many others, the differences in action must be attributed to differences in the molecules as a whole rather than in the special affinities of their parts. The still newer field of colloidal chemistry may ultimately yield the explanations of some of the differences and similarities in actions between similar drugs upon the same structure and of the actions of a given drug upon diverse living structures.

Whatever may be the ultimate explanations of these reactions, there can now be no question of the great importance of the study of the action of poisons to the understanding of the nature of living matter. At present the only deficiency lies in the lack of appreciation of this importance.

METEOROLOGICAL FACTORS IN THE CAUSATION OF PNEUMONIA.

From the days of Hippocrates cold and damp were considered to be the moving factors in the causation of pneumonic conditions. Indeed, bronchopulmonary conditions have always been associated with cold to such an extent that the very word, cold, has come to be synonymous with a pathological condition affecting the respiratory passages. Yet scientific inquiry into the subject does not bear out this theory. While it is true that the months between and including July and October have the smallest proportion with about 4.5 per cent., the winter months have only a little less than twice that, or about eight per cent., while the spring months have the greatest share, about twelve per cent. While it is less prevalent near the equator, it is just as little prevalent near the poles. On the other hand, after exposure to the exhausting heat of the tropics the incidence of pneumonia has often phenomenal rises.

It seems that marked changes of temperature have more influence than either extreme, hence, probably, the greater prevalence in the intervening zone, where such changes are frequent. For the same reason it is common in great altitudes where the daily changes in temperature are likely to be marked. With respect to cold it is the prolonged exposure to low temperatures which, like prolonged exposures to heat, depress and predispose to the development of pneumonia. Moderate degrees of cold seem rather to stimulate than to depress, hence the almost universal use of cold in the treatment of pneumonic conditions.

The factor of moisture seems to play even a lesser part than that of temperature, for during the months when humidity is highest, June, July, and August, there is the least pneumonia. The influence of cold and damp is specific, however, though indirect. During the months when this sort of weather is likely to obtain, there is usually considerable indoor congestion and overcrowding, with little or no ventilation, lack of exercise, and like conditions having a tendency to reduce vitality and make likely victims to bacterial invasion. Besides, according to Anders, under conditions of poor ventilation, there is an increased virulence of the organisms which cause pulmonary disease.

In the causation of pneumonia complicating other conditions, the same adverse and usually artificial environmental conditions operate. Wilson (*Archives of Pediatrics,* April, 1916) found that the pneumonia complicating measles had little, if any causal connection with season or weather. On the other hand, wherever there had been congestion and overcrowding, measles was more likely to be complicated with pneumonia. The incidence of pneumonia otherwise bore only an indifferent relation to cold and inclement weather.

THE HAY FEVER PROBLEM.

To the sufferer from the disease the hay fever problem is a momentous one in proportion to the severity of his attacks, which not only take the joy out of life during the season, but cloud the remaining months of the year with the anticipation of what lies before him. To the physician the disease is but one of the many unsolved problems, so far at least as its cure is concerned, and its prevention is as yet anything but an easy matter. So many are the victims of this distressful malady that they have organized into clubs and societies the better to study and combat their common affliction.

Hay fever follows on the presence of certain pollens, but pollens we have always had with us, though not hay fever. By the removal of the source of pollen the victim is cured, but this is not a simple matter, and, after all, the condition of the patient is by no means restored to normal, for it is certainly not normal to be hypersensitive to pollens whether these irritate by their mere physical makeup, or by their chemical constitution. Since subjects of the disease recover, or are better and worse in different seasons, and are relieved by traveling to another region which may contain similar weeds, it seems unlikely that chemical factors have much to do with the disease, while other data point to a general abnormal nervous excitability as the groundwork for the reaction.

Since the first description of hay fever, in 1819, humanity has been climbing to a pitch of nervous stress and strain which cannot from any point of view be called normal, and it is from those that ride the crest of the wave of culture and strenuosity that the hay fever army is recruited. Hay fever is therefore more common among women than men, among city than country dwellers, and among the educated and highly nervous than other classes. For the individual physician the combating of the tendencies of life which make for hay fever is certainly, in the language of Artemus Ward, "2 mutch," and yet the physician is frowned upon for his helplessness in the matter. Here is another problem, or rather a part of a more general problem, for a national department of health.

So far as the actual treatment of the disease is concerned, the destruction of the weeds producing the offending pollen in the neighborhood of large cities is to be considered, for pollen travels far. Local applications to the inflamed mucous membranes may keep the patient busy and make him feel that something is being done for his relief, but more experienced sufferers say that such treatment is either unavailing, or is like adding fuel to flame, as no foreign substance is more soothing to the sensitive surfaces than the normal secretion of the nose. Local anesthetics must soon be repeated and in larger dose, and are harmful in the long run, and vaccines seem to have more influence on the mind than otherwise.

The perfecting of the general health of the victim, between and especially preceding attacks, gives the best results, and often leads to a permanent cure by lifting him above the level of hypersensitiveness to the offending pollen.

USE OF OIL IN POSTOPERATIVE PERITONITIS.

At a meeting of the Société des chirurgiens de Paris, August 25th, Chaton (*Presse médicale,* September 7, 1916) described his method of using camphorated oil in laparotomies whenever septic foci were discovered. As soon as the abdomen is opened, the operator begins to pour in the oil and subsequently he adds to the quantity from time to time. When, finally, the abdominal wall is sewn up, after there have been a dozen or so respirations, protective compresses are arranged so as to absorb the excess of oil. The oil obstructs the lymphatic ducts, prevents agglutination, allows of prolonged drainage, and possesses a tonic action on the heart. Ampoules containing from ten to twenty-five c. c. are used, and 300 c. c. of a one per cent. solution may easily be employed at one time. Chaton is greatly pleased with his results.

Obituary

ADONIRAM BROWN JUDSON, A. M., M. D.,*

of New York.

Dr. Adoniram Brown Judson, who died on September 20, 1916, was born in Maulmain, Burmah, where his father was stationed as a missionary, on April 7, 1837, and graduated as A. M. from Brown University in 1859. He then attended lectures at Jefferson Medical Colege. The Civil War breaking out before he had completed his course, he entered the navy as assistant surgeon in 1861, was promoted to passed assistant surgeon in 1864, and surgeon in 1866, resigning in 1868. At the close of the war he received the degree of M. D., 1865, from Jefferson Medical College, and in 1868 a similar degree *ad eundem* from Bellevue Hospital Medical College.

After several years spent in work connected with the health department of New York city, Doctor Judson devoted himself to orthopedic surgery, and in 1887 assisted in forming the American Orthopedic Association, of which he was vice-president in 1889 and president in 1890. For thirty years he was orthopedic surgeon to the outpatient department of the New York Hospital, resigning in 1908.

Doctor Judson was a man of lovable personality, prone to see that which was good in every man, and to overlook his failings. He was glad to extend a helping hand to the younger men in his specialty, and if he differed from his confrères on any topic, did so in a way that did not give offense.

Whatever Doctor Judson started to do, he did it with his whole heart, and he did it thoroughly. In nothing was this more clearly shown than in his connection with the New York Academy of Medicine. From 1886 until the time of his death, Doctor Judson was our statistical secretary, and to his diligence and painstaking accuracy we owe the exact record which we possess of the part which every Fellow of the academy has taken in its activities.

While chairman of the section in orthopedic surgery, he had full record made of the transactions of the section, and saw to it that these were published in full in many journals, both in this country and abroad, as well as being filed on the shelves of our own library, and in this, and many other ways, he made this section one of the most widely known throughout the medical world.

In his death the New York Academy of Medicine has lost one of its most faithful and conscientious officers, and in acknowledgment of his services the council of the academy desire this record of their appreciation to be spread upon the minutes, and copies sent to his family, and to the medical press.

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*Communicated by the New York Academy of Medicine.

News Items

The Æsculapian Club of Philadelphia gave a reception in honor of the Physicians' Motor Club, Tuesday evening, October 3d, in recognition of their long continued active efforts for the rights of medical motorists.

Buffalo Academy of Medicine.—Dr. Joseph C. Bloodgood, of Baltimore, delivered an address on the Cancer Problem Based Upon Recent Experiences, illustrated with lantern slides, at a meeting of the section in surgery of the Buffalo Academy of Medicine, Tuesday evening, October 3d.

Women to Be Admitted to Membership in the Northern Medical Association.—At the last meeting of the Northern Medical Association, the second oldest medical organization in Philadelphia, it was unanimously decided on election to admit women physicians to membership in the society.

A Memorial to Doctor Peck.—It has been proposed to erect a research laboratory at the Philadelphia Hospital for Contagious Diseases as a memorial to the late Dr. Earl C. Peck, who was first assistant resident physician at the institution, and who died recently from anterior poliomyelitis.

County Societies Hold Joint Meeting.—Dr. Henry B. Doust, of Syracuse, was nominated president of the Onondaga County Medical Society, at a meeting held on the evening of September 26th, jointly with the Cortland County Medical Society. Other officers were nominated as follows: Vice-president, Dr. William F. Cregg, of Camillus; secretary, Dr. E. V. Sweet, of Syracuse; treasurer, Dr. R. J. Stoup, of Syracuse. The election will be held at the December meeting of the society.

American Röntgen Ray Society.—The following officers were elected at the annual meeting of this society, held in Chicago, September 28th, 29th, and 30th: Dr. Lewis Gregory Cole, of New York, president; C. S. Blair, of Chicago, and Dr. Howard E. Ruggles, of San Francisco, vice-presidents; secretary, Dr. William H. Stewart, of New York; treasurer, Dr. William A. Evans, of Detroit. Dr. James T. Case, of Battle Creek, Mich., was elected editor of the *American Journal of Röntgenology,* the official organ of the society.

The American Association of Obstetricians and Gynecologists held its twenty-ninth annual meeting in Indianapolis, September 25th, 26th and 27th under the presidency of Dr. Hugh O. Pantzer, of Indianapolis. Officers to serve for the ensuing year were elected as follows: President, Dr. John W. Keefe, of Providence, R. I.; first vice-president, Dr. Francis L. Reder, of St. Louis; second vice-president, Dr. Charles L. Ill, of Newark, N. J.; secretary, Dr. E. Gustave Zinke, of Cincinnati (reelected); treasurer, Dr. Herman E. Hayd, of Buffalo.

The Cartwright Lectures of the Association of the Alumni of the College of Physicians and Surgeons, Columbia University, will be delivered at the College of Physicians and Surgeons, 437 West Fifty-ninth Street, New York, Tuesday and Wednesday afternoons, October 24 and 25, 1916, at five o'clock, by Richard M. Pearce, M. D., professor of research medicine, John Herr Musser Department of Research Medicine, University of Pennsylvania, Philadelphia. His subject will be The Spleen in Its Relation to Blood Destruction and Regeneration. The public is cordially invited to be present.

Medical Association of the Greater City of New York.—A stated meeting of the association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, October 16th, at 8:30 o'clock. Dr. Fred H. Albee will read a paper on Experiences in War Surgery in France, which will be illustrated with motion pictures. Among those who will take part in the discussion are Dr. Augustin A. Crane, Dr. William Seaman Bainbridge, Dr. Clarence A. McWilliams, Dr. Foster Kennedy, and Dr. William B. Giles. First Lieutenant Charles D. Kayser, Medical Corps, National Guard, will read a paper on Paratyphoid Fever Among National Guard Troops on the Mexican Border, which will be followed by a ,general discussion.

The Bronx County Medical Society will hold a regular meeting on Wednesday evening, October 18th, at Ebling's Casino, 156th Street and St. Ann's Avenue, New York, under the presidency of Dr. John E. Virden. Dr. Thomas H. Curtin will read a paper on General Medicine and Eye Diseases and a paper on Some of the Important Causes and Symptoms of Mastoid Disease will be read by Dr. William M. Danning. There will be a general discussion.

Indiana State Medical Association.—The following officers were elected at the annual meeting of the association, held in Fort Wayne, September 27th, 28th, and 29th: Dr. John H. Oliver, of Indianapolis, president; Dr. John W. Phares, of Evansville, first vice-president; Dr. Charles M. Mix, of Muncie, second vice-president; Dr. George L. Guthrie, of Indianapolis, third vice-president; Dr. Charles N. Combs, of Terre Haute, reelected secretary-treasurer. Next year's meeting will be held in Evansville.

American Hospital Association.—Dr. Robert J. Wilson, of New York, was elected president of this association, at the eighteenth annual meeting, held in Philadelphia, September 26th to 29th, and other officers were elected as follows: Dr. Andrew R. Warner, of Cleveland, and Miss George M. Nevins, of Washington, D. C., vice-presidents; Dr. William H. Walsh, of Philadelphia, secretary; Asa Bacon, of Chicago, treasurer; trustees, Dr. Winford H. Smith, of Baltimore, Richard P. Borden, of Fall River, Mass., and Miss Mary L. Keith, of Rochester, N. Y.

Poliomyelitis in Neighboring States.—Up to the last available date of record there have been in New York city and the adjacent States of New York, Connecticut, Massachusetts, New Jersey, and Pennsylvania, the following number of cases and deaths: New York city, September 30th, 9,029 cases, 2,286 deaths; New York State, exclusive of New York city, September 14th, 2,785 cases, 318 deaths; Connecticut, September 18th, 677 cases, deaths not reported; Massachusetts, September 19th, 678 cases, 95 deaths; New Jersey, September 19th, 3,495 cases, 775 deaths; Pennsylvania, September 20th, 1,278 cases, 313 deaths; total, 17,935 cases, 3,787 deaths.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of this prize, which amounts to about $250, will be made on July 14, 1917, provided that an essay deemed by the Committee of Award to be worthy of the prize is offered. Essays intended for competition may be upon any subject in medicine, but must not have been published. They must be typewritten, and if written in a language other than English must be accompanied by an English translation. All essays must be in the hands of the secretary of the college on or before May 1, 1917. For full information regarding the conditions of the competition, address Dr. Francis R. Packard, secretary, 19 South Twenty-second Street, Philadelphia. The Alvarenga Prize for 1916 was not awarded.

To Amend the Public Health Law.—At a meeting of the governing body of the Medical Society of the County of New York, held at the Academy of Medicine on Monday evening, October 9th, it was decided to ask the next Legislature to amend the public health law by striking out Section 173, which reads: "This article shall not be construed to affect the practice of the religious tenets of any church." The action was the result of the recent decision of the Court of Appeals that reversed the conviction of Willis Vernon Cole, the Christian science healer, and granted him a new trial. In the opinion of George W. Whiteside, counsel of the society, who was present at the meeting, it would be useless to retry Cole because of the exception in the statute which prevents interference with any acts constituting part of the religious practices of any church. Mr. Whiteside said that under the existing law any persons desiring to practise medicine without having passed the necessary examination or undergoing the usual period of study would only have to organize some kind of a religious sect and meet in some building that might be designated as a church. All county medical societies in the State will be asked to cooperate with the local body in obtaining the passage of the amendment to the law.

The Eastern Medical Society of the City of New York held a stated meeting on Friday evening, October 13th, at the Hotel Brevoort. Dr. Joseph F. Saphir presented three cases of profound anemia due to ulcerated internal hemorrhoids. Dr. Maurice Fishberg read a paper on Traditional Fallacies About Tuberculosis, which was followed by a general discussion. A paper on the Treatment of Poliomyelitis was presented by Dr. Israel Strauss and Dr. P. W. Nathan, which was discussed by Dr. B. Sachs, Dr. Henry Ling Taylor, Dr. Percy B. Roberts, Dr. Leon Louria, and Dr. Henry W. Frauenthal.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, October 16th, Clinical Association, Medical Society of the Woman's Hospital, Society of Normal and Pathological Physiology; Tuesday, October 17th, West Branch of the County Medical Society; Wednesday, October 18th, County Medical Society (business meeting), Section in Otology and Laryngology of the College of Physicians; Thursday, October 19th, Section in Ophthalmology of the College of Physicians, Northeast and Southeast Branches of the County Medical Society; Friday, October 20th, Jefferson Hospital Clinical Society.

Harvey Society Lectures.—The twelfth course of lectures given by the Harvey Society under the patronage of the New York Academy of Medicine, will be opened on Saturday evening, October 14th, with a lecture by Professor J. S. Haldane, of Oxford University, on the New Physiology. Other lectures in the course are: November 4th, Dr. F. M. Allen, of the Rockefeller Institute, the Role of Fat in Diabetes; November 28th, Dr. Paul A. Lewis, of the Henry Phipps Institute for Tuberculosis, Chemotherapy in Tuberculosis; December 16th, Professor Henry H. Donaldson, of the Wistar Institute of Anatomy and Biology, Growth Changes in the Mammalian Nervous System; January 13th, Professor E. V. McCollum, of the University of Wisconsin, The Supplementary Dietary Relationships Among Our Natural Foodstuffs; February 3d, Professor J. W. Jobling, of Vanderbilt University, The Influence of Nonspecific Substances on Infections; February 24th, Professor John R. Murlin, of Cornell University, The Metabolism of Mother and Offspring Before and After Parturition; March 17th, Professor Francis W. Peabody, of Harvard University, Cardiac Dyspnea; April 7th, Professor W. H. Howell, of Johns Hopkins University, The Coagulation of the Blood.

Personal.—Dr. Herbert Bruce, who is serving with the Canadian Army Medical Corps in France, has cabled his resignation as president of the Toronto Academy of Medicine, as he finds that he will be absent from Toronto for the entire winter. Vice-president Dr. John Ferguson has been elected president for the current Academy year, and Dr. D. J. Gibb Wishart has been elected vice-president.

Dr. Gwilym G. Davis, professor of orthopedic surgery at the University of Pennsylvania, has been elected to membership in the executive committee of the North American Children's Sanitarium, to fill the vacancy caused by the death of Dr. William L. Rodman. Dr. J. B. Carnett is chairman of this committee and other members are Dr. J. Torrance Rugh, Dr. De Forest P. Willard, and Dr. W. Blair Stewart, of Atlantic City.

Dr. William H. Davis, of Boston, has been appointed chief statistician, division of vital statistics of the United States Bureau of the Census. Doctor Davis was for a number of years chief statistician of the Boston Health Department.

Dr. Sidney D. Jones has been placed in charge of the Clinical and Röntgen Ray Laboratory at Fort Dodge, Iowa, succeeding Dr. Thomas H. Glenn.

Dr. George H. Whipple, professor of sanitary engineering at the Massachusetts Institute of Technology, has been retained by the New York State Department of Health as scientific adviser in the matter of the garbage nuisance on Staten Island.

Medical Director Philip Leach, of the New York Naval Hospital, has been assigned to duty as medical director of the Naval Hospital at Chelsea, Mass., succeeding Medical Director George B. Wilson, who died on October 1st.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,

Professor of Pharmacology and Therapeutics, University of Southern California.

Fortieth Communication.

PLEURISY.

In the plastic type of pleurisy the leading need is the relief of the sharp distress. For this purpose two measures seem feasible, counterirritation and some sedative of the opiate type. Counterirritation here assumedly benefits by increasing reflexly the circulatory exchange in the pleural area affected. Almost invariably in pleurisy, especially of the dry type, there are localized areas of tenderness in the skin. There may be in the immediate vicinity of the inflammatory process or as remote as the neck and shoulder, pleuritis of the costodiaphragmatic "accordeon pleat," often accompanied by distressing needle pricks in the skin overlying the acromion process. It is believed that these superficial areas of tenderness are due to the impinging in the posterior columns of the cord by nerve fibres from the inflamed area on other fibres from the cutaneous surface, and there ensues a contiguous irritation with receptive reference to the sensory distribution. For example, afferent fibres of the phrenic nerve are spinally contiguous with sensory fibres of the supraacromial; or, again, an intercostal nerve may supply both cutaneous and pleural surfaces. From all these data the reasoning is proposed, and corroborated in part by clinical experience, that superficial irritation of areas of skin tenderness will be followed by an improvement in the correlated affected area, the improvement being assumedly due to more rapid removal, through accelerated circulation, of the inflammatory products. But whatever may be the correct explanation, physicians usually find that sinapisms over associated areas of tenderness give remarkable alleviation in pleurisy.

For immediate relief an opiate may be demanded, and in a majority of cases the powder of opium will be found more efficacious than the principal alkaloid, possibly because of the synergism of the several narcotic principles; also, because of a peculiar though unexplained effect, which the salicylates often have in modifying inflammations of serous surfaces, it may prove advantageous to add some sodium salicylate to the powdered opium. Usually two or three doses of this combination prove adequate for controlling such distress as the patient feels unable to bear unaided; but its continuance is not advisable. Other effective measures during the period of convalescence are rest in bed, with limitation of the movements of the affected side.

Quinine has its advocates in the treatment of pleurisy, but its usefulness in this ailment may well be questioned. Possibly its former reputation as an antipyretic may account for the panacean value still ascribed to quinine by many practitioners.

In pleurisy with effusion further measures are demanded, and the summary of evidence indicates that little reliance may here be placed on the use of drugs. If the effusion becomes menacing, surgical interference, in the form of painstaking thoracentesis, is the chief recourse. Effusions of the milder sort are usually resorbed by the system, though some have to be aspirated ultimately. Various drugs and measures have been suggested at one time or another as accelerators of resorption, but the evidence as to their real efficiency is not convincing. The average physician probably thinks immediately of potassium iodide as the drug *par excellence* for promoting the absorption of exudates, but there is little in its known action to justify this opinion. To be sure, this drug will induce the resolution of syphilitic gummata, but this latter process has no analogy to the resorption of serous exudates. For this purpose probably no drug has any but remote and indirect action, such, for instance, as the salines have; but real dependence must be placed on nature or the surgeon.

Prophylaxis and Treatment of Arteriosclerosis.—Edwin W. Janes (*Northwest Medicine*, September, 1916) considers that prophylaxis should properly begin in childhood by teaching a fondness for adequate outdoor exercise, but the time when it will actually be begun will usually be in middle adult life. It should then comprise chiefly a moderation in diet, avoidance of worry and the securing of adequate exercise in the open. Alcohol and tobacco should be reduced, but their temperate use may be permitted. The treatment differs according to the conditions and to the underlying causes. Where there is hyperpiesis, every means must be employed to diminish nervousness and worry; exercise, graded to the patient's capacity, should be prescribed in the form of walking, hill climbing, golf, etc.; and a sharply limited general diet prescribed, with meat allowed only two or three times weekly, and fluids, salt and condiments greatly restricted. Treatment with the high frequency current does much to reduce excessive blood pressure, and its effects are fairly lasting. Where cardiac failure is manifest, digitalis is the drug of choice and may be used in small daily doses for months with much benefit. Apocynum cannabinum, in the form of the tincture, will sometimes give better results where there is marked edema. It may be given in a dose of one mil three times a day. Vasodilators should be used only as symptomatic remedies and calomel, salines and baths are of value in keeping down excessive pressure. Venesection may be used as an emergency measure, or it may be practised regularly about twice a year for its beneficial influence on blood pressure. In toxic arteriosclerosis, the source of the intoxication must be removed if possible and where syphilis is the cause this must be treated appropriately.

Treatment of Acute Poliomyelitis by Intraspinal Injections of Adrenaline Chloride.—P. M. Lewis (*Medical Record,* September 23, 1916) reports seventy-seven cases treated at the New York Nose, Throat, and Lung Hospital with adrenaline. There were eighteen deaths, of which only five, or 6.9 per cent., were due to straight poliomyelitis under the adrenaline treatment. The treatment was as follows: The bottle of one in 1,000 solution was placed in a bath of boiling water to drive off the .5 per cent. chloretone content, and the solution was used undiluted after cooling. The child's body was flexed over a six inch glass bottle to increase the interspinous spaces, the skin was painted with tincture of iodine before, and dressed with moist boric acid dressings after the injections. A medium sized aspirating needle was found to be the best and the punctures best made between the fourth and fifth lumbar vertebræ. Intraspinal pressure was relieved and two c. c. of the one in 1,000 solution of adrenaline was injected, repeated every six hours day and night uptil the temperature was normal, unless kept up by some cause other than the poliomyelitis. No local anesthetic was found to be necessary. Hexamethylenamine was given in moderate doses during the acute stage and any tendency to deformity was the signal for putting the affected limb in plaster of Paris.

Drainage by the Drop Method in Nephrotomy and Pyelotomy.—M. Devroye (*Paris médical,* August 12, 1916) points out that, although the initial mortality of operations on the kidney and renal pelvis is relatively low, the subsequent prognosis in these cases is uncertain owing to the possibility of a persisting lumbar fistula or of later infection of the kidney which may necessitate even nephrectomy. In a recent case of severe wound of the scrotal urethra in which cystostomy had been performed, and subsequently also pyelotomy for pyonephrosis, with introduction of two drainage tubes in the renal pelvis, Devroye was surprised to note that when dilute permanganate solution was run into the renal pelvis through one tube none of it returned through the adjacent outlet tube—the patency of which was known—but all through the cystostomy siphon tube in the bladder. This led to use of the ureter as the outlet tube in antiseptic irrigation of the kidney in three subsequent cases, with excellent results. These three cases comprised one each of pyonephrosis, pelvic calculus (with infection) and hydronephrosis After a pyelotomy, with evacuation of pus or stones, a Nélaton catheter (No. 12 or 14) with its tip cut off was pushed as far as possible into the funnel shaped transition from pelvis to ureter and fixed with a suture of fine catgut to the margin of the renal pelvis or adjoining tissues. All surrounding tissues were then sutured with catgut and the skin with silkworm gut or silk. An ordinary drain was left for two or three days in the renal fossa. After a nephrotomy, a catheter was similarly inserted to the ureter, through the kidney, and the latter sutured as usual round it. The patient having been returned to bed, sterile apparatus for irrigation by the drop method was at once connected with the catheter and the flow into the renal pelvis started. Solutions used comprised one in 8,000 or 10,000 potassium permanganate, one in 10,000 mercury oxycyanide slightly tinted with methylene blue, and in one pus case, the Carrel-Dakin solution, carefully neutralized with boric acid and diluted to five per cent. Use of a catheter in the urethra was found unnecessary, and also inadvisable owing to the probability of inducing cystitis. The solution was run through continuously at the rate of one drop every two seconds. The patients urinated more copiously than usual owing to the solution introduced, but were in no other way disturbed by the procedure. Aftercare consisted in daily renewal of the external dressing, generally soaked with urine from the drain in the renal fossa. In aseptic or slightly infected cases the irrigating catheter may be removed after three or four days; in intense pyonephrosis, after ten to fifteen days. When it is removed the drain may also be taken out and replaced with gauze wicks. Restoration of ureteral function is shown by cessation of urine extravasation on the dressing. Healing rapidly follows. The procedure is advantageous in that it combats infection by the natural route from kidney to urethra, antagonizes cicatricial narrowing of the ureter, and renders pyelotomy a less hazardous procedure than heretofore in comparison to the more mutilating nephrotomy. Its benefits are especially marked in renal infection—pyelitis, pyelonephritis, and pyonephrosis. Ascending infection is combated by it. The author's three cases ended in prompt recovery, with any tendency to fistula formation.

Appendicitis: A Record of Personal Experience in 1915.—Albert Ehrenfried (*American Journal of Surgery,* September, 1916) says that with regard to treatment of appendicitis after operation the patient is allowed water immediately upon request. Food is omitted for twenty-four hours, morphine being given sparingly when needed. After twenty-four hours, the patient is given broths, malted milk made with water, and orange albumin as desired, and a suds enema is administered. On the next day he is started on a diet of soft solids. If all goes well, he is allowed to sit up in a chair for half an hour on the fourth or fifth day, and thereafter for increasing periods. The stitches are removed on the eighth day, and adhesive strapping is applied over the wound. After drainage patients are allowed to sit up as soon as the temperature is normal, provided that the discharge is limited and the wound is well strapped. Right rectus incision patients are not allowed up in a chair until the stitches are out. The peritonitic cases have been treated by withholding food and water by mouth for forty-eight hours, maintainng the Fowler position, administering ten per cent. glucose solution in water by rectum in sufficient quantity and giving suds or milk and molasses enemata frequently as indicated. Recently, Ehrenfried has acquired the habit of using pituitrin to forestall or relieve distention, and he has given six or more ampoules in twenty-four hours in severe cases, always, it seemed to him, with benefit. He has not refrained, however, in cases of severe distention from using the time honored methods of stupes, drastic enemata and gastric lavage in the rare instances when they have been indicated. Moderate stimulation has been given when necessary, and morphine has been avoided.

Pneumococcal Meningitis. — A. Carnarvon Brown (*Lancet*, Sept. 16, 1916) records a specially severe case to show the strikingly favorable results obtained from the use of a stock pneumococcus vaccine. Lumbar puncture showed a thick, opaque fluid in which pneumococci were found. The first dose of vaccine reduced the patient's spinal muscular rigidity, diminished his delirium, and greatly relieved his headache. This dose was preceded by a second lumbar puncture, since the initial one seemed to afford some symptomatic relief. Each dose of vaccine also brought about a fall in temperature, which was delayed and temporary at first, but was fairly permanent after the third dose. In all, five doses were given and the patient made a complete recovery. The size of the doses used is not stated.

Intravenous Injections of Antimony in Ulcerating Granuloma.—George C. Low and H. B. Newham (*Brit. Med. Jour.*, Sept. 6, 1916) report that on the strength of the favorable experiences of South American workers with the intravenous use of antimony, they have employed this plan of treatment in a case of this refractory disease which came under their observation. After repeated administrations twice weekly for three and a half months the disease was cured. Antimony and potassium tartrate was used, dissolved in sixty mils of normal saline and given in doses beginning with sixty-five mgm. and increased to a maximum of 0.16 gram. No ill effects from the drug were encountered, although some general lassitude followed each injection. The use of x rays has also given good results in these cases and it is suggested that a combination of these two forms of treatment might hasten the cure. The condition is not affected by mercury or salvarsan, both of which were tried without benefit in the case reported.

Results of Disinfection and Early Closure of Wounds.—G. Dehelly (*Bulletin de l'Académie de médecine*, May 2, 1916) reports statistics from a military hospital in which Carrel's procedure of continuous wound irrigation, followed by early closure of the wound, was applied in the treatment of a series of forty-eight fresh wound cases. Of the seventy-six patients received in the hospital, four died of shock within a few hours, and twenty-four had simple fractures, contusions or other slight injuries, or bullet wounds, none requiring antiseptic treatment. The forty-eight cases treated by the Carrel method comprised wounds by shell fragments, grenades, bombs, or mines, all infected *a priori*,—an assumption proved valid by bacteriological examinations and the temperature charts. These forty-eight patients bore 155 wounds of which 135 were closed after antiseptic treatment, only twenty being allowed to heal spontaneously. Of the 135, 121 were closed before the twelfth day and eighteen between the thirteenth and the eighteenth days. As a result, 119 wounds, or 88.25 per cent., healed before the thirtieth day, eight more before the fortieth day, and the remaining eight, before the sixtieth day. Among twenty-two cases with fracture in which the procedure was applied, the results were precisely similar, eighteen healing within the thirtieth day. Comparison of these results with those obtained when wounds are allowed to close spontaneously, the majority of the latter requiring three months to heal, shows that by the new procedure the period of healing can be shortened by two thirds in over eighty-five per cent. of cases. Carrel's continuous antisepsis, where applied to the entire surface of a wound, completely eliminates lymphangitis and adenitis. The wounded region is slightly swollen, and remains supple. Neither muscular contractions nor rigidity of the neighboring joints follows. Osteomyelitis is also completely avoided, the bony surfaces being rapidly disinfected. Amputations for infection will, for the most part, disappear. Finally, the early wound closure obviates the thick, contracting cicatrices which follow prolonged treatment. The scar tissue not being required to fill spaces from which tissue has been lost, but resulting merely from the adhesion of normal tissues, remains flexible, does not obtrude in the intermuscular spaces, and consequently does not interfere with the functions of the limb.

Treatment of Cardiac Decompensation.—J. E. Benjamin (*Lancet-Clinic*, September 9, 1916) reports favorably on the use of powdered digitalis leaves in pill form in preference to other preparations of the drug. Three or four pills of average dose are given daily for two or three days. Where, in spite of rapid general improvement, edema does not lessen and there is no diuresis, a pill containing one grain each of digitalis leaves, squill, and blue mass often gives good results. Theophylline in five grain doses for three days acts well as a direct diuretic, not only often causing edema to vanish, but also ascitic fluid. For the early symptoms of acute heart failure, such as dyspnea and excitement, morphine acts extremely well when given hypodermically in repeated doses until the patient is quiet. In subjects with valvular disease who have had attacks of decompensation, but are continuing the various activities of life, often with dyspnea on moderate exertion as their only complaint, the author recommends the following:

℞ Tincturæ strophanthi, ...20 c. c.;
Tincturæ nucis vomicæ, ...40 c. c..

M. Sig. Fifteen drops after each meal.

Patients under this combination are very comfortable and their field of cardiac response seems increased. During convalescence from acute decompensation, the patient having progressed from massage, through passive and active motion, to sitting up and walking, the physician must impress forcibly on him the importance of remaining within this "field of cardiac response." Exercise tests to ascertain the cardiac reserve power should not be made according to any fixed rule. In one case, bending forward a few times; in another, merely sitting up in bed, and in yet another, climbing a flight or two of stairs may be the appropriate amount. The patient's exercise prescription must be based not only on results of these tests, but on a careful study of the pulse rate and quality, any change in the blood pressure, cough, dyspnea, precordial discomfort, giddiness, etc. In any case, orders as to exercise to be taken should allow less exertion than the functional tests indicate, as the present age is one of excesses and the patient is at to do more than he has been advised.

Operative Treatment of Flatfoot.—C. Arnd (*Correspondenz-Blatt für schweizer Aerzte*, August 19, 1916) cuts a groove on the posterior surface of the tuberosity of the scaphoid bone, releases the tendon of the tibialis anticus and transfers it intact to this groove. He asserts that the effect of this procedure is practically to shorten the tendon and enable it to pull the arch of the foot into shape. When the tuberosity is not sufficiently prominent the joint between the astragalus and the scaphoid may be opened, the groove cut within the joint and the ligament sutured over the tendon. The groove must be made deep enough to hold the tendon.

Treatment of Dislocated Fractures of the Long Bones. — C. Arnd (*Correspondenz-Blatt für schweizer Aerzte*, August 19, 1916) lays bare the fracture, makes a little notch in the end of the upper fragment in which he places a long stout nail with the point impinging on the upper part of the end of the lower fragment, which serves as a fulcrum. Then while the fragments are pulled apart traction is made on the head of the nail so as to use it as a lever to bring the fragments into proper apposition. When this is done the nail slants in a different direction than it did at first and is driven into the lower fragment. The head of the nail then acts to prevent the upper fragment from slipping out of place, the nail itself acts to prevent them from slipping from side to side, and the fragments are held together by the tension of the muscles.

Clinical Significance of Sinus Arrhythmia.—Leslie Thorne Thorne (*Practitioner*, September, 1916) says that the present war has demonstrated in numbers of cases that hearts supposed to be perfectly sound, and fulfilling their functions satisfactorily in the ordinary routine of life, have broken down entirely under severe and unusual strain. He is convinced that the presence of any kind of irregularity in the cardiac rhythm is not a normal condition and should not be disregarded. In many cases the only signs of abnormality are a slight cardiac dilatation and a marked sinus arrhythmia. The patients, usually young men, are apt to give a history of former heart trouble, such as a strain in school athletics, or an attack of rheumatic fever in childhood, and the cases of two young officers whose hearts broke down on active service are cited as examples. He concludes that the presence of sinus arrhythmia, which indicates an irregular cardiac dilatation, is not an absolutely normal phenomenon; that persons in whom it is present are more liable to suffer from a cardiac breakdown under mental or physical strain than are those who have a perfectly regular pulse; and that any soldier who has had a cardiac breakdown, and whose pulse shows evidence of sinus arrhythmia, is not fit for active service abroad. So far as treatment is concerned, absolute rest is not advisable, except in the acute stage of the breakdown. When the patient is able to get about at all, he should take as much walking exercise a day as he can without feeling done up. A course of mineral baths, and in some cases massage, is useful. Drugs seem to be of little or no use after a certain stage.

Injuries of the Urinary Tract.—Howard J. Williams (*Southern Medical Journal*, September, 1916) gives the following lines of treatment: In mild cases of kidney wounds, rest and ice bags locally, and conservative watching. In grave cases, with excessive shock and signs of intraperitoneal hemorrhage, or rapidly growing tumefaction in the loins, incision and suture of the kidney wound with drainage, or nephrectomy; if infection is present, incision and drainage or nephrectomy. In all cases use urinary antiseptics. In bladder wounds, open up and explore suprapubically. In extraperitoneal laceration close the bladder wound and employ a prevesical drain if possible; if not, use a suprapubic vesical drain. In intraperitoneal laceration, close the bladder wound and use peritoneal drainage. In all cases use a retention catheter through the urethra, and employ urinary antiseptics; in deep urethral wounds, perineal incision, with a catheter passed and retained in the bladder as in external urethrotomy, if the laceration is incomplete or partial. If the laceration is complete, perineal incision; find the ends of the divided urethra, suture the ends of the torn urethra over a permanent catheter passed into the bladder through the urethral canal, close the perineal wound with a superficial drain. In infection and perineal abscess or localized gangrene, try a free incision and multiple drains. In all cases use urinary antiseptics.

Bleeding Without Venesection.—L. Plantier (*Paris médical*, August 19, 1916) refers to the undeserved unpopularity of venesection as being due partly to its suggestion of an operation of last resort in the minds of patients and their families, and partly to the difficulty of carrying it out in stout persons with small veins and rapidly coagulating blood, as well as the realization of the possible dangers of sudden decompression from rapid bleeding. He deems superior the procedure he describes, which consists merely in leeching followed by cupping. Two groups of three of four leeches are applied, each group in a liqueur glass, some distance apart on the lateral aspect of the thorax or abdomen. The triangular, lacerated wounds produced by the leeches present a natural tendency, which is not possessed by linear wounds such as those made for wet cupping, to remain open and continue to bleed. Besides, the leeches secrete a principle which prevents coagulation, hence eliminating one of the difficulties presented in this connection by venesection in a certain proportion of patients. A flow of blood having thus been well established, Plantier removes the gorged leeches and maintains or accelerates at will the hemorrhage by applying cups alternately to the two groups of leech wounds, the cups being filled as often as is indicated by the total amount of blood to be withdrawn. An improvement in the technic is to use a cup with a suction bulb and a graduated receptacle for the blooa below. By this method a bleeding is effected easily, regularly, progressively, and at any desired speed, while the possibility of a sudden, excessive drop in blood pressure or of congestion *a vacuo* is obviated. The patient readily submits to the procedure, which is thus rendered easily available in the nu-
which is thus rendered easily available for the removal of toxic material from the circulation.

Sympathetic Ophthalmia.—J. H. Burleson (*Texas State Journal of Medicine,* September, 1916) treated a case of sympathetic ophthalmia in which the vision of the sympathizing eye was reduced to the ability to see large objects. A subconjunctival injection was made of thirty minims of mercury cyanide, prepared according to the formula of Dr. Emmett L. Jones, of Cumberland, Md. This was followed by a severe reaction, the side of the face being swollen so that the eye could not be seen for five days. This gradually subsided. At the end of one month the vision was 20/20 and the ophthalmoscope showed the media to be clear and the optic nerve head normal.

Tepid Baths in the Treatment of Malaria.—Theodore Zanger (*Lancet,* Sept. 16, 1916) found that half baths at 23° C. gave good results in the treatment of infantile catarrhal pneumonia. He tried their effects in a series of cases of malaria and obtained equally good results. The baths were given by filling the tub with enough water to half cover the patient and while he was lying in the water his arms, legs, back, and chest alternately were rubbed vigorously for five minutes. The baths completely stopped severe paroxysms and convalescent patient were soon restored to health with improved heart action and rapid decrease in their anemia. Usually the baths were given three times each week and in cases of recurrence as often as five to six times weekly.

Treatment of Tuberculosis in Infancy.—William W. Howell (*Boston Medical and Surgical Journal,* September 21, 1916) says that the object of treatment in these cases is to get the infants into such good physical condition that they can fight against any disturbing element absorbed from the primary glands, and to give the primary glands a chance to be walled off and become inactive, for they are never healed. The three factors essential in the treatment are rest, fresh air and sunlight, and suitable food. Rest is the most important, and by it is meant inactivity sufficient to get gain in digestion and weight. Though this stage is called chronic glandular tuberculosis, it is a fairly active process, and active tuberculosis needs rest. It later lung or bone tuberculosis needs rest, it is just as reasonable and necessary to give it at this stage. The rest should be persisted in till long after the symptoms have been relieved.

The Dressing of Septic Gunshot Wounds.—W. B. Davy (*Lancet,* Sept. 9, 1916) emphasizes as the result of a year's work at a base hospital, the undesirability of frequent changes of surgical dressings in the treatment of septic wounds. He advocates that the wound be carefully lined with a few layers of gauze containing tablets of salt which have been previously disinfected by immersion in tincture of iodine. After this dressing has been put in place and adequate drainage of the wound has been provided for, and all of its pockets have been laid open, the wound should be covered with several layers of absorbent material and firmly bandaged. The outside dressing, that is the absorbent material alone, may be changed as often as it becomes saturated with the discharges, and it may be kept from becoming foul by dusting with eupad or some other antiseptic. The inner dressing in contact with the wound surfaces should not be changed until it will come away easily without injuring the new granulations. It will be found covered with a layer of slimy pus, but this is the ideal medium for the growth of granulations and should be regarded with favor. As the salt tablets dissolve and the swelling in the wound declines, apposition of the surfaces will be helped by tightening the outer dressings. By this method all injury to the new granulation tissues is avoided as well as the pain and anxiety of change of dressings and the best conditions for prompt healing are provided.

Indications for Blood Transfusion.—E. S. Edgerton (*Jour. Kansas Med. Soc.,* Sept., 1916) considers that the majority of anemias offer indications for transfusion, depending upon their nature or severity. Anemia from gastric or duodenal ulcer, if severe with continued active bleeding, demands transfusion both for the hemostatic and for the nutritional value of the new blood. A less certain indication is found in typhoid hemorrhage, but transfusion has certainly given good results in some cases. A ruptured ectopic gestation sac is a certain indication for transfusion before, during, or after operation. The chronic anemias, other than pernicious anemia, require repeated small transfusions, and all forms of hemorrhagic diathesis are suitable fields for its use. Many surgical procedures are aided by transfusion, but shock seems to be helped least of all in this category. Among the essential blood diseases, pernicious anemia is often benefited more by repeated transfusions than by any other measure. Infectious diseases and various poisonings offers a fruitful field for this procedure, but its limited employment has not yet sufficed to determine its value.

Methods and Results in Surgery of the Stomach and Intestines.—George W. Crile (*Buffalo Medical Journal,* September, 1916) says that in cases in which resection of the stomach is indicated the reserve alkalinity is usually lessened, and often is reduced to a minimum. In these cases measures should be employed such as will obviate the further depletion of the body's stores of alkalies and bases, and the reserve alkalinity should be increased. Nitrous oxide is the anesthetic of choice. The acid producing effects of operative trauma should be reduced to a minimum by employing the technic of anociassociation. In resection the operation should be performed in two stages—first, gastrojejunostomy, second, resection after nutritional balance is restored. Water and subcutaneous saline infusions, glucose and sodium bicarbonate per rectum, increase the reserve alkalinity and consequently conserve the patient. Bromides per rectum conserve the patient by diminishing the transformation of energy, thus diminishing acid production, and by inducing sleep, the only means by which the damage done to the energy transforming organs by excessive acid byproducts can be repaired. The division of the stomach by the cautery and the searing of cut edges by moderate heat sterilize against pyogenic infections and against cancer growth, and prevents bleeding, three of the important considerations in gastric resection.

Miscellany from Home and Foreign Journals

Pain in Gastric Ulcer.—Harry Ginsburg, Isador Tumpowsky, and Walter W. Hamburger (*Jour. A. M. A.*, Sept. 30, 1916) cite the literature in full and record a series of experiments to determine the mechanism of the production of pain. The conclusions reached were that pain is due to increased endogastric tension through contractions similar to the hunger contractions which occur normally. The pain is also due to the hyperirritable state produced by the ulcer. Hyperacidity is not a direct cause of the pain, but may indirectly induce it to contract through stimulation of the stomach. Alkalies reduce the pain through neutralizing the acid and preventing its stimulant action. Pituitary extract causes increased contractions and increased pain, while amyl nitrite acts in an opposite way.

Syphilis as a Factor in Vague Stomach Disorders.—Cabot Lull (*Jour. A. M. A.*, September 30, 1916) shows with the aid of the x ray, the response to antisyphilitic treatment, and the Wassermann reaction, that a considerable proportion of gastric disorders is due to syphilis. There are three ways in which syphilis may cause these gastric disorders: First, through the presence of gastric gummas, erosions, or endarteritis; second, through structural changes in closely associated organs, either anatomically or functionally related to the stomach; and third, through direct action on the stomach of the spirochetes or their toxins without histological lesions. The cases in which the third mode of action occurs are those with the vaguest and most varied symptoms, and are often diagnosed as neurotic cases. This last group of cases may often show a negative Wassermann reaction until a provocative dose of salvarsan is given, indicating a latency of the spirochetes and suggesting their symbiotic existence in the tissues of the stomach and other portions of the body.

Differential Leucocyte Counts in Enteric and Dysenteric Convalescents.—I. Walker Hall and D. C. Adam (*Lancet*, Sept. 16, 1916) made a series of careful differential leucocyte counts in normal inoculated men and in inoculated men with infections by the enteric and dysentery organisms, in the hope of securing added means of differentiating between agglutination reactions in inoculated persons with and without active infection with enteric organisms. The content of agglutinins in antityphoid inoculated healthy men did not affect the ratio of polynuclear leucocytes to lymphocytes. It also was without effect upon this ratio in convalescents from infection with either paratyphoid organism. Where the agglutinins were due to inoculation the blood count was found approximately normal, but where they were due to infection, the typical leucocytosis or polynuclear leucopenia of the infecting organism was found. This observation not only proved of value in differentiating infective from inoculation agglutinins, but also suggested that there was a different mechanism of response of the human cells to living and virulent bacilli than to the killed organisms used in the vaccines for inoculation.

Child Weighing Twenty-five Pounds at Birth.—D. P. Belcher (*Jour. A. M. A.*, September 23, 1916) reports a child born at term, which weighed twenty-five pounds, measured twelve inches across the shoulders, and was twenty-eight inches long. The child was dead at birth. The mother was a multipara, thirty-five years old, five feet seven inches tall, and weighed 220 pounds. The circumference about her hips was fifty inches. Labor was difficult and prolonged and special trouble was encountered in the delivery of the shoulders. There was only slight perineal laceration. The child was a girl.

Renal Calculi in Rudimentary Kidney.—Ferguson Lemon (*Archives of Radiology and Electrotherapy*, September, 1916) reports a case in which six renal calculi were found in a nonfunctioning rudimentary kidney or vestigium of the Wolffian duct. Several x ray pictures had been taken and a negative report made. In spite of the negative x ray findings the patient was operated on for a floating kidney. He made a bad recovery from this operation and the attacks of pain were more frequent. Later, the nerve was severed but the pain still continued. Doctor Lemon saw the case later and his x ray plates showed the presence of six shadows in the right lumbar region close to the crest of the ilium. The patient was subsequently operated on and the stones were removed. He remained free from attacks for about two weeks, when another severe attack of pain set in. A further x ray examination showed evidence of a concretion in the appendix and the latter was removed. The patient is considerably improved, but still complains of occasional pain in the same area.

Prolonged Hyperpyrexia in a Child with a Mid-Brain Tumor.—C. Violet Turner (*British Journal of Children's Diseases*, September, 1916) calls attention to the case because of the duration of the hyperpyrexia. High fever is seen commonly as the terminal manifestation of cerebral lesions in children, and extreme variations of temperature are also noted in meningococcal meningitis, middle ear disease, and other infectious intracranial conditions. For ten days the temperature would reach 105° to 107° F., once or twice every twenty-four hours and then fall to subnormal within eight to twelve hours. The highest temperature recorded was 109° F. axillary and 111° F. rectal. Four hours after this temperature was recorded it had fallen to 100° F., and in eight hours it was subnormal. The rises occurred most frequently at 11 p. m., but this was not constant. The pulse varied with the temperature. The respiration rate also showed corresponding variations, and just before the patient died the respiration was of the Cheyne-Stokes variety. After death, a solid rounded tumor was found situated in the midline in the region of the corpora quadrigemina. Microscopically the tumor consisted of numbers of round cells, uniform in size, with but little intercellular matrix. In parts the growth had undergone cystic degeneration, leaving a hyaline material without cell elements.

Gastroenteritis Due to Bacillus proteus.—W. Boxwell (*British Journal of Children's Diseases,* September, 1916) gives the history of an interesting patient, who had a sudden attack of gastroenteritis with sharp hemorrhage from the bowel. High fever and delirium were present, there was pain in the muscles and joints similar to that found in Henoch's purpura. Later, transient paralysis of different limbs was observed and the fever chart showed a hectic fever long protracted. The blood culture was negative, but the culture from the feces showed a bacillus similar to Bacillus proteus. Vaccines were made and injected into the patient. There was considerable reaction after the first injection which was of five million, a milder reaction after the second of ten million, and a slight reaction after the third of fifteen million. The dose never exceeded twenty-five million and was given once a week. Recovery was complete.

Chronic Multiple Arthritis.—George R. Elliott (*Medical Record,* September 23, 1916) divides the condition into two types, the proliferating or ankylotic, and the degenerative or nonankylotic. The ankylotic type, called either rheumatoid arthritis or atrophic arthritis, usually attacks the young adult, has an irregular and frequently overlooked febrile onset; the best external signs are in the small peripheral joints which tend to become fusiform, it is steadily progressive. If ankylosis tends to occur, the patient becoming bedridden may live for years, dying of cardiovascular renal disease with anemia. This type is generally admitted to be due to an infection. The theory of nerve origin of rheumatoid arthritis is now practically dropped, and most authorities agree that the cause is a bacterial infection, many alleging a variety of infecting organisms especially of the streptococcus group, while others think that there will ultimately be found a single causative organism.

New Urinary Test of Prognostic Value in Pulmonary Tuberculosis and Diagnostic Value in Typhoid Fever.—Petzetakis (*Bulletin de l'Académie de médecine,* August 8, 1916) describes a test which he terms the iodoreaction, which consists in adding to the urine a solution of one part of iodine and two parts of potassium iodide in 200 parts of water, or preferably, a five per cent. solution of iodine in alcohol. Fifteen or two c. c. of filtered urine are placed in a test tube and two or three drops of the reagent dropped over its surface. By gently tapping the tube, these drops are mixed with the upper two c. c. of the urine, and the mixture watched for a time. If no change of color appears the test is negative; if positive, the upper portion assumes a yellow color. Dark urines should be diluted before testing. If doubt as to the result of the test is felt, a drop of a very dilute solution of sodium thiosulphate or a few drops of urine is added to the upper portion, causing the suspicious color to disappear in case of a negative reaction, and accentuating or not affecting it in case of a positive reaction. The test remains valid in the presence of albumin, sugar, acetone, ether, benzine, toluol, and practically all coal tar analgesics, as well as upon heating. Cryogenin and neosalvarsan, however, sometimes impart the yellow tint. In normal subjects the test is always negative. In lung tuberculosis it is seldom positive at first, but was uniformly positive in eight advanced cases. Among fourteen cases of tuberculous pleurisy, nine were positive. Of thirty-three tuberculous patients yielding negative reactions, none died, whereas of twenty-one patients yielding strongly positive tests, fifteen died within two to six weeks. Thus, in tuberculosis, a positive iodoreaction is of unfavorable prognostic significance. In fourteen cases of typhoid fever the reaction was uniformly positive, appearing within the first five days in nine of these, i. e., before the Widal reaction itself. It also sometimes preceded the diazo reaction or existed where the latter was absent. The test was also positive in two out of eight cases of influenza, two of scarlet fever, one of erysipelas, and one of puerperal fever; in each of these cases the diazo and Moriz-Weisz tests were likewise positive. The simplicity of the reagent used in the iodoreaction is a marked advantage over other similar tests for bedside use.

Location of Foreign Bodies in the Fingers.—Roscoe C. Webb (*Jour. A. M. A.,* September 30, 1916) demonstrates a method by effective transillumination of the finger, which can be made simple by the following procedure. A piece of black woollen cloth eight inches square is backed with a piece of adhesive plaster of the same size, and through the centre an oval opening five eighths by one half inch is cut. This cloth is then placed over an electric light, with a reflector, and the finger to be examined is laid over the hole in the cloth. By making pressure over the suspected area with a pointed instrument the foreign body can be brought out clearly, and more so if the finger is made bloodless. The finger may be placed over the opening during the operation and the object may thus be accurately located and removed.

Crossed Hip Reflex in Enteric Fever.—E. B. Gunson (*Lancet,* Sept. 16, 1916) reports that this reflex is elicited by firmly grasping the body of the quadriceps femoris above the knee and pinching it between the thumb and fingers. This produces some pain at the site of grasping and the reflex consists in the flexion of the hip and extension of the great toe of the opposite side. An incomplete reflex may occur with only one of these two movements taking place. The pain elicited by the stimulation is marked and usually persists for several days after the reflex movements cease to develop. This reflex, either complete or incomplete, appeared in a considerable proportion of the enteric fever cases in which its presence was sought, occurring as early as the second day of the disease and lasting to as late as the eighth week. It was not found to bear any direct relation to the severity of the disease, but did tend to be more marked and persistent in the more severe cases. Along with this reflex others, such as the knee jerk and abdominal reflexes, were usually diminished or absent. These findings were taken as indicative of some temporary disturbance in the function of the spinal cord and their occurrence seemed to be of some diagnostic value. The crossed hip reflex was also found in cases of brain tumor, various cerebrospinal conditions, and diphtheria.

Fatality Following Acute Otitis.—I. W. Voorhies (*Medical Record*, September 23, 1916), in reporting a case of death following a mild otitis, remarks that the appearance of the drum may be misleading and that a culture should be taken in every case. Further, any abrupt cessation of discharge with unilateral headache indicates a condition requiring operation, and no patient with acute otitis should be allowed to escape from trained observation until the condition is entirely cured.

Vaccination of Guineapigs with Bacillus aerogenes capsulatus.—Muriel Robertson (*Lancet*, September 16, 1916) undertook experiments to determine whether or not immunity could be produced by the prophylactic inoculation of Bacillus aerogenes capsulatus. The results showed conclusively that no immunity could thus be produced, in guineapigs, at least. And, further, that in these animals the survival of one infection with this organism did not confer any immunity to the injection of an infecting dose at a later period.

Case of Intrauterine Scarlet Fever.—R. M. Liddell and C. E. Tangye (*Brit. Med. Jour.*, September 16, 1916) report the case of a mother, exposed to scarlet fever near term, who gave birth to a normal, living child which, however, was found to be desquamating freely on its body and extremities. The infant's urine also contained traces of albumin. The child made an uneventful recovery. During the last week of her pregnancy the mother complained of a "burning pain inside" but was otherwise entirely normal. She was immune to scarlet fever as the result of an attack in childhood.

Glandular Carcinoma of the Uterus in a Child Aged Two and One Half Years.—Joseph E. Adams (*British Journal of Children's Diseases*, September, 1916) states that for three weeks before admission to the hospital the child had a bloody flow from the vagina which had increased in amount and frequency. There was no pain, but a fullness had been noticed in the child's abdomen. There was no family history of carcinoma. On examination, a palpable tumor partly cystic in consistence, was revealed in the hypogastrium, situated between the bladder and rectum. A catheter specimen of urine contained no blood. At operation the rectovesical space was found to be occupied by a cystic growth about the size of half a tennis ball. The growth obscured the position of the uterus, but was obviously attached to the roof of the vagina. It was too adherent for complete removal. The child died two months later. At autopsy, a large growth completely covered by peritoneum, adherent to the posterior surface of the bladder and closely connected with the rectum posteriorly was found. Several enlarged mesenteric nodes were removed for examination. The vaginal report showed the specimen to consist of the uterus and its appendages. The body and cervix of the uterus were largely replaced by the breaking down growth. The microscopic diagnosis was carcinoma with both columnar and cuboidal cells, having a somewhat tubular arrangement. It belonged to the group of carcinomata arising in the glandular epithelium of the body of the uterus.

Syphilitic Reinfection.—D. Villanova (*Revista de Ciencias Medicas de Barcelona*, July, 1916) reports two cases of supposed reinfection. One was not a clear case, but was probably a chancrelike mucous patch with accompanying adenitis, but the other was an undoubted case of reinfection of a man from his wife after several years of apparent cure. Villanova insists, however, that such cases are rare and the history and physical examination should be gone into thoroughly before making a diagnosis of reinfection.

The Effect of Trench Warfare on Renal Function.—J. W. McLeod and P. Ameuille (*Lancet*, Sept. 9, 1916) summarize the results of their studies: That exposure alone has nothing to do with the production of a large number of the cases, especially of the milder ones; that if it plays a part in the severer cases this is similar to that played in many infectious diseases, that is, it causes a defective circulation and diminished resistance in the kidney; that a transitory albuminuria is very common in the troops undergoing severe physical strain, and that finally diet seems to be the most plausible explanation of the transitory albuminuria and mild nephritis, and also is a contributory factor in the more severe cases. To substantiate this conclusion, the authors point out that the average soldier takes protein food in excess of his requirements, throwing an added strain on his excretory organs, that the large number of cases of gingivitis indicate the effects of a restriction in fresh vegetable foods, and that, finally, there is evidence of the existence of a slightly scorbutic condition prevailing among the men. This scorbutic condition reduces the resistance of the kidneys along with its effects upon other organs, and the former give out when added demands are made upon them by the excess of protein in the diet or by bacterial invasion of the body.

Hereditary Factor in Pellagra.—C. B. Davenport (*Archives of Internal Medicine*, July, 1916) adduces evidence that while the disease is not inheritable in the same sense as is a brown color of the eyes, its course depends on certain constitutional, inheritable traits of the patient. Pellagra is probably communicable, as suggested by the careful research of E. B. Muncey, whose article follows that of Davenport. When both parents are susceptible to the disease, at least forty per cent. of their children are likewise susceptible; the significance of this is accentuated by the fact that pellagra affects less than one per cent. of the population in the region studied by Muncey. That susceptibility is, with infection, also an important etiological factor is evinced by the varying reactions to the toxin of the disease shown in different families. Thus, many families never show mental symptoms, while others usually do. In some families intestinal symptoms are slight; in others, severe and rapidly fatal. In some the skin eruptions are but slightly marked; in others, severe ulceration and dermal desquamation are characteristic. The fact that among affected children there are brothers and sisters who have never shown pellagra symptoms can be understood as due to inheritable constitutional differences, just as brown eyes and blue eyes occur in same family.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 5, 1916.

The President, Dr. WALTER B. JAMES, in the Chair.

The Management of Poliomyelitis with a View to Minimizing the Ultimate Disability.—Dr. ROBERT W. LOVETT, of Boston, read this paper, which appears in abstract form on page 747 of this issue of the JOURNAL.

Dr. SIMON FLEXNER said that Doctor Lovett's most excellent paper should properly be discussed, not by a pathologist, but by an orthopedic surgeon, from the point of view presented, though it was a pleasure to him to be asked to open the discussion because he had followed with interest the work of Doctor Lovett in Boston and Vermont, where he had carried into effect principles and methods of aftercare of the paralyzed that appeared to be an improvement over older methods of treatment. Doctor Lovett had based his views on the pathology of the disease, which was the logical way to approach the subject; and he had done the speaker the honor to employ in his descriptions conceptions and explanations for which the studies of the speaker had been responsible.

The basis of the modern conception of poliomyelitis was that it was an infectious disease in which the paralysis was merely an incident and an accident and by no means a necessary part. The percentage of cases in which paralysis occurred was probably much lower than had been previously believed. Had the pathology of the disease been worked out originally in artificially infected animals, this confusion would never have occurred. Nevertheless, Wickman had discovered clinical types of the affection in which paralysis never occurred; but experiments on animals and the employment of lumbar puncture both showed that, whether or not paralysis occurred, changes took place in the cerebrospinal membranes and fluid which indicated implication of the meninges in the pathological process.

In many cases, there was no invasion of the substance of the brain and spinal cord. When invasion did take place, it was through the lymphatic structures about the bloodvessels which became infiltrated with cells—usually of lymphoid type. In a proportion of cases the process went no further; but it was common that when so much involvement had arisen, actual infiltrations occurred in the nervous tissues, the gray matter of the cord especially, but also, in far less degree, the white matter; and not only the anterior gray matter of the cord, but the posterior also and the intervertebral ganglia which were among the earliest structures to show lesions.

The infiltrative process damaged the nervous tissues and thus interfered with function in two main ways; the cellular invasion of the sheath of the bloodvessels obstructed the lumen and reduced the flow of blood; the cellular and fluid exudate pressed in the nerve cells and fibres. In this way alone disturbance of function leading to paralysis of muscle groups might be produced. This class of pathological changes was subject to complete reversion. Once the infectious process was arrested, as it was by the developing immunity principles, resolution of the exudate took place and function was restored. This change was noted clinically, and frequently, in cases in which paralysis of members disappeared in a few days or weeks. Another more severe lesion, however, might occur. The virus of the disease might attack and seriously injure or actually destroy nerve cells. When the cells of the anterior horn were thus injured and became neurotic, they were quickly invaded by phagocytes which brought about their disintegration. This process was not reversible; its effects were therefore permanent. Commonly, the two classes of changes were united in one person, so that partial but not complete recovery of function took place.

The muscles presided over by the lost nerve cells were for the time being paralyzed. The theory on which Doctor Lovett proceeded in this instance was to reeducate the nervous system in such a manner as to open new paths along which impulses might pass from the brain to the muscles. On account of the many connections between neurons, there would not seem to be anything anatomically impossible involved in the concept. The proof must lie in the results achieved by the educative methods described

One word in conclusion: The pathological processes being what they were, tended to reversion. Hence, recovery was the outcome to be looked for and expected, its extent being determined by the degree of the reversionary process to which the paralysis was due. Hence, any form of treatment, not distinctly prejudicial, would be followed inevitably by some improvement. This improvement tended to occur during the early weeks or months following the attack; the paralytic residue, after this process was exhausted, was that attributable to more severe injury or destruction of nerve cells. The restoration of this further loss of function, when it was accomplished, might be the result of the reeducative methods which had been described.

Dr. E. C. ROSENOW, of the Mayo Foundation of Rochester, Minn., said that in discussing Doctor Lovett's paper, it would be useless for him to do so specifically because it bore largely on therapeutics, a subject of which the speaker knew little. However, some of the experimental results Doctor Rosenow had achieved bore directly or indirectly on the management and treatment of poliomyelitis. Dr. E. B. Towne, Dr. G. W. Wheeler, and he himself had studied the present epidemic, both in Rochester, Minnesota, and here in New York at the New York Hospital, from the standpoint of the elective localization of the bacteria (chiefly streptococci) isolated from the throat, from the tonsils, and from lesions of the central nervous system. The technic used was similar to that employed by the speaker in studies on the elective localization of bacteria in various other diseases, including diseases of the nervous system.

The tonsils, especially in patients over three or four years of age, yielded on pressure a surprisingly large amount of infectious material, even in patients with no subjective or objective signs of acute tonsillitis. In all of seventeen cases where tonsils were removed after death and carefully sectioned, there were found from one to fifteen peculiar areas of localized necrosis, usually at the base along the capsule not communicating with the surface. They contained a peculiar, opalescent material chiefly filled with large and small mononuclear cells, polymorphonuclear leucocytes, and often large numbers of diplococci of the usual size and occasionally some small forms; fusiform bacilli and micrococci. In three or four adenoids removed at autopsy similar pockets were found. The ages of these patients ranged from seven months to twenty-four years.

The importance of localized foci of infection in the tonsils as a point of entrance of bacteria in poliomyelitis had not been specifically emphasized. Owing to the presence of large numbers, and often in almost pure form, of a streptococcus which on injection produced paralysis in animals, rabbits, guineapigs, dogs, cats, and monkeys, and to the low virulency of the bacterial flora in these patients, the experimenters felt with Doctor Roper that tonsillectomy was justified in patients in whom there was persistence for some weeks of fever, irritability, lack of appetite, and little or no improvement in the paralysis, or in whom the paralysis was slowly extending. This had been done under light ether anesthesia in eleven cases. In none of the cases subjected to tonsillectomy had there been any sign of acute tonsillitis. In most of them there was found a surprisingly large amount of pus and infectious material during the tonsillectomy. Numerous cross sections of the extirpated tonsils revealed pockets similar to those in the fatal cases, but which were smaller and fewer in number. None of the cases were made worse. Most of them showed improvement soon after tonsillectomy and in several the results were strikingly favorable, the fever disappearing, the extended paralysis being arrested, and the general condition greatly improved.

In the light of these facts, it was possible that unrecognized foci in the lymphoid tissue of the throat was an important factor in determining the severity of the initial paralysis, especially in preventing the usual early improvement, the localized foci affording entrance way to the organisms having elective affinity for the central nervous system. The number of cases of tonsillectomy were of course too few to warrant drawing positive conclusions; the results were merely suggestive. The experiment had proved, however, the presence in the throat, in the tonsils, and in the central nervous system, in epidemic poliomyelitis, of a peculiar streptococcus which, when injected into animals, including the monkey, produced a flaccid paralysis due to lesions in the central nervous system.

Dr. Frederick Tilney said that Doctor Lovett had shown how much could be done in the intelligent aftercare of cases of poliomyelitis. Certain details in his paper interested the speaker, who thought stress should be laid on these, so he would confine his remarks to them. In most severe cases of poliomyelitis, it was generally admitted that there was a focus of intensity in the inflammatory process. The situation of this focus in the central nervous system determined the distribution of the most profound motor defects and the most persistent residual paralysis. This focus was usually accompanied by a more extensive involvement, characterized by less extreme degree of inflammatory reaction which determined the recessive paralysis. It was probable that there were no means at present to combat the intensity of the focus or its accompanying involvement during the acute stage of the disease. Experience with the serum treatment indicated that it might be beneficial in the preparalytic stage and possibly in the ascending, bulbar, and meningitic forms.

The first object, therefore, in limiting the resulting disability, was to determine as nearly as might be the exact position of the focus of intensity in the central nervous system in order to deal with what was certain to be the most persistent and profound residual paralysis. This determination was best made by means of electrical reactions which, for this reason, assumed great importance, not only in the diagnosis and prognosis of the disease, but also in its treatment. These reactions should be taken at the beginning of treatment.

Knowing the groups of muscles most affected, it was next necessary to guard against the development of malpositions in the limbs. This was particularly true of foot drop, shoulder drop, and knee back. Care should be taken that the bed clothes put no undue pressure on the foot. Sand bags might be used to prevent overextension of the knees, and pillows, foot boards, and plaster of Paris splints met the tendency toward podoptosis.

The question naturally arose at what time it was best to begin treatment. The most conservative attitude put the earliest beginning of treatment at the end of six or eight weeks, but those who took a more radical position affirmed that treatment should be begun as soon as the fever disappeared. The latter was dangerous because it favored further spread of the infection, and the former was unnecessarily cautious because much time was lost which might be used advantageously in the application of beneficial therapeusis. It was safe to say that treatment might advantageously and safely be begun at the end of the third or fourth week, but in cases with pain and tenderness it should be undertaken most cautiously and at once be given up if the pain tended to increase.

The principal elements of the treatment included active and passive exercises, massage, support, and electricity. This referred to immediate aftercare and did not include surgical necessity.

The value of electricity had been much questioned, owing undoubtedly to its improper application. It was certainly true that electricity, properly applied in this disease, had a real value. The faradic current should not be used for two reasons: First, because it caused no reaction in profoundly paralyzed muscles, and, second, because it tetanized partially paralyzed muscles and thus fatigued them. The ordinary galvanic current was also ineffective. The most useful form of electrical current was the sinusoidal galvanic, which not only produced rhythmical contractions of the muscle groups involved, but caused alterations in the polarity of the current. To get the best effects of the electrical treatment, the part to be stimulated should be first massaged. The effects might be further enhanced by applying heat to the surface, by means of either a hot pack or a calorescent lamp. In this way about one half of the current strength might be employed to effect efficient muscular contraction, whose production might otherwise require current strength sufficient to cause pain, which raised a serious obstacle to this treatment, especially in young children. The electrodes should be static and not moved about. They should be fastened firmly in position over the muscles to be stimulated. A towel, wrung out of warm salt water, should be placed between the skin and the electrode. The current should never be started at the maximum, but gradually increased during the treatment, which should last fifteen to twenty minutes. Massage, as well as the electrical treatment, should be given daily. It was even better if the massage could be given twice daily. Exercise might be recommended at the end of the third week and should be confined to passive movements of a mild sort. During the fourth week the child might be placed in a bath tub filled with warm water for fifteen or twenty minutes each day. The addition of salt rendered the water more buoyant, so that while in the bath the child was able to make voluntary movements in the paralyzed limbs which was impossible under other circumstances.

From the end of the fifth week special exercises should be devised to meet the special defects in the musculature. In leg cases, a very valuable contrivance was a skate which ran upon a track. The patient sat on a chair and, putting the foot on the skate, moved it back and forth. If the muscles were not strong enough for this motion, strings running over pulleys could be attached to the heel and toe so that with the aid of a hand the patient exercised the limb. Muscular individualization and substitution should be begun under special instruction and much could be accomplished in this way.

Splints, braces, plaster of Paris casts, and various other forms of support were never curative in their application and should be advised only when malpositions of the limb threatened to do injury to the joint, or caused undue stretching of a paralyzed muscle.

Exercise, in the speaker's opinion, was, above all other things, the most essential factor in the aftertreatment of anterior poliomyelitis. This might be beneficially supplemented by massage and properly applied electricity. All of these means constituted the type of treatment to which every case was entitled; but without persistent application for a long period of time, no patient could be said to have had full opportunity for completely normal restoration.

Dr. Charlton Wallace said that every one in New York who had children suffered during the last few months with hysteria, for they confronted a disease which they did not know how to control. It was not the speaker's intention to talk about the etiology or pathology of poliomyelitis, as that had been done very lucidly by others, but to call attention to the fact that from an orthopedic standpoint each case of infantile paralysis presented a separate study, and it was observation of the muscular anatomy and the physiology of those muscles that enabled them to care for a case properly. It was well to beware of the haphazard treatment by those untrained and unskilled in the anatomy and physiology of the muscle groups.

Treatment should be started when the acute stage had subsided, but there was a question as to when the acute stage ceased. It was the speaker's opinion that it lasted only so long as there was any inflammatory process in the spinal canal. The acute stage lasted so long as there persisted tenderness of the joints. No treatment, except absolute rest, should be given other than the serum treatment during the acute stage and application of plaster of Paris bandages to the feet to prevent foot contractures, After that, orthopedic treatment should be started. There had been patients with tenderness in the joints lasting from three to four months; such patients should be kept in bed in a horizontal position. A plain wooden bed, with a mattress, was excellent for this purpose. Orthopedic treatment should not be carried out without general hygiene, fresh air, sunlight, proper food, etc.

In regard to braces, the speaker believed that no patient who had paralysis of the lower extremity or back should go about without brace support. Braces were used, in the first place, to prevent deformity and strain on affected muscles. They also prevented the strong muscles from overacting. Braces also helped in the physiological function of walking, which should be encouraged as soon as the patient was able to sit up and get about.

Another valuable aid was muscle training while there was power in the muscle; but the warning should be given to the parent that this would not cure, but was an aid only toward restoration of normal power. The speaker had seen instances of muscle training improperly taught, where the parents, having believed this would cure the child, set aside all braces, resulting in the worst types of deformity. The cases benefited by this method had been properly handled. Massage played some part and electricity might be of some benefit. While there was a possibility of improvement, every aid that could be given without harm should be utilized, and therefore it seemed that these children should wear braces, receive muscle training, massage, and some electricity.

Operative treatment should not be resorted to until three, four, or five years had passed, except when contractures and deformities existed, which should be overcome so that the patient might walk with supports. Some forms of operation were more appealing than others; a dangle foot, for instance, might be operated on perhaps within two years, or two and a half years after onset. The procedure preferred for these feet affections was the removal of the astragalus, displacement of the foot backward, and the transplantation of the selected tendons. The speaker had seen several hundred of these cases have circulation so restored after operation that the warmth of the foot was greatly increased and a good base was obtained for standing and walking.

Dr. G. R. Pisek was inclined to disagree with Doctor Lovett in his statement that he was presenting nothing new this evening. It must be gratefully acknowledged that his scientific method of muscle testing would add valuable facts to the conception of poliomyelitis and place the treatment on a more rational basis. Doctor Lovett had brought a note of optimism to the situation, an optimism based on results obtained and recorded, and in the opinion of the speaker he had proved his case. The pediatrist had a duty to perform as well as the orthopedist, whose viewpoint had been ably expressed by Doctor Wallace. The pediatrist was mainly concerned with the acute and convalescent stages of poliomyelitis and with the opportunity for study afforded by the epidemic and in cooperation with other members of the medical profession, and it should be his duty to correlate all the facts in his possession so that diagnosis could be made more certain early in the disease. Upon the pediatrist devolved the task of sifting out the large mass of data gathered during this epidemic, particularly from the clinical standpoint, establishing, if possible, a symptomatology for the acute stage. Seventy per cent. of the cases were easy to diagnose; the other thirty per cent. were not so readily diagnosticated, while the so called abortive or nonparalytic types were baffling in the extreme.

Another duty lay in the analyses of the great number of cases observed this summer so that a rational basis for treatment could be established. It was certainly necessary to decide what was the proper method of handling the acute stage. Serum treatment was approached with great hope by those brought into contact with large groups of cases in hospitals, but they had changed their opinion; it did not present a large measure of success, except in the very early cases and those of the ascending type. The laboratories were at work and some were offering new etiological factors that certainly opened new avenues of thought. Doctor Roper had reported for the New York Hospital Annex that there were no drugs used, nursing care only being employed (except in one case of serum treatment), and yet in this hospital the mortality was lower than that reported for the city. Specific treatment must wait upon the pathologists and epidemiologists, but meanwhile the management must be worked out in relation to the pathological processes of repair and absorption which took place soon after the infection had occurred. Emphasis should be placed on the counsel of the essayist regarding precision, efficiency, and persistence in treatment.

The public, owing to the courageous stand of Doctor Emerson, the health commissioner, had been awakened to their responsibilities. If this large group of patients were thrown on their own resources, the surgeons would not be performing their obvious duty. The orthopedic institutions of the city would not have room efficiently to care for the large number of cases discharged from the hospitals, and the ordinary dispensary was not fitted nor qualified to do so. This was the time for cooperation with the commissioner and the immediate attention of the association of outdoor clinics, to the end that a uniform standard of equipment might be established so that these children might receive proper treatment and welfare workers follow up these cases so that the parents would be constantly encouraged and the necessarily long course of treatment, as Doctor Lovett had so admirably shown, be persisted in so that the patients, otherwise crippled for life, might be restored to usefulness. If treatment did not seem to produce results and these people were left to themselves, they would drift away.

Dr. Foster Kennedy said that there was nothing that had not been touched on better than he could do it, but he wished to refer to Doctor Lovett's comment regarding the neurologists' lack of enthusiasm for braces compared to their alleged favorable opinion of electricity as a therapeutic measure in poliomyelitis. The speaker did not regard this as an even comparison, for electricity at its worst was at least not more harmful than an incantation, while braces improperly or prematurely used could be destructive.

Neurologists had tried for a long time to discourage the undue use of apparatus during the first two years after the onset of the disease. It was a difference of opinion between them and the orthopedic surgeons, not yet settled. What Doctor Lovett had said would do a great deal to make some medical men less anxious to splint these paralyzed legs. If rigid apparatus was put on a muscle already diminished in innervation, it became still more atrophic and there was more difficulty in helping it to recovery.

It was necessary within six weeks to two months of onset to begin to institute passive movements and massage. This did not mean massage given three times a week for half an hour at a time, but rather for five or ten minutes five or six times a day. If the mother was properly educated, results could be attained in a dispensary which would not be achieved in the homes of the rich, where the patient was treated by a professional masseuse for half an hour or more every other day.

The placing of rigid apparatus on muscles which, though injured, were still capable of development by carefully graduated exercises and massage, both carried out several times a day for short periods, was a very heavy responsibility. The result of doing so was inevitably to increase uselessness in already atrophic muscles. Doctor Lovett had said that operation should not be done until two years from onset. The speaker affirmed also that, generally speaking, no brace should be applied during the same period.

Dr. Abraham Jacobi had seen this disease occasionally during the past sixty years, but not this summer. What had been said about infantile paralysis was not uniform; the cases that had been described, however, seemed much the same as years ago, except that at that time fever was rare. The cases usually had the following history: "A baby was put to bed apparently well and was taken up in the morning paralyzed, with two to four sets of anterior nerves involved. The child was better in five or six days, improvement being rapid; it was less rapid afterward for five or six weeks and this terminated the improvement. He had known of only one exceptional case; the child was treated for two or three years by a peculiarly enthusiastic assistant of his with galvanism, some 600 or 800 applications a year and eventually got nearly well. Treatment should not be undertaken, unless it could be continued over a number of years.

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Third Annual Meeting, Held at Washington, D. C., May 11 and 12, 1916.

The President, Dr. J. W. JOBLING, of Nashville, Tenn., in the Chair.

(*Continued from page 722.*)

A Stable Bacterial Antigen with Special Reference to the Meningococci.—Dr. GEORGE HANSEN, of Glenolden, Penna., observed that various methods had been recommended for the standardization of antimeningococcus serum, but no method so far devised was considered satisfactory. There had recently been a return to complement fixation, not because it was supposed that complement fixing antibodies had any exact relationship to the therapeutic value of the serum, but because the method was fairly accurate and served to identify the serum with the various types of meningococci with regard to its polyvalency. An antigen which might be distributed to various laboratories and which would remain unchanged under the varying conditions therein would remove one source of variation in results. Further, such an antigen might have value in the case of other bacteria, for instance, the gonococcus.

Cultures for the preparation of dried meningococcus antigen were grown on salt free agar. The growth was collected in distilled water, an equal volume of alcohol was added, and the mixture was centrifugated at high speed. The bacteria were further dehydrated by repeated washing with alcohol and finally with ether. The resulting mass was dried and preserved *in vacuo* over phosphorus pentoxide. For use, weighed amounts of the antigen were ground in a mortar and suspended in physiological saline solution. The usual preliminary titrations and controls were set up to be certain the reactions were specific. The dried antigen had been checked up against its homologous serum and a large number of heterologous serums had been found to yield specific results.

The Wassermann Test.—Dr. JUDSON DALAND, of Philadelphia, was especially interested in Doctor Coca's paper. Clinicians, however, were fully convinced of the importance and great value of the test, and were most optimistic. Speaking broadly, he inclined to the opinion that the Wassermann reaction might be looked upon as having a diagnostic seventy or eighty per cent. value, under ordinary conditions; and under special conditions still greater value. The object to be accomplished by a study of errors of the test was to increase its value; and these errors might be divided into two classes: 1. Laboratory, and 2, clinical errors. The laboratory errors might be due to the many causes with which the members of the society were familiar and occasionally might be due to the methods employed or to gross carelessness. On the other hand, clinical errors might be due to the erroneous belief that syphilis was present or absent, and in such cases when the Wassermann reaction was positive, the error was ascribed to the test. Syphilis might exist and the Wassermann reaction be negative, and they might conclude that the Wassermann reaction had been incorrectly performed and should have yielded a positive result. A common clinical error was failure to recognize the fact that under certain conditions associated with marked disturbances of metabolism, such as uremia, intestinal toxemia, fever, etc., occasionally a serodiagnostic test for syphilis might be strongly positive and syphilis be absent. Obviously such a diagnosis of syphilis solely from the laboratory test, would be a clinical and not a laboratory error. It was of the utmost importance that the society should at once take steps to standardize the serodiagnostic test for syphilis so that the results obtained by the large number of workers might be truly comparable. It was for this reason that he had advocated the original technic described by Wassermann, although during the past four years he had modified it by the use of cholesterinized extract of the bovine heart. From the clinical standpoint, it was of the utmost importance that all factors concerned in the interpretation of the results of the Wassermann reaction should be given due weight before deducing that a positive or negative Wassermann reaction proved the presence or absence of syphilis.

Dr. OSCAR BERGHAUSEN, of Cincinnati, said that first of all they should be clinicians, able to interpret the laboratory findings in terms of the clinical picture that was presented. A great deal depended upon the antigen. A suitable antigen gave positive reactions in luetic cases and negative reactions in nonluetic cases. The results should be reported as either distinctly positive or negative; doubtful reactions having but little real diagnostic value. A series of antigens, including cholesterinized antigens, should be used in carrying out the reaction. With cholesterinized antigens occasionally false positive reactions were obtained. He had observed such reactions with the blood obtained from patients suffering from advanced malignant disease and uremia Some substance had developed, which appeared in the blood current and was able to find complement in the presence of syphilitic antigens. They should be careful in taking and preserving the blood to be examined. Standing at room temperature, or the delay occasioned by sending the specimen through the mail, might be the cause of false reactions.

Prophylactic and Therapeutic Inoculations in Affections of the Respiratory Tract.—Dr. GEORGE W. ROSS, Dr. H. K. DETWEILER, and Dr. J. C. MAYNARD, of Toronto, Canada, made particular reference to the "common cold," first concerning its prevalence and the great discomfort, disability and economic loss which it caused. Its etiology was then discussed. Foster's filterable virus and Bacillus rhinitis (Tunnicliffe) and Bacillus influenzæ (Pfeiffer) were referred to as microorganisms which in different epidemics seemed capable of initiating the coryza or other early symptoms. It was thought that the secondary invaders (various streptococci in catarrh, pneumonia, etc.) probably played an important part, and the question was raised as to the likelihood of symbiosis occurring among those organisms, or increasing their parasitism. In connection with the recent epidemic in Toronto, it was shown that Streptococcus pyogenes largely prevailed in cultures from the nose and nasopharynx and sputum.

(*To be continued.*)

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Handbook of Fevers. By J. CAMPBELL MCCLURE, M. D. (Glasgow), Physician to Out-Patients, The French Hospital, London, and Physician to the Margaret Street Hospital for Consumption and Diseases of the Chest, London. Formerly Senior Resident Assistant Physician, Assistant Superintendent, and Resident Medical Officer in Charge of the Smallpox Hospital, Belvidere Fever Hospital, Glasgow. New York: Paul B. Hoeber, 1914. Pp. viii-470. (Price, $3.50.)

This is a handy work in which the discussion of the various fevers is almost entirely confined to practical aspects, the chief aim being manifestly to facilitate their recognition and the application of appropriate treatment. The customary pathological descriptions of textbooks on medicine have been omitted, and but little of epidemiology and bacteriology allowed admission. All that the general practitioner may find it necessary to know is included, however, special sections on the methods of infection, for example, period of infectivity, home prophylaxis, and public health administration being provided. Special attention is paid to the differentiation of the various clinical types in which the diseases taken up may be manifest, as well as to their complications and sequelæ, with the corrective measures indicated. In the sections on treatment the author presents much that is original or at least is based on his personal experience with the various therapeutic means referred to. In typhoid fever he favors giving calomel in small doses steadily for some days or even weeks, finding that it reduces meteorism and abdominal discomfort. In the bowel hemorrhage of the same disease he has found lead, tannic acid, and other astringents of no value, but favors opium, to which strychnine is added in small repeated doses to prevent relaxation of the intestine. Tepid compresses on the abdomen are preferred to cold applications in these cases, as they seem to have some action in restoring the tone of the gut. Kala azar, beriberi, and pellagra are included among the affections considered in this useful book.

Christianity and Sex Problems. By HUGH NORTHCOTE, M.A. Second Edition, Revised and Enlarged. Philadelphia: F. A. Davis Company, 1916. Pp. xvi-478. (Price, $3.)

The book begins with a survey of the literature on the subject, which is rapidly attaining a formidable bulk, and then plunges *in medias res.* Sexuality in the child is discussed—incidentally coeducation is denounced—then sexuality in the normal adult, neomalthusianism, sexual promiscuity, with the Bible's statements thereon, prostitution, including rescue work and the "white slave" traffic, venereal disease, marriage, and divorce. Two curious chapters follow, on the sexual in art and on the nature and ethics of impure language. The perversions are next taken up, and the evolution and metaphysical basis of sexual morality. There is an interesting chapter on the virgin martyrs, and the last chapter is concerned with the attitude of the gospel toward sex relations, the Christian ideal of marriage, etc.

The author is a priest of the Church of England and is evidently deeply read in the literature of the subject, scientific as well as poetical, to say nothing of the Scriptural and patristic. He knows his classical poets and the modern English books of Havelock Ellis and a few others. We think that the first thought of his readers will be directed toward what some will consider the broadmindedness of the author, while others will characterize it as disgraceful and unchristian temporizing with the most repellent forms of vice. Indeed it is hard to seize the writer's viewpoint when, for example, he recommends punishment for inversion, yet stipulates that the punishment be a light one.

In France and Italy, we believe, there is no penalty for inverted practices, provided that children are not debauched; the law, in fact, resembles our laws regulating normal intercourse. The attitude in this country toward inversion, however, is so antagonistic that tolerant legislation, Federal or State, is not likely for many years to come. In Europe sexual vagaries have been recognized to the extent of the founding in Germany of a periodical specially devoted to their study. The only remedy seems to lie in suggestion, either during the hypnotic sleep or with the subject conscious and willing. Perhaps Mr. Northcote's book, if widely circulated—and we hope it will be—may centre attention on a really tragic abnormality and modify our views sufficiently to permit of dispassionate discussion with a view to intelligent legislation. One thing seems to be sure—that sexual disorders are not due to criminal or disordered minds, and are quite independent of the will; indeed, they have a singular characteristic, in that their victims are often extraordinarily gifted, usually in music and the arts generally. A common jail, therefore, does not seem to be the proper place for them.

Mr. Northcote notes here and there the great variation, from one individual to another, of the strength of the sexual appetite; this variation seems to be at the bottom of the diverse views of what constitutes sexual temperance, etc. With some young men it is a constant fight with desire, while others seem to be able to shut down on the instinct when they have other important matters to attend to. Middle aged men, too, appear to forget the hot blood of their youth and are overbold in stating that sexual temperance is an easy matter. It is, usually, for men over fifty years of age at all events, unless an attack of senile satyriasis supervenes; but what interpretation do the preachers of continence place upon the red light district of every city, town, and many a village of the country? How have they read the amazing revelations of the various vice committees appointed in our larger towns?

Mr. Northcote speaks with authority to devout and earnest people, and it is to be hoped that his painstaking work will bear fruit in compelling a more unanimous verdict on the phenomena of his vast and newly agitated subject.

Interclinical Notes

The *Medical Review of Reviews* for October, 1916, says some very nice things about the NEW YORK MEDICAL JOURNAL, among others that we are "the most interesting of the independent weeklies." We are sufficiently ungrateful to state that we have seldom printed anything more interesting than the following paragraph, which we found on page 761 of our learned contemporary: "Bleeding from the rectum should be considered malignant in origin unless due to some other cause!!!" The exclamation points are our own.

* * *

Mr. Irvin S. Cobb has, in the *Saturday Evening Post* for October 7th, a story, Lover's Leap, which purports to be the diary of a seminary professor. If there is in this broad land any seminary harboring a professor who writes the extraordinary English of the Rev. R. T. Fibble, its name should be published as a warning to possible young women matriculates. Doctor Fibble uses *transpires* for *happens*, apparently does not know that unguents and ointments are the same thing, speaks of a lady as a confrère; he uses the expression, "actual fact," he calls a horse an equine, and a dog a member of the canine kingdom. Professors, as a class, may avoid the lingo of the race track and diamond, but they do not use the inflated jargon of this clerical hero.

* * *

Paul J. Banker is responsible for this paragraph in *Commerce and Finance* for October 4th: Shell shock frequently has been spoken of since the war. The terrific detonation of the heavy artillery has a terrible effect on men's nerves. Men lose their power of speech and hearing and often the use of their limbs. The London *Observer* says that nearly every day the papers contain a paragraph stating that some victim of shell shock has suddenly recovered his speech and the variety of methods is curious. A few are given: 1. Grew excited over a game of cards. 2. Fell downstairs. 3. Had a tooth pulled at the dentist's—without anesthetic. 4. Choked through inhaling cigarette smoke. 5. Underwent a flashlight photograph. 6. Put the wrong end of a lighted cigarette in his mouth. The *Observer* observes that "the card cure on the whole seems the least painful."

Meetings of Local Medical Societies

Monday, *October 16th.*—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Medical Society of the County of Erie; Elmira Clinical Society; Psychiatric Society of Ward's Island.

Tuesday, *October 17th.*—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Buffalo Academy of Medicine (Section in Obstetrics); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Federation of Medical Economic Leagues.

Wednesday, *October 18th.*—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society.

Thursday, *October 19th.*—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn (annual); Æsculapian Club of Buffalo; New York Celtic Society.

Friday, *October 20th.*—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; University of Virginia Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 4, 1916:

Bahrenburg, L. P. H., Surgeon. Directed to attend the meeting of the South Texas District Medical Association at Orange, Tex., October 5 and 6, 1916.

Bailey, Charles A., Acting Assistant Surgeon. Granted one year's leave of absence without pay from October 6, 1916.

Carter, H. R., Assistant Surgeon General. Granted two months' leave of absence without pay from October 20, 1916.

De Saussure, R. L., Assistant Surgeon. Granted three weeks' leave of absence from October 20, 1916.

Draper, W. F., Passed Assistant Surgeon. Directed to deliver an address on public health at a meeting of the Civic League at Potter's Hill, Va., October 10, 1916.

Frost, W. H., Passed Assistant Surgeon. Granted three days' leave of absence, September 24 to 26, 1916, and one day, September 30, 1916.

Glennan, Kenneth R., Field Investigator. Directed to proceed to Toledo, Ill., for duty in studies of rural sanitation.

Glover, M. W., Surgeon. Department letter of August 25, 1916, amended to grant sixteen days' leave of absence on account of sickness from August 20, 1916.

Grimm, R. M., Passed Assistant Surgeon. Granted fifteen days' leave of absence from October 16, 1916.

Heterick, R. H., Passed Assistant Surgeon. Directed to report at the Bureau for conference relative to anticipated trip to Tampico, Mexico.

McKeon, F. H., Surgeon. Directed to assume charge of Fort Stanton, N. M. Sanatorium.

Miller, K. E., Assistant Surgeon. Directed to proceed to Nashville, Tenn., for conference with State Boards of Health on October 2, 1916.

Ramus, Carl, Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to proceed to Naples, Italy.

Rucker, W. C., Assistant Surgeon General. Directed to proceed to Baltimore, Philadelphia, and New York relative to discontinuance of measures for the prevention of interstate spread of poliomyelitis; granted seven days' leave of absence on account of sickness from September 21, 1916.

Saunders, Samuel, Field Investigator. Directed to proceed to Toledo, Ill., for duty in studies of rural sanitation.

Schereschewsky, J. W., Surgeon. Directed to attend the meeting of the National Safety Council at Detroit, Mich., October 17-20, 1916.

Sharp, W. J., Field Investigator. Directed to proceed to Tuscaloosa, Ala., for duty in studies of rural sanitation.

Smith, F. C., Surgeon. Relieved from duty at Fort Stanton, N. M., and directed to proceed to Cape Charles Quarantine Station.

Storrs, H. R., Acting Assistant Surgeon. Directed to proceed to Seattle, Wash., for instruction in examination of cholera carriers.

Warren, B. S., Surgeon. Directed to proceed to Boston, Mass., for conference with the State Department of Health.

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Births, Marriages, and Deaths

Married.

Hollings-Walker.—In Norwood, Mass., on Monday, October 2nd, Dr. Byam Hollings, of Waverly, and Miss Alice Walker.

Moser-Kierstead.—In East Hartford, Conn., on Wednesday, September 27th, Dr. Oran A. Moser, of Rocky Hill, and Miss Lottie E. Kierstead.

Northridge-Taylor.—In Biddeford, Me., on Wednesday, October 4th, Dr. Robert J. Northridge, of Worcester, Mass., and Miss Elizabeth E. Taylor.

Wood-Heidbrink.—In St. Louis, Mo., on Friday, September 22nd, Dr. William J. Wood, Jr., and Miss Ida Heidbrink.

Died.

Aldrich.—In Albany, N. Y., on Thursday, September 28th, Dr. William D. Aldrich, aged thirty-three years.

Barry.—In Hot Springs, Ark., on Tuesday, September 26th, Dr. William H. Barry, aged eighty years.

Daniel.—In Claxton, Ga., on Saturday, September 30th, Dr. A. B. Daniel, aged eighty-two years.

Dominick.—At sea, on Monday, October 2nd, Dr. George Dominick, of New York, aged thirty-nine years.

Ellsberry.—In Bethel, Ohio, on Saturday, September 9th, Dr. William S. Ellsberry, aged sixty-four years.

Everett.—In Remsen, N. Y., on Monday, September 25th, Dr. Mary H. Everett, aged eighty-six years.

Green.—In Mexico, N. Y., on Wednesday, October 4th, Dr. Tobias J. Green, aged ninety-eight years.

Hornblower.—In Jersey City, N. J., on Thursday, October 5th, Dr. Josiah Hornblower, aged eighty years.

Howe.—In Bristol, R. I., on Sunday, October 1st, Dr. Herbert Marshall Howe, aged seventy-two years.

Keep.—In Brooklyn, N. Y., on Saturday, September 30th, Dr. J. Lester Keep, aged seventy-eight years.

Lloyd.—In Baltimore, Md., on Thursday, September 19th, Dr. Louis L. Lloyd.

Magie.—In Princeton, N. J., on Tuesday, October 3rd, Dr. David Magie, aged seventy-five years.

Mease.—In Goldsboro, N. C., on Sunday, September 24th, Dr. John H. Mease, aged forty-four years.

Moore.—In Philadelphia, Pa., on Tuesday, September 26th, Dr. William D. Moore, aged forty-nine years.

Pierce.—In Worcester, Mass., on Monday, October 2nd, Dr. George J. Pierce, aged seventy-six years.

Severance.—In Tacoma, Wash., on Tuesday, September 26th, Dr. A. Edward Severance, aged sixty-two years.

Solandt.—In Hayden, Col., on Tuesday, September 26th, Dr. John V. Solandt, aged forty-seven years.

Wolsey.—In Buffalo, N. Y., on Wednesday, September 27th, Dr. Cardinal T. Wolsey, aged sixty-seven years.

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Original Communications

CONSIDERATIONS IN THE MEDICAL TREATMENT OF GOITRE.*

By J. M. Anders, M. D., LL. D.,
Philadelphia,
Professor of Medicine, Medico-Chirurgical College.

The medical treatment of goitre must have special reference primarily to the particular clinical variety. For example, if the given case in hand is of the nontoxic form, then iodine and thyroid extract are indicated, as a rule, but if of the toxic type, or exophthalmic goitre, then these medicaments would be for the most part pernicious in their influence. Confessedly difficult, it is, nevertheless, all important from the standpoint of treatment to make an accurate diagnosis, including the special variety. The exigencies of time and space, however, will prohibit more than a brief reference to this aspect of the subject.

In the simple hypothyroid type (Sajous) the following group of features should be present: Slight enlargement of the thyroid gland (soft but not tender), more marked on the right side; hypothermia of slight degree; slow pulse ranging from 64 to 40 a minute; the hands and feet cold, excessive sweating, especially on exertion, and bodily fatigue on slight muscular exercise.

In the toxic (exophthalmic) goitre, the enlarged gland is tender to palpation, while tachycardia, tremor, exophthalmos, and other features are present as a rule, and serve to differentiate this, the commoner variety, from the type under consideration. After eliminating Graves's disease, we can approach the medicinal treatment of the hypothyroid type with a feeling of confidence, provided that the case in question has not been allowed to pass beyond the acute and subacute stages into the chronic form where surgery alone suffices to accomplish a cure of the existing deformities.

Again, some of these cases, if untreated, in the course of time cross the threshold of the hypothyroid into the hyperthyroid type. On the other hand, if recognized early this form yields promptly to appropriate treatment.

Sodium iodide often proves efficient, in gradually ascending doses, beginning with five grains three times a day, although the maximum dose should not exceed ten grains. If symptoms of iodism, which should be carefully watched for, develop, the use of the iodides should be temporarily interrupted, and later resumed in smaller doses. In my experience, the tincture of iodine, in gradually increasing doses, beginning with one drop, three times daily, is to be preferred in cases in which gastrointestinal fermentation is an accompaniment.

In this class of cases, thyroid function is deficient as a rule, hence the extract of this gland often exhibits a specific action, but it should be omitted from consideration when iodine proves curative. The daily quantity when used should not exceed five grains, while the beginning dose should be small, e. g., one grain three times daily, and the effects carefully noted. If the pulse rate is not noticeably accelerated, a slow and gradual increase in the dose may be made (one quarter grain three times a day at the end of each week) until the maximum is reached.

Sajous (1) suggests that the total daily dose of the remedy should be administered at night, believing that its use on retiring "protects the heart through the avoidance of exertion while the drug is being assimilated"—a suggestion worthy of more general adoption, especially in cases in which this method of administration does not cause an increase of the pulse beyond ten or twelve beats a minute.

It has always seemed to me to be the part of wisdom to discontinue the iodine in cases in which the thyroid extract is exhibited, on account of failure of the former remedy to bring about a cure. If, however, the desiccated thyroid extract, like the iodine, fails when employed alone, then these remedies should be given simultaneously, their action being almost identical, notwithstanding.

Should untoward effects result from the thyroid medication, they may be successfully combated by two to three minim doses, thrice daily after food, of Fowler's solution. The fact that we are unable to determine clinically, in all cases at least, whether or not hyperthyroidism has already set in, should make us exercise caution and reserve in the administration of so potent a remedy for harm as thyroid extract. Disappearance of goitre should be the signal for the discontinuance of the remedy, but a recurrence, however slight, should lead promptly to its readministration.

It is customary to prescribe an ointment of biniodide of mercury. This with massage over the gland favors absorption of the hyperplasia. Should

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*Read at the annual meeting of the American Therapeutic Society, Detroit, June 9, 1916.

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Röntgen exposures be resorted to in these cases of hypothyroidism? In my view the measures suggested above should be given a thorough, painstaking trial before using the x ray treatment. I have, however, observed good results from this method in some half dozen cases. It is stated by certain writers that it may produce "intense hyperemia and muscular adhesions, which increase the danger when an operation becomes necessary."

Finally, it may be repeated that the treatment of this type of goitre is entirely satisfactory, provided that the condition is recognized early enough, and iodine and the other agents recommended above are judiciously and promptly employed.

MEDICAL TREATMENT OF GRAVES'S DISEASE.

In the first place, it should be stated that thyroid extract and iodine are contraindicated in the therapeutics of this form of goitre, if we except cases in which myxedematous changes occur as the sequel of secondary atrophy of the thyroid gland. The signs and symptoms of the concurrence of Graves's disease and myxedema are mental dullness, dryness of the skin, falling of the hair, scleroderma, and, more important, supraclavicular swellings and a nonpitting edema. In this class of cases thyroid feeding from time to time is most useful in removing the features just enumerated.

One of the principal factors in the treatment of Graves's disease consists in the removal of recognizable causes. Certain writers describe a "secondary" or symptomatic variety, superinduced by special sources of irritation. It is undeniably true that the removal of these foci may, in rare instances, result in decided benefit, but I know of no cures that have been effected in this manner. Putnam (1), however, correctly observes that "when the nervous system has been under the tax of bearing several loads at once, the removal of any one of them may suffice to communicate a new "set" to the nerve functions or to provide the amount of relief needed to make recovery possible." It follows that an attempt should be made to remove intensifying sources of peripheral irritation whenever found to exist, with the reasonable hope of rendering medical and hygienic measures effective.

Among other prominent causative factors are emotional excitement, shocks, tuberculosis, rheumatism, syphilis, and intoxication from the intestinal canal.

When Graves's disease supervenes as a sequel of acute rheumatism, the use of sodium salicylate often yields excellent results. The writer has seen at least one striking and apparently complete cure from the exhibition of the salicylates. Their use should be interrupted for a few days at intervals of about one month. In cases in which syphilis is associated with Graves's disease, the employment of salvarsan is to be advised and encouraged. In a case reported by Ziegel (3), favorable results were obtained.

In four fully developed cases recorded by Epstein, as the result of large rectal injections of oil, with the purpose of removing all impacted fecal masses, an absolute cure was established. He holds that coprostasis with absorption of intestinal toxins is a very common symptom of the disease, and even in cases in which diarrhea is present there may be pronounced fecal impaction. W. H. Thompson likewise emphasizes the possible influence of autointoxication from the intestines as a causal factor, and excludes all meats from the dietary in order to prevent its development.

S. Solis-Cohen (4) states "whether or not the disorder is originated by the absorption of toxic products from the intestine, it is certainly aggravated thereby." In my belief, a careful regulation of the diet, thorough evacuation of the intestine by means of colonic irrigation with either a hot saline solution, as advised by Cohen, or large oil injections as recommended by Epstein, once or twice weekly, to obviate toxic absorption, cannot be too strongly emphasized. I have found heavy mineral oil administered internally of much service in unloading the bowel during the intervals between the irrigations.

Intestinal antiseptics are of distinct value in selected cases of exophthalmic goitre, the most effective, in my experience, having been betanaphthol, salol, and guaiacol carbonate.

Cases in which a clinical factor, other than shock, physical or emotional, is operative, do not lend themselves to satisfactory medical treatment. In my belief, this view is tenable in no limited sense, judged by an extensive experience. True it is that many of the distressing and alarming symptoms can be relieved by various vaunted remedies, and in exceptionable cases, a cure may follow; but rarely indeed are the results so favorable as those achieved by timely surgical intervention. Clearly, since the knife offers so much more than our therapeutic armamentarium in these cases, it is the plain duty of the internist and general practitioner to request surgical aid without too much delay. If operation is refused by the patient—a not infrequent occurrence—or a contraindication exists (rarely), then medical treatment should be undertaken.

At the outset it is to be recollected that certain hygienic measures are vastly more important to the patient than any known drugs or organotherapy. These patients are often greatly injured by being advised to travel or to take active exercise. What they need in view of the presence of the circulatory disturbances, increased metabolism, and myasthenia, is rest of both body and mind. At the beginning of a course of treatment, massage and passive exercise should be substituted for muscular activity. Later, with improvement in the patient's strength, gradually increased exercise, carefully prescribed, may be advised, but should not be carried to the point of fatigue.

Hydrotherapy has been found to be useful. In general, however, a daily tepid bath to insure cleanliness is sufficient. Baths that tend to induce exhaustion are contraindicated. The environment should be cheerful, but free from mental excitement on the one hand, and all depressing influences on the other hand. The value of fresh air, judiciously taken, is undoubted. In addition to the usual methods of taking the air, the patient should be encouraged to recline out of doors, well protected against cold, sudden changes of temperature, and strong winds. The foregoing measures—rest, followed by suitable exercise, fresh air, a proper environment, and bathing—are more useful than drugs in controlling tachycardia, neurasthenia, and insomnia.

It is sometimes necessary, however, to supplement them by other means. For example, the tachycardia and palpitation may require the use of an ice bag over the precordia, and a weak, rapid heart the administration of cardiac stimulants. As regards digitalis, it may be said that it often fails to control the tachycardia of this disease, and when employed it should be discontinued when found to be without favorable effect. Strychnine in small doses is effectual in combating cardiac weakness.

Of the numerous available remedies which have been advocated, two are worthy of elaborate mention. These are quinine hydrobromide and antithyroidin Möbius, the latter being prepared from the serum of thyroidectomized sheep and preserved by the addition of 0.5 per cent. carbolic acid. This product is available in bottles containing two and a half drams (ten c. c.) and may be administered in doses ranging from ten to sixty minims, two or three times daily. It has no cumulative action.

It is customary to continue the use of antithyroidin until the contents of one bottle are taken, and then to omit it for a few days, when it is to be resumed. Unfortunately, we are still ignorant, as Dock has pointed out, of the amount of this remedy requisite for the best results. Elsner and Wiseman (5) state that antithyroidin confers benefit "by relieving the annoying and alarming symptoms of exophthalmic goitre in typical and atypical cases." In their experience the greatest improvement is found in the relief of the tachycardia, precordial distress, and tremor. This improvement was hastened by rest in bed and close attention to diet, and in serious cases it was necessary to continue the treatment during many months.

Personal experience confirms that of Elsner and Wiseman just cited. Antithyroidin causes the enlarged thyroid to lessen in size, but not beyond the normal dimensions. The relief afforded to the distressing nervous phenomena of the disease, by antithyroidin and its apparent harmlessness, combine to stamp this as a sovereign remedy in exophthalmic goitre. As in the case of the use of thyroid extract in myxedema, so it is found wise to administer antithyroidin after the active symptoms have subsided, during periods varying from four to eight weeks, at intervals of two to three months.

The second remedy worthy of careful consideration in connection with the therapy of Graves's disease is the neutral hydrobromide of quinine, first proposed by Forcheimer. My custom has been to prescribe it in five grain capsules three times a day after food, later increased to four doses of the same strength, daily, if well borne. The remedy is to be continued until the subjective symptoms, the tachycardia, and tremor have disappeared, after which it is to be diminished until a single dose is taken daily. Should active symptoms arise during this tentative withdrawal of the drug, it must be resumed in full doses at once. The hydrobromide of quinine antagonizes hyperthyroidism, probably owing to its vasoconstricting effect, but it does so in a slow and gradual manner, hence patients should be told that they must be prepared to use it continuously for a period of months.

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1605 WALNUT STREET.

THE EARLY DIAGNOSIS OF TUBERCULOSIS.

By EDWARD O. OTIS, M. D.,
Boston.

> "The physician ought in the first place to endeavor to ascertain the nature and state of the disease by the common symptoms alone."
>
> JOHN FORBES.

In the experience of the writer a timely recognition of clinical tuberculosis is now more frequently made by the general practitioner than was the case in the past; indeed, the pendulum almost seems to have swung the other way and the specialist is not infrequently consulted by a frightened victim of undue zeal on the part of the doctor, who has made the dreaded diagnosis of tuberculosis upon slight or questionable physical signs or upon the x ray picture, regardless of the fact that no constitutional symptoms exist; he has made the mistake of calling a tuberculous infection an active tuberculosis. This distinction must always be borne in mind. Clinical tuberculosis means active disease indicated by its characteristic *symptoms*, such as cough, increased temperature, rapid pulse, loss of weight and strength, slight dyspnea on exertion, etc. There may even be no definite physical signs, but the toxemic symptoms plainly reveal the disease. On the other hand, nonclinical tuberculosis may show definite physical changes in the lungs, but there are no symptoms, and no deviation from normal well being—the subject is in no way ill and requires no treatment.

There are other cases, however, in which a definite diagnosis cannot be made at a first examination or at a second one. We can only keep the patient under observation and carefully watch developments. The symptoms are too indefinite and not corroborative one of another; the physical signs are indeterminate. Our suspicion is aroused, but only time can dispel or confirm it.

A belated diagnosis, or the failure to make one when the evidence is adequate, is still, however, only too common, and this may lead to disastrous results, as we all know too well. A striking and sad example of the failure recently came under the observation of the writer. A young woman, married but three weeks, was found to be suffering from well marked and well advanced tuberculosis with very active symptoms and very plain physical signs. She had been told by two physicians whom she consulted that she had only some "throat trouble" and so misled she married, only to awake to the distressing fact at the end of her honeymoon that she was a sufferer from the dreaded disease which had existed long before her marriage. How much needless suffering and disappointment did this mistake entail upon her and her unsuspecting husband! She had lost her best chance of recovery and the new home was broken up.

The fault in not making an early diagnosis lies largely, it seems to the writer, in the neglect of a careful study of the symptoms, which everyone can make with patience and time, and in placing dependence upon too slight and inadequate physical signs, of which even the specialist cannot always be sure. If the physicians in the case cited had only studied the symptoms, the diagnosis would have been evident.

It requires much time and careful investigation under quiet conditions to make an early diagnosis of tuberculosis. We cannot make it in a hurry. The history of the patient has to be carefully investigated, and, in the experience of the writer, the personal history is of more importance than the family history: What has been the patient's previous mode of life? His past illnesses? His occupation? His habits? His environment at home and at work? His excesses or deprivations? Anything and everything relating to the past life of the patient may give valuable clues; if, for example, the occupation is a dusty one, this is a significant fact, for we know that the incidence of tuberculosis is materially greater in dusty occupations, especially where the dust is metallic or mineral. Or is it an occupation which requires excessive physical or mental demands and close indoor confinement? Again, the question of exposure to infection, as in a family where one member is suffering from the disease, or long and intimate association with a tuberculous person in office or workshop is an important fact to ascertain. Past illnesses, such as pleurisy, influenza, typhoid fever, recurring bronchitis, and syphilis, suggest a lowered resistance or a tuberculous infection awakened into activity by one or another of these diseases.

In obtaining the history of the present illness we may either ask the patient when and how he first began to feel ill and what symptom he first noticed, or perhaps better, when he last felt perfectly well. As to the first symptoms observed, the patient will generally give one or more of the following: 1. A slight but persistent cough, or he may call it a cold which "hangs on"; 2, loss of strength or nervous energy—he does not feel quite up to his former physical condition, he gets tired more easily; 3, loss of weight, which may be but slight; 4, hemoptysis, which always brings the patient to the physician and which is almost a pathognomic symptom of pulmonary tuberculosis; 5, slight dyspnea on exertion; 6, pain in the chest or referred to the shoulder blade; 7, chilliness followed by flushing or feeling of undue warmth, indicative of fever; 8, loss of appetite or digestive disturbances; 9, hoarseness. Of all these symptoms perhaps the most common one is loss of energy or "ambition." We should be very careful to inquire into the matter of cough and expectoration, for these symptoms (cough and expectoration) may be so slight that the patient may at first deny that they exist. Although specific questions must be asked, yet it is often illuminating to allow the patient to tell his story in his own way.

We cannot be too painstaking in eliciting and studying the symptoms when making a diagnosis of pulmonary tuberculosis; for upon them we shall have to depend largely, if not entirely, for definite symptoms are frequently present before physical signs appear or at most the physical signs are indefinite and doubtful. On the other hand, it may be repeated that physical signs without symptoms mean only that there is a latent tuberculous infection and not an active process. The mistake is not infrequently made of acting upon physical signs without the accompanying symptoms, and consigning the individual to active treatment in the sanatorium or elsewhere to the disruption of his economic and social life. Thus his whole career and life may be ruined and marriage and self support prevented.

The temperature and pulse are of great significance, but in order to obtain an accurate gauge of the former, the temperature, it should be carefully taken for a week, three or four times a day, at eight, twelve, four, and six or seven o'clock. The patient may generally be taught to take it himself, or some one of his friends may do it. A constant although slight rise of temperature (99.5° F., or over) usually occurring in the afternoon, or a subnormal temperature accompanied by a persistently rapid pulse is very significant. When these two conditions exist, viz., a slight and constant rise of temperature in the afternoon and a rapid pulse, and at the same time they are accompanied with a little loss of weight and strength and some nervous instability, the case for the existence of pulmonary tuberculosis is a strong one. We must remember that a case of tuberculosis may simulate neurasthenia in its symptoms, and hence in every case of the latter condition a careful examination of the lungs should be made.

In the physical examination, which it is hardly necessary to say, should be made with the patient stripped to the waist; we first have to *look* at the chest and much information can often be obtained by the glance of the trained eye. We can see if there is, 1, any greater depression on one side than on the other, above and below the clavicle; or 2, whether there is less movement at one apex than the other, both of which are very suggestive signs of a tuberculous process. When we come to percussion and auscultation, the whole chest should, of course, be examined front, back, axillary region, and base. It is true that evidence of a tuberculous infiltration is generally found at the apices, still there are exceptions, consequently the whole chest should be examined minutely.

In percussing, we should proceed from below upward, because at the lower part of the chest we generally obtain the normal resonance which can be taken as the standard for the individual. It must be remembered that at the right apex there is a physiological difference in the percussion sound from that at the left apex; at the right apex the sound is not so resonant and is of a higher pitch and, moreover, the respiratory sounds are harsher and the voice sounds decidedly more intense. All this is normal for the right apex. If we found the same condition at the left apex it would indicate some slight degree of consolidation. Generally in early cases, percussion will not give very definite information, for a slight diminution of resonance is difficult of determination. When unmistakable dullness is present, the case has passed beyond the initial stage. Sometimes when there is a marked degree of infiltration in both lungs, the resonance, although greatly impaired, may be so nearly the same on both sides that we may fail to recognize that dullness exists. This is particularly the case when there are no adventitious sounds.

It is principally upon auscultation that we must depend for physical signs in early diagnosis, and often such auscultatory signs will be so indefinite and slight that their interpretation is difficult if not impossible. Both in auscultation and percussion we can discriminate better between slight differences in pitch and sound if we have a musical ear and are ourselves musical. The elder Flint, that great master of auscultation and percussion, played upon the violin. Laennec, the discoverer of mediate auscultation, played upon the flute, and Auenbrugger, the discoverer of percussion, was passionately devoted to music.

In auscultation we should study first the respiration, then the voice sounds, whispered and spoken, and, last, seek for adventitious sounds, namely, rales. The ability to distinguish abnormal respiratory sounds must depend upon a clear recognition of the normal respiratory murmur. "You cannot study too frequently or too minutely," said the elder Bowditch, nearly seventy-five years ago, "the respiratory murmur and the voice in healthy persons."

In early tuberculosis, one of the most significant modifications of the respiratory murmur is what Turban calls "rough" breathing, in contradistinction to the smooth vesicular respiration. We may also have a distinct diminution of the respiratory murmur upon the affected side. The expiratory murmur may also be distinctly prolonged and may be more or less bronchial in character—the bronchovesicular murmur of Flint. "This sign," he says, "represents the different degrees of consolidation of the lung between an amount so slight as to occasion only the smallest appreciable modification of the respiratory sound, and an amount so great as to approximate closely to the degree giving rise to bronchial respiration."

"Cogwheel" or intermittent respiration, in my experience, is of little value, as it is frequently heard when there are no other abnormal signs.

After all is said, slight modifications of the respiratory murmur are often difficult of detection and of limited value in diagnosis. "Distinctions in the (respiratory) murmur," says Gee, "which correspond with no definite physical condition of lung, make a show of profound and accurate knowledge, but really obscure it. They are *idola theatri*."

The voice sounds, spoken or whispered, if increased, indicate, of course, some beginning consolidation over the area in which they are heard, but it must be remembered that usually the voice sounds are much louder at the right apex than at the left, and when they are of equal intensity at both apices, it is an indication that there is some consolidation at the left apex.

Rales are, by far, the most significant of all the auscultatory signs, for they are definitely abnormal, and when persistent and localized, even if but few and feeble, they have far greater weight in making an early diagnosis than any deviation in the respiratory murmur. In seeking for rales we must never forget to have the patient cough, and then take a full breath immediately thereafter, for thus rales may be detected which would not otherwise be discovered. Turban mentions the incident of a patient who had consulted many physicians and who estimated their diagnostic ability by noting whether they asked him to cough during the examination. We must agree with Hector McKenzie that "the earliest physical sign which is *really* characteristic is the presence of rales." Although rales may not be regarded as the earliest physical sign of tuberculosis, the majority of physicians will make their diagnosis depend largely, so far as the physical signs are concerned, upon the detection of rales. "The detection of rales by the auscultation of the inspiration following cough," says Lawrason Brown, "is the most important procedure in the detection of physical signs of early pulmonary tuberculosis." Unilateral rales, with or without other physical signs at the base of the lung, have not infrequently led to the diagnosis of tuberculosis and the sending of the patient to the sanatorium. If there is no discoverable affection at the apex of the same lung, the basic condition must be considered to be due to causes other than tuberculosis.

After the most careful physical examination we shall often be unable to detect definite evidence of disease if we base our diagnosis upon physical signs alone, for as Knight truly observes, "variations in the respiratory murmur and slight modifications of the percussion note are not enough for positive diagnosis, and a patient should not be condemned to radical treatment upon such insufficient evidence." It is chiefly upon the symptoms, be it repeated, that we must depend for early diagnosis, unless we are so fortunate as to discover tubercle bacilli in the sputum, or detect persistent localized rales, or hemoptysis has occurred not referable to any other source.

In every suspected case, an examination of the sputum should be made and several times repeated if tubercle bacilli are not found upon the first examination. This examination is now so simple, easy, and rapid that no practitioner is excusable for not being able to do it. Although we can often be morally certain that tuberculosis exists from the symptoms and physical signs, yet absolute certainty can be determined only by finding the specific organism in the sputum, for it is possible that the symptoms which we regard as those of tuberculosis may be caused by other conditions. "Active disease confined to an apex," says Glover, "with a repeatedly negative sputum is not common." If from all the evidence obtained we are unable to make a positive diagnosis or a probable one sufficiently strong to warrant active treatment, we must keep our patient under observation and make repeated examinations at short intervals.

There are other helps to a diagnosis which, under favorable circumstances, may be available, namely, the x ray and the tuberculin test. Unless the former—the x ray—is done by an expert technician, and we are quite familiar with interpreting x ray plates, it is not of much aid, and, moreover, a diagnosis of active tuberculosis should never be made from the x ray picture alone as is sometimes done.

The tuberculin test can be employed in exceptional cases and its application is easy. Here again, however, it tells us nothing as to the activity or latency of the disease. "No modification of the tuberculin test as yet devised," says Brown, "differentiates clearly clinical tuberculosis that demands vigorous treatment from nonclinical tuberculosis that requires only a God-fearing life."

In conclusion, the diagnosis of early clinical tuberculosis depends upon the careful and painstaking assembling, correlation, and study of the symptoms, together with the evidence of the temperature and pulse and such definite physical signs as can be clearly discerned. The main reliance must be upon the symptoms, the pulse, and the temperature. If the physician spent the major part of his time and efforts in studying the symptoms and less upon the attempt to determine uncertain physical signs, I am convinced that but few cases would slip through his hands unrecognized.

REMOVAL OF THE THIRD LOBE OF A CYSTIC GOITRE.*

From a Woman with Exophthalmos,

By A. Ernest Gallant, M. D.,

New York.

The points of interest which led to a report of this case were:

1. The mother and five sisters had goitre and were said to have been cured by medicine.

2. The successive enlargement of the right and left lobes after removal of the middle lobe, with intervals of fourteen and four years respectively.

3. The aphonia following the second operation, and restoration of the voice after the third operation.

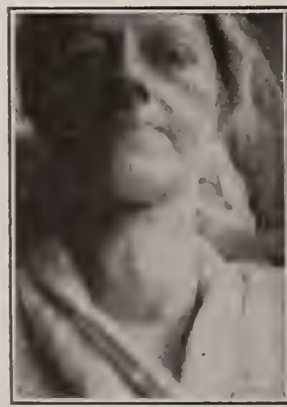

Fig. 1.—The third (left) lobe at the third operation, October 12, 1907.

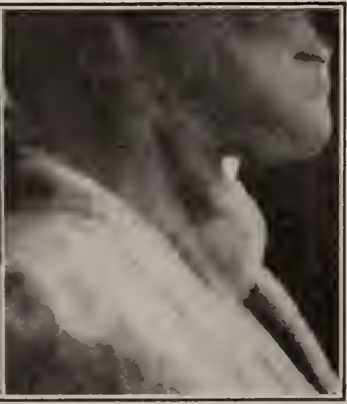

Fig. 2.—Side view of third lobe shown in Fig. 1.

4. The very disagreeable effects when thyroid gland or potassium iodide was administered.

5. The almost uninterrupted discharge from the sinus, and the serious discomfort and "queer feelings" whenever the sinus closed temporarily and the secretion could not escape.

6. The marked diminution of the exophthalmos.

7. The return of a considerable growth of hair in a woman of her age.

Case (65). On October 2, 1907, Mrs. A. F., German, aged forty-eight years, secundipara, came to the Westside German Dispensary on account of reappearance of a "goitre," the third of its kind. She was thoroughly familiar with the phenomena, as her mother and five sisters had had the same condition, "and were cured by medicine." The growth was first noticed when she was fourteen years old, and when it had reached about the size of the present tumor, it was removed by Dr. F. Kemmerer in 1892. Later, the "right" lobe enlarged and was removed at Roosevelt Hospital in 1903, and was followed by complete loss of voice, which became only a whisper. Since then the exophthalmos had somewhat diminished, but was still quite in evidence (Fig. 1). On the *left* of the median line in the neck was a semielastic tumor, with a surface diameter of three inches and an elevation of nearly two inches (Figs. 1, 2). The patient's general condition was underweight; no anemia; pulse somewhat irregular and intermitting occasionally. She was very nervous and able to do but little work, which her husband's illness had compelled her to undertake.

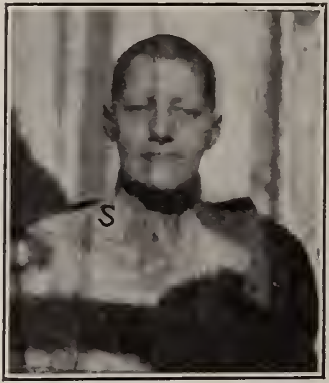

Fig. 3.—Open sinus, November 22, 1908: S, sinus.

The third operation was done, October 12, 1907, at the Baptist Deaconess' Home. Morphine, one quarter grain, was dissolved on the tongue a short time before etherization. For convenience in operating, the patient was placed in a semireclining posture. A vertical median incision alongside the old cicatrix was carried from the hyoid down to the suprasternal notch, and extended to the left, at a right angle for one and one half inch. The tumor was extremely vascular, and in cutting through the capsule some large veins were severed and bled profusely. The growth extended over an area five by six inches, well under the left sternomastoid nearly to the hyoid above, and dipped down below the sternal notch, behind the sternum, for some two inches. During the blunt enucleation the left superior vein was torn, the superior thyroid artery ligated, and several cysts were ruptured. Catgut sutures were carried completely across the base and, when tied, obliterated the cavity. The sheath and fascia were united with a continuous suture, and the skin approximated with silkworm gut. A rolled gauze wick saturated with adrenaline solution was inserted at the lower angle and another into the cavity behind the sternum.

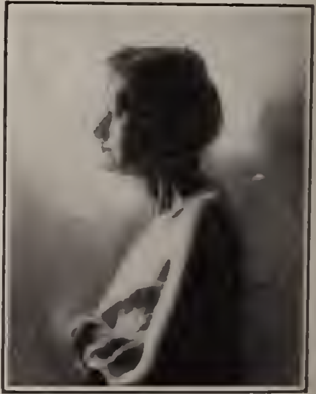

Fig. 4.—Sinus still open, March 3, 1915.

The patient stood the operation well and when put in bed the pulse was 120, regular, and the face a good color. Later the pulse intermitted frequently, but was of fair quality when stimulated by a saline whiskey enema. Shortly after the operation the patient's hair fell out.

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*Read as a part of the Symposium on Goitre, before the American Therapeutic Society, at the seventeenth annual meeting, Detroit, Mich., June 9 and 10, 1916.

January 22, 1908. Ever since the operation there had been a constant free discharge of a gummy secretion, which did not diminish, and the sinus manifested no evidence of closing. The sinus was curetted to a depth of one and a half inch, and packed with adrenaline gauze, after the application of pure carbolic acid to the bottom of the canal.

November 22, 1908. During the past ten months the discharge did not cease (Fig. 3). The protruding granulations were cut away and red iodide of bismuth powder was applied. A week later, the sinus closed over.

March 3, 1915. From time to time during the past seven years the sinus has reopened and the discharge recurred for a while; but the patient has always experienced such distressing, nervous feelings when there was no discharge as to make her encourage it to flow.

When last seen, March 3, 1915 (Fig. 4), the exophthalmos had disappeared, her hair had grown in to about its original, scanty quantity, the voice had gradually returned, though it was of a lower pitch. Owing to her stiffened fingers, she has been able to do but little work, and suffered from lack of nourishing food. As a last resort she applied to a charitable organization for help. They promised to look after her welfare, furnish much needed glasses, and to have her badly decayed teeth replaced by a set of "store teeth."

If the patient can be found, it is my purpose to institute the feeding of " thyroid residue" (John Rogers, *New York State Journal of Medicine*, May, 1916, pp. 232-237) and report the result.

616 Madison Avenue.

FOCAL POINTS OF INFECTION.*

Suggestions for Locating Them,

By Noble P. Barnes, M. D.,
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To the student of rational therapeutics there is no problem of greater interest than focal infections and the many clinical manifestations that are brought daily to his attention. The result of the painstaking and systematic research in rounding up and exterminating these Villa bands is even now of sufficient proportions to mark a new era in scientific medicine and surgery.

Such foci are now regarded as real and important factors in the diagnosis and treatment of many disorders, some of which have been classed as incurable. Carious teeth, dental alveoli, tonsils and adenoids, gallbladder, prostate, and appendix, sinuses, mastoids, and many other nooks and corners, favorite breeding places and portals, have been found guilty of harboring enemies to health and happiness.

The apprehension of these hiding places brings into employment every diagnostic method known to science. The application of recently gained knowledge respecting the character and characteristics of microorganisms and the practical adjustment to newer conditions of some of our old observations, furnish us with additional means not only of recognizing these offenders but of locating their favorite haunts.

Different animals have a preference for different lairs. Different families of the human race find health and comfort under entirely different environments. A person away from his native country may fail in health, to be restored to normal only by repatriation. Likewise we now have known facts regarding the habits of certain types of microorganisms that give important evidence respecting their tissue affinity. The following are recognized facts respecting the tissue selection or predilection and habits of some of the well known microorganisms:

Those of typhoid, dysentery, and cholera select the digestive tract.

The gonococcus has a fondness for the genital mucosa and the conjunctiva.

The Klebs-Löffler bacillus shows a preference for the tonsils.

The meningococcus invades the upper meninges.

The pneumococcus pervades the respiratory tract and the streptococcus of Herb the parotid and testicle.

The staphylococcus is usually found in circumscribed infections, especially on the surface, while various strains of streptococi produce a great variety of infections and more than any other microorganisms are capable of adjusting themselves to new surroundings by changes of a morphological character and becoming unassailable by the forces of the host.

The streptococcus and pneumococcus in some strains are characterized by infectiousness of a low grade of toxicity. The more virulent microorganisms have a tendency to make their matrix or host less favorable for their growth, while some of low virulence as found in chronic foci make their habitat or soil more favorable for their existence. The plasmodia (hematozoaria) select the red blood corpuscle and Trichina spiralis the muscle.

Likewise toxins have a special selective affinity for certain tissue and produce their symptoms in consequence of such affinity. Tetanus toxins anchor to the motor ganglion and the virus of rabies to the central nervous system. Poliomyelitis anterior is also the result of a specific toxin or microorganism having an affinity for the anterior horns of the cord.

In connection herewith it is of interest to note that some chemical substances localize unequally and thus give rise to certain diagnostic symptoms, for example, the paralysis of the extensors in lead poisoning; also that certain alkaloids, leucomaines, ptomaines, and bacterial toxins may have similar selective effects upon living organisms. Therefore a direct effect upon the cells of the body takes place whenever there exists a mutual affinity between such cells and a toxic substance. Again, tissue cells are sensitized against certain substances; generally as in the appearance of anaphylaxis and locally by limited reaction.

Toxin may act upon a sensitized spot that has held previously injected toxin or its effect for a period of years. This is not unreasonable when we consider that some chemical substances will be fixed in the tissue for a lifetime, for example the common tattoo.

Another interesting chapter recently developed is the acquired specificity for location of certain microorganisms. Like birds that return to their northern home to nest, or like trout that leap to the source of the stream to spawn, so do these microorganisms when injected into animals race back to the place whence they were taken.

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*Read before the American Therapeutic Society, Detroit, Mich., June 9, 1916.

E. C. R. Rosenow (*Journal A. M. A.*, LXV, 20) in an article, Elective Localization of Streptococci, and in a later paper, Bacteriology and Experimental Production of Ovaritis (*Ibidem*, LXVI, 16), gives a comprehensive and convincing discourse on the affinity or tropism, which the streptococci, isolated from various diseased structure, have for the same organ or tissue when injected into animals. In the animals which survived the injections, many showed no other lesion than in the organ or tissue from which the streptococci had been taken. The streptococci strains employed by Rosenow were similar in cultural and other respects, but differed in degree of virulence. Those taken from the gallbladder were more pathogenic than those taken from gastric ulcer, while those from the appendix were least virulent. To use Rosenow's expression, "it appears that the cells of the tissue for which a given strain shows elective affinity, take the bacteria out of the circulation as if by a magnet—absorption."

Beginning with the introduction of bacterial vaccines, when Koch recommended and used tuberculin, we witnessed one reaction after another and failed to take advantage of one important practical application. Koch's tuberculin treatment was then a failure because of misapplication. Time after time was a focal smouldering ember fanned into an active and destructive inflammation because of an overdose of tuberculin.

This focal reaction has presented itself in most every injection we have carefully observed. The flaring up of a boil or carbuncle after administering a suitable vaccine, or the appearance of urethral discharge, frequent urination, or strangury, after using gonorrheal vaccine, or the bursting forth of embryo pimples after the injection of acne vaccine are common observations.

Having these facts in mind, after prolonged treatment of a gonorrheal arthritis, with prostatic massage, irrigation, and carefully measured doses of vaccine, in which there were days of encouragement, though the end result was nil, I decided to give the patient an unusual dose of the vaccine and thus incite an intense reaction in the joints from which he always experienced a great improvement. Within twenty-four hours my patient had a temperature of 103.5° F. with all the symptoms of a general infection. Pain in the affected parts was severe. Interesting and suggestive was the stimulation of an unsuspected focal point of infection resulting in a most distressing epididymitis. The patient informed me at this time of a similar inflammation of the same structure during one of his unpleasant outbreaks over twenty years before. Here, then, was a focal point of infection I had overlooked.

Upon this suggestion of locating focal points by infection by obtaining a reaction following a larger than the therapeutic dose of vaccine, I have been working with a number of cases. Two of these I will report because of their unusual interest.

Case I. A woman of forty years had been treated for gout, rheumatism, and so called "rheumatic gout," with everything from the salicylates and mineral waters to the baking oven and mud baths. She described her suffering as mostly "soft pains, stiffness, joint soreness, and occasional severe joint pains." The heart sounds gave evidence of a previous endocarditis with resulting mitral insufficiency. Cultures made from her blood grew Streptococcus viridans. A vaccine made from this culture and given in an initial dose of 100,000,000 was followed by a moderately severe appendicitis.

Case II. A woman fifty-four years old with chronic polyarthritis and a bed invalid for over a year. She had had pyorrhœa alveolaris and her teeth had been removed while under treatment at the Johns Hopkins Hospital. When referred to me, she was taking from one to two grains of morphine daily and was considered incurable. Three blood specimens were negative or no culture could be grown on either aerobic or anaerobic media. Realizing that this form of infection is usually due to some strain of streptococcus, I injected 50,000,000 bactéria of a polyvalent streptococcic vaccine. In twenty-four hours she was in great distress. "I'm just as sore and painful as a big boil all over" was her remark. Blood specimens taken at this time grew Streptococcus viridans. An autogenous vaccine prepared and given in an initial dose of 100,000,000 was followed by pain and tenderness in the gallbladder region and the usual symptoms of cholecystitis.

The effect of a diagnostic dose of vaccine is both general and local. The symptoms of a general reaction are those akin to a pathogenic invasion—chill, fever, headache, anorexia, general malaise, and increased urination. The local effects, lasting from one to several days and depending upon the size of the dose, are pain and swelling of the affected parts—joints and glands—increased urethral discharge, strangury, or otorrhea as the case may be. In one instance increased discharge in the postnasal cavity determined an infection in the ethmoidal sinuses.

Focal reactions are caused best, if not exclusively, by injection of the killed infecting microorganism, and, as some organisms have a wide range of affinity and adaptability, selection of the vaccine is important

Inasmuch as the morphology of microorganisms is changed by environment, and a predilection is shown for the organ or tissue in which they have been living, thus establishing an affinity between host and guest, and inasmuch as these microorganisms and tissues thus fixed are unassailable by vaccine made from other strains, why would it not be practical in the absence of a suitable strain to cultivate and acquire this favor by growing the microorganism in a medium containing the extract or substance of the organ we are going to treat?

Forssner (*Nord. Med. Ark.*, 1902) demonstrated that streptococci grown in kidney or "kidney extract acquire a special predilection for the kidney when injected intravenously." Why not apply this principle in the making of vaccines?

Streptococcus viridans, for instance, includes a variety of strains having special affinity for different tissues.

Vaccines and serums prepared with due regard for tropic conditions will, from this point of view be the requirements of the future and, no doubt, many failures today will be successes tomorrow.

The Arlington.

Fatigue Toxins.—L. Ferrannini and S. Fichera (*Riforma medica*, August 28, 1916) from experiments on frogs show that these toxins when injected subcutaneously reduce markedly the extent of muscular contractions, considerably increase the latent period of contraction, shorten and render irregular the curve of muscle fatigue, and lessen excitability, contractility and force of the muscle.

LARYNGEAL ABSCESS.

With a Report of Three Cases,

By Milton J. Ballin, M. D.,
New York.

One of the unusual affections of the throat, occasionally associated with such intense subjective phenomena as to jeopardize the life of the patient, is a phlegmon, or abscess of the larynx.

That this condition is not of more frequent occurrence is surprising when we take in consideration the large number of patients who are subject to repeated attacks of inflammatory processes terminating in localized suppurations in the tonsils, peritonsillar, and retropharyngeal regions. An abscess of the larynx may arise as a primary infection, having its origin in the larynx proper, without any apparent predisposing cause. Or it may develop secondarily to an acute inflammation of the tonsils, nasal, or postnasal structures, and by continuity extend downward toward the laryngeal structures. It is also met as a complication to an old, long standing lesion of the larynx, in that it may develop in rare cases in conjunction with a tuberculous or syphilitic process, and may also arise as a secondary infection of an advanced, broken down malignant lesion.

The inflammatory process having advanced toward the laryngeal area, may involve the submucous layers of the mucous membrane and produce an acute laryngitis submucosa. This condition may, however, under usual circumstances, recede spontaneously, as is generally the case, or it may, in rare instances, lead to the localization of a firm exudate, which in turn may break down into a suppurative process in the form of a diffuse or circumscribed abscess.

An abscess of the larynx, according to most observers, is an infection of adult life, and is never met in infants or young children. According to Vogel (1) it has never been observed as a true spontaneous or idiopathic affection of the infant larynx, but has been observed as a complication, in rare cases, of typhoid fever in children. Parry (2) likewise regarded it as extremely rare in children and reported two cases which, according to him, were the only cases recorded up to 1873. These resembled an acute edema of the larynx in adults, and gave all the evidences of a croup or other laryngeal disease associated with a marked stenosis.

Holt (3) speaks of a submucous laryngitis characterized by a swelling which is partly edema and partly cell infiltration. He does not mention, however, a true form of abscess of the larynx.

Koplic (4) speaks of cases of periesophageal abscesses (retroesophageal abscesses) and also of cases in which pressure of the intubation tube or diphtheria of the pharynx had involved the periesophageal tissue, causing the formation of an abscess. He likewise does not mention the occurrence of a true laryngeal abscess, but states that a retropharyngeal abscess may extend downward toward the larynx and give rise to symptoms there. It is fortunate that in children and infants bacterial invasion usually takes place into the soft tissues of the tonsillar and pharyngeal regions, giving rise to localized suppurations in the form of retropharyngeal, tonsillar, and peritonsillar abscesses, which are easily accessible to operative measures. This same thing applies to adults, for when the suppurative process has become localized in the larynx, it is not merely the collection of pus in the soft tissues, but it is mainly the diffuse infiltration of the surrounding tissue and the varying degree of edema associated with it which give rise to the alarming symptoms.

That suppurations of the larynx were already recognized as far back as the thirteenth century, is evident from the reports of Roland, of Parma, who, at that time, described several cases in which the cause of death was due to laryngeal abscess found post mortem. Furthermore, Morgagni mentions two cases in which the cause of death was unknown, and in which the autopsy likewise revealed an abscess of the larynx. Thus, if we peruse the literature on this subject, we find occasional reference to localized suppurations in the larynx as the cause of death, which, however, were not recognized during life, but were accidentally discovered post mortem.

Thanks to the improved technic of modern laryngoscopy and to the advent of the laryngeal mirror, it has become possible to recognize intralaryngeal pathological conditions in their incipient stages. We are therefore no longer compelled to find, at the autopsy table, an explanation for the sudden death of a patient, but are now able to recognize pathological changes in the larynx before they have advanced to such a stage as to jeopardize the life of the victim. Through the early recognition of intralaryngeal conditions and in particular abscesses, we are enabled in a large number of cases to employ timely and energetic surgical measures, by which it is possible to stay the spread of infection and to prevent the development of fatal complications.

Although cases of laryngeal abscess are occasionally reported (5, 6), they are comparatively rare. Why they do not develop more frequently is difficult to explain. Explanation may perhaps be found in that the mucous membrane of the upper portions of the throat is more prone to traumatic influences, so that the bacteria always present, find ready access, and thus favor the formation of suppurative processes. On the other hand, the larynx, owing to its anatomical position, is less vulnerable and therefore more immune to bacterial invasion.

The etiology of primary laryngeal abscess may be regarded, according to Ziemssen (7), as a phlegmonous inflammation of the submucous connective tissue of the larynx, which may begin as a perichondritis, brought about by a trauma, overexertion of the laryngeal muscles, rheumatism, and catarrhal inflammations, and terminating in a circumscribed formation of pus. Tobold (8) is of the opinion that the primary abscess is merely a circumscribed collection of pus, being the result of an inflammation of the glands of the mucous membrane or of the mucous membrane itself.

Some observers believe that it is brought about by the breaking down of the lymphatic glands or of the bursa mucosa subhyoidea, while others again are of the opinion that the abscess originates in the tissues of the larynx as the result of some traumatic abrasion, thus creating a port of entry for pathogenic microorganisms.

Any irritation which has a tendency to produce an acute inflammation of the mucous membrane or of the perichondrium, may in short bring about changes in the deeper structures which ultimately result in localized or diffuse suppurations. The primary abscess may develop from external harmful influences as well, so that we find them associated with fractures of the laryngeal cartilages and with injuries of the neck caused by stab wounds, deep lacerations, etc. They may arise after cauterization with acids and caustic alkalies, which have accidentally penetrated into the larynx, or have been taken with suicidal intent; also from the inhalation of pungent, irritating, or hot vapors and gases, and finally as a result of injury from foreign bodies, such as bones (fish, meat), false teeth, buttons, etc.

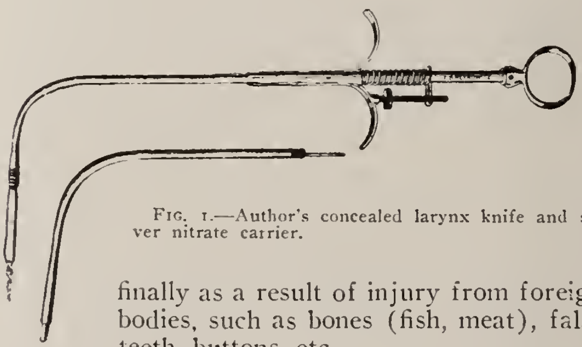

Fig. 1.—Author's concealed larynx knife and silver nitrate carrier.

The secondary laryngeal abscess may develop from extension of an inflammatory process in the nasopharynx, tonsillar, or peritonsillar region, downward into the laryngeal cavity. It may arise in the course of an acute exanthem, such as measles and scarlet fever, or develop as a metastatic process of a general sepsis, such as a general septicemia (9), a pyemia, an erysipelas, or in rare cases an ulcerative endocarditis. According to some authors, it may occur as a complication to typhoid fever, becoming evident in the convalescent stage; also in conjunction with a tuberculous or syphilitic process which has existed for some time and has undergone degenerative changes.

The site of a laryngeal abscess varies. It may be intralaryngeal or extralaryngeal, and either unilateral or bilateral. In the majority of cases it is unilateral, and may take its origin in the middle of the thyroid cartilage or in the epiglottis itself. It may furthermore become evident as a circumscribed pocket of pus or as a diffuse, widespread suppuration. In the latter form it may extend over the greater portion of the throat, and by penetrating into the deeper tissues, become apparent as a more or less extensive swelling in the neck. In the circumscribed form, however, it remains localized, and is visible as an indurated globular mass. Experience has shown that most laryngeal abscesses take their origin from the lingual surface of the epiglottis, the aryepiglottic folds and in the pyriform fossæ, and that they are usually unilateral, the majority being situated in the left side. Most abscesses are fortunately located extralaryngeally, making the prognosis decidedly more favorable. In the intralaryngeal cases, which are extremely rare, the outlook is unsatisfactory, as the site of the abscess acts as an impediment to respiration, and is inaccessible to operative procedures.

As a rule, a laryngeal abscess runs a rapid course, reaching its acme about the eighth or tenth day, but it may extend over a period of three to four weeks, as in one of my cases. During this time it gradually increases in size until it reaches such dimensions that it either bursts spontaneously or requires surgical intervention to check its further spread. If the abscess cavity is not evacuated before it has advanced to too large proportions, it may cause great distress by pressure and narrowing of the lumen of the larynx, thereby interfering with respiration to such a degree as to jeopardize life.

The prognosis depends on the site of the abscess. This is also more favorable when the condition is recognized early, as it enables us to adopt timely and energetic surgical measures. If the case is one of intralaryngeal abscess, the prognosis is decidedly more unfavorable, as the swelling and edema may proceed with such rapidity that the patient dies of suffocation before medical aid is available. Fortunately, these cases are extremely rare. On the other hand, prognosis is more favorable in the extralaryngeal cases. The infiltration and edema do not progress with such rapidity and do not, as a rule, produce the marked dyspnea during the early stage. It is only when the suppurative process begins to expand that the pressure on the walls of the larynx causes an increase in the edema and a narrowing of the lumen. The extralaryngeal abscess may exist for some days without producing urgent symptoms, and at times has a tendency to expand outward toward the muscular structures of the neck. By doing so the lumen of the larynx remains comparatively free, and the dyspnea does not become very marked. If laryngeal abscesses are recognized in the early stage, and proper therapeutic measures adopted, the prognosis is, on the whole, favorable.

There are cases, however, which terminate fatally. These are fortunately very rare and may be attributed to the sudden development of an acute edema and infiltration, brought about by the rapid formation of the suppurative process.

SYMPTOMS.

The symptoms of laryngeal abscess first manifest themselves as a burning sensation in the throat, which is associated with a feeling of pressure and pain on swallowing. If the abscess exerts pressure against the esophagus, there is more or less interference with deglutition and the patient experiences pain and difficulty in taking food. As the pus formation becomes more diffuse, it gradually brings about a stenosis of the lumen of the larynx so that we notice a change in the patient's voice and an increased difficulty in respiration. The cervical lymphatic nodes become enlarged, and the abscess may be readily palpated as a circumscribed mass on the side of the neck. The spontaneous pain becomes intensified and may be increased by pressure from without. The edema becomes more extensive so that the stenosis produces such difficulty in breathing that the patient is in constant dread of suffocation. As a rule there is no great fluctuation in temperature. There may be a slight rise between 99° and 100° F. The general condition of the patient is usually good, although there may be a general feeling of malaise and a certain degree of nervous tension and irritability, due more to the fear of suffocation than to lack of sleep and food. The voice becomes more guttural, and talking also requires greater effort. The mucous expectoration becomes more profuse and thicker, and is generally tinged with blood from the highly congested mucous membrane. If the abscess cavity increases in proportion and is under great tension, it may rupture spontaneously, whereupon the patient experiences a paroxysm of coughing, followed by the expulsion of a varying quantity of mucopurulent secretion. If this takes place, there usually follows a great feeling of relief in that the distressing phenomena disappear, the dyspnea improves, deglutition is accomplished with greater facility, and the patient's general condition tends to become more normal.

DIAGNOSIS.

The diagnosis as a rule can be readily made from the sudden onset of the subjective symptoms and from the laryngological picture. Inspection of the larynx reveals a highly congested and turgescent mucous membrane, which is associated with a diffuse or circumscribed area of infiltration. This may have its seat, as already mentioned, in the pyriform fossa, in the aryepiglottic fold, or in the base or body of the epiglottis. The infiltrated area appears as a more or less prominent mass which has a tendency to expand until it reaches such dimensions as to create a mechanical obstruction to the free entrance into and exit of the air from the lungs. As a general rule, the epiglottis is the part most involved, and appears as an indurated mass twice or three times its original size. The edema, which is generally present in these laryngeal conditions, is often a most unpleasant complication. It has the appearance of a globular pearl gray mass, varying in size from a pea to that of a walnut, and usually occupying the upper portion of the epiglottis and its adjacent folds. Its rapid development often endangers the patient's life, in that it occasionally attains within the shortest time such proportions as almost completely to occlude the larynx, causing death by suffocation before medical aid is available. It is not always possible to make a diagnosis of laryngeal abscess at the first examination, as it may easily be mistaken for other pathological conditions. This is especially true if the abscess has existed some time, as in one of my cases, and may under such conditions resemble a gumma, a tuberculous infiltration, or even a new growth.

All these conditions present a marked similarity at first, especially if the abscess is deep seated, so that it is only upon further observation that we notice a change in the picture which allows us to assume that the case is one of laryngeal abscess. On the other hand, if the abscess lies superficially, we can readily recognize its presence by the yellow discoloration of the tense fluctuating area. In such cases incision into this area will immediately reveal the presence of pus. This does not apply to the deep seated abscess, however, for even if we make repeated deep incisions into the indurated area, the pus may not appear for some days, and in some instances it does not come to the surface at all.

In cases of intralaryngeal abscess, repeated examinations may be necessary before we can recognize the true nature of the affection. The recognition of such abscesses is rendered more difficult, if they develop after a syphilitic or tuberculous lesion of long standing, and if they are brought about by the long continued use of an intubation or tracheotomy tube. On the whole, it is not difficult to make the diagnosis of laryngeal abscess, if we take into consideration the sudden onset of the subjective symptoms, in conjunction with the laryngeal picture detailed above.

TREATMENT.

The treatment is at first conservative; we endeavor to allay the pain and feeling of tension and fullness in the throat by local instillations and sprays, and by vigorous application of antiphlogistics. These may be employed in the form of cold sprays to the throat, and cold compresses or an ice bag to the neck. The patient is advised to abstain from hot and irritating food, and is permitted to take only cold, semifluid food. By following this precaution it is possible to ameliorate the subjective symptoms and to bring about a recession of the active phenomena. In some cases this mode of treatment suffices, in that a small circumscribed pocket of pus may either resolve or rupture spontaneously. As a rule, however, such conservative treatment proves ineffectual, and sooner or later the case demands surgical intervention. This applies especially to cases in which the abscess is either a large circumscribed mass or a diffuse infiltration associated with extensive edema. In such cases we endeavor to bring about prompt evacuation of the pus by liberal incision into the indurated area and by free scarification of the edematous parts. To carry this out, we must first thoroughly anesthetize the mucous membrane of the entire pharynx and larynx with a five or ten per cent. solution of cocaine, to which a few minims of adrenaline solution (one to 1,000) have been added. This having been done we proceed, under guidance of the laryngeal mirror, to incise the most prominent portion of the infiltrated area and to scarify the edematous parts as freely as possible with the concealed larynx knife (Fig. 1). If we have been successful in striking the abscess cavity, the patient immediately coughs up a quantity of pus, which is followed by a grateful feeling of relief. If, on the other hand, as happens occasionally, we do not strike the abscess, there is created a point of least resistance at which the pus breaks through some hours later. These manipulations in the larynx, however, sometimes tend to aggravate

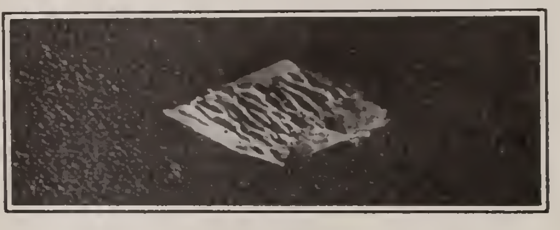

FIG. 2.—Bone, actual size, Case II, Dr. Ballin.

the subjective symptoms; the edema becomes more marked, the swelling increases, the larynx fills up with purulent, hemorrhagic secretion and the dyspnea becomes greatly intensified. When this ensues, intralaryngeal surgical measures must again be resorted to, and if the symptoms become too alarming, tracheotomy may even become necessary as a last resort. Intralaryngeal measures having thus been employed, the patient is kept at rest under strenuous antiphlogistic treatment. The throat is sprayed every half hour with:

℞ Acidi borici, ... gr. x;
Cocainæ hydrochloridi .... gr. j;
Solutionis adrenalis, 1 ad 1,000, ... ♏xx;
Aquæ destillatæ, q. s. ad .... ℥ij.
M. fiat mistura. Sig. Use cold, every half hour.

This is used until there is a diminution in the purulent or mucopurulent secretion and a decided improvement in the subjective symptoms. If the process takes a favorable course examination will, at the end of twelve to twenty-four hours, show great reduction in the indurated area and great lessening, or almost complete disappearance of the edema. Cold compresses to the neck are nevertheless continued, and the patient allowed to take only cold fluid diet (ice cream, cracked ice, etc.) until the subjective phenomena clear up entirely. Internal medication consists merely in giving cathartics and small doses of codeine or morphine to allay pain, which is sometimes intense. If the case runs a normal course, the process, as a rule, subsides within a few days, and the larynx assumes its normal appearance. If intralaryngeal measures have proved futile, and the patient is in danger of suffocation, we must not temporize too long. It is advisable not to try intubation, which is generally not feasible, but rather to perform a rapid tracheotomy. The latter proceeding having been carried out, we can resume intralaryngeal measures with safety.

Finally, we meet with cases of laryngeal abscess in which the pus burrows into the deeper tissues of the neck and becomes evident as a large fluctuating external mass. In other words, we are dealing with a cervical abscess of laryngeal origin. The laryngeal symptoms are not pronounced in these cases, for the larynx remains comparatively free. These abscess formations, being situated rather deep and externally, cannot as a rule be reached by intralaryngeal procedures, so that the most advantageous and safest method of evacuating the pus is by external incision and drainage.

The following three interesting cases which came under my observation are illustrative of laryngeal abscess and are therefore given in detail:

CASE I. R. H., a perfectly healthy man, fifty-six years of age, began to complain of pain during the act of swallowing and a feeling of fullness and tension in the throat. This condition persisted for about ten days, during which time he noticed a slight change in his voice and some difficulty in breathing. The sensation of fullness became more marked, and swallowing likewise became more difficult. The patient, being alarmed at his condition, consulted his physician, Dr. M. Schiller, who referred him to me. I found his general condition good, but he was somewhat weak owing to his abstinence from food for about a week. He swallowed cold fluids with difficulty, but found that they had a soothing effect on his larynx, so that he partook of them freely. The patient gave no history of tuberculosis, and there were no lung or throat signs indicative of such a condition. He denied luetic infection, so that a Wassermann test was not made. There was no fever to speak of, the temperature ranging between 99° and 100° F. The condition in his throat did not suggest malignancy, as the affection was of acute onset, and there were no other signs, such as emaciation or loss of weight.

Examination revealed a bulging mass about the size of a walnut occupying the left pyriform fossa and a portion of the pharyngeal wall on the corresponding side. The epiglottis, the left arytenoid, and aryepiglottic fold were markedly indurated and edematous. The true vocal cords were not involved, yet there was a slight impairment in speech, which was somewhat guttural; the respiration was labored on account of a slight stenosis and lateral displacement of the larynx. It was difficult to make a diagnosis, at first, and as the patient was in no precarious condition, he was kept under observation for further developments. During the next few days, the edema and swelling became more prominent, the mass increased considerably in dimensions, speech was more impaired, and the dyspnea was very marked. He was ordered to spray the larynx with cold solutions (boric acid, adrenaline solution, etc.) every two hours, and to apply an ice bag to the neck. He was put on cold fluids and given cracked ice freely. This treatment was continued for a week, but the laryngeal condition became worse, so that I concluded that I was dealing with an acute active process, most likely an abscess of the larynx.

I determined, therefore, to make an exploratory incision into the mass. The larynx and pharynx were thoroughly anesthetized with a ten per cent. solution of cocaine, to which a few minims of adrenaline solution were added; with the concealed larynx knife the protruding mass in the left pyriform fossa was incised, whereupon the patient coughed up a large quantity of mucopurulent secretion. The edematous parts were also freely scarified, after which there was immediate relief in the subjective symptoms. This operative procedure was performed about 10 a. m. in my office, and the patient allowed to return to his home. In the afternoon, I was suddenly called to his residence, where I found him in great agony and in fear of suffocation. His respiration became so impaired that external operative measures seemed imperative. The laryngeal examination showed that the edema had spread over the greater portion of the epiglottis so that it looked like a large globular mass, almost completely occluding the larynx. Expectoration became more profuse, so that the patient constantly coughed up a foul smelling purulent secretion. Fearing that he might suffocate, and thinking that a tracheotomy might be necessary, I had him immediately transferred to Mt. Sinai Hospital. On his arrival I thought it best to try to relieve his alarming condition by intralaryngeal measures, and if these failed, to perform a tracheotomy as a last resort. Fortunately the former methods proved beneficial; the condition became slightly better; his respiration was less labored, and the feeling of fullness and oppression were somewhat diminished. Antiphlogistics were again vigorously employed with apparent benefit. The purulent secretion became more profuse as the abscess drained freely, and the subjective symptoms showed gradual improvement, so that further recourse to operative measures was unnecessary. The following day, inspection of the larynx revealed a diminution in the edema and swelling, and the patient experienced decided relief. From this time on, respiration became more normal, and the laryngeal dyspnea steadily improved, so that by the end of the week the larynx assumed a normal appearance and the patient made a complete recovery. During his stay at the hospital his general condition was good, and his temperature never rose above 100° F. Internal medication consisted merely in the administration of small doses of codeine to allay pain, of which he complained a good deal. As his breath was offensive, owing to the foul smelling secretion, he received inhalations of steam impregnated with a few minims of creasote; these were kept up almost continuously during his stay, and added greatly to his comfort.

CASE II. A. H., a healthy robust woman, sixty years of age, came to my clinic at Mt. Sinai Dispensary, complaining of pain in the throat and great difficulty in swallowing. She stated that two days prior to her visit to the clinic she had eaten some meat and had accidentally swallowed a piece of bone. Careful laryngological examination revealed a highly congested and swollen mucous membrane and pronounced induration in the left pyriform fossa. There was a large amount of mucous secretion, so that the deeper structures of the larynx were hidden. Although this secretion was thoroughly removed, the presence of a foreign body could not be verified. The cervical glands on the left side were slightly enlarged, and external pressure caused considerable pain in the larynx. The sudden onset of the laryngeal symptoms, the laryngological picture of edema and marked induration, led me to believe that I was dealing with an acute abscess of traumatic origin. She was ordered to spray her throat with cold solutions (as in the previous case) every three hours, and put on a soft cold diet. The breath being offensive, she was given steam inhalations containing compound tincture of benzoin, every four hours.

Two days later, she returned to the clinic in much worse condition, as her laryngeal symptoms had become greatly aggravated. Her voice was impaired, dyspnea had developed, and deglution was difficult and painful. Examination of the larynx showed that the indurated area had extended, and that the epiglottis was swollen and edematous. There was no sign of a foreign body, as it was lodged deep in the pyriform fossa and hidden by the infiltrated mass.

The pharynx and larynx were thoroughly anesthetized with a ten per cent. solution of cocaine, to which a few minims of adrenaline solution, one in 1,000, had been added; with the concealed laryngeal knife the indurated area was incised, whereupon a quantity of foul smelling pus was expelled. The edematous parts were scarified and relief followed. The patient was permitted to return home and told to continue the antiphlogistic treatment. For the next few days, a large quantity of pus was expelled. The dyspnea improved, the pains diminished, and swallowing was accomplished with greater ease. During the night she had an attack of coughing, and to her astonishment expelled a hard mass, which proved to be a piece of bone (Fig. 2). From this time on, the subjective symptoms improved rapidly, so that by the end of the week the larynx assumed a normal appearance and recovery was complete.

Case III (under the care of Dr. H. D. Mandelbaum, and seen by me in consultation). A. F., young lady, was suddenly taken ill with fever, discomfort in throat, and severe pain on swallowing. The subjective symptoms became so intense that the brother of the patient sent for Doctor Mandelbaum at one o'clock in the night. Examination revealed a slight congestion and reddening of the tonsillar and pharyngeal regions and an enlargement of the left cervical nodes. She received small doses of salol and was ordered to gargle with antiseptic solutions every hour. She was seen again on the following morning, at which time the subjective symptoms were somewhat exaggerated, and a few irregularly scattered white spots could be seen on the left tonsil. The temperature was not high, ranging between 99° and 100° F. She felt miserable, however; the dysphagia had become more painful and there was, in addition, a beginning sense of suffocation. Owing to an increase in the subjective phenomena, and the respiration becoming impaired to such a degree that the patient was in utter fear of suffocation, Doctor Mandelbaum was again summoned during the night. Examination of the larynx revealed infiltration of the left lateral pharyngeal wall, which extended down into the left pyriform fossa and was associated with extensive edema of the epiglottis and surrounding tissue. This picture suggested to the doctor that he was dealing with an acute laryngeal suppuration, and therefore deemed it advisable to incise the mass. This incision was followed later by a scant purulent discharge, which gradually increased during the following day. The patient received vigorous antiphlogistic treatment, in that she was directed to spray the throat with cold antiseptic solutions, to take plenty of cracked ice and cold liquids, and in addition to apply cold compresses to the neck. The patient being in a very nervous condition, and the subjective symptoms showing but slight improvement, I was asked to see her in the evening with Doctor Mandelbaum. She still had great pain and difficulty in swallowing, and her breathing was considerably impaired. There was a feeling of fullness in the throat, and constant fear of suffocation. There was profuse mucopurulent secretion, which was being freely expelled. Examination showed diffuse induration in the left pyriform fossa which extended upward and was associated with extensive edema of the epiglottis and surrounding tissue, so that the larynx was narrowed down to a small cleft. Through the incisions made by Doctor Mandelbaum at different parts of the mass, pus could be clearly seen to escape. Drainage was apparently free, so that further operative measures were deemed unnecessary. The patient was advised to keep up the sprays and gargles and to continue the cold fluids and compresses to the neck. During the subsequent twenty-four hours the mucopurulent secretion was abundant and the swelling and edema gradually subsided, so that within a few days all subjective symptoms disappeared, the larynx assumed a normal appearance, and the patient made an uneventful recovery.

These three cases are clear examples of laryngeal abscess, in which the localized suppuration was situated, as in the majority of instances, on the left side, and in which complete recovery ensued after timely intralaryngeal measures. The main purpose in presenting this subject is to call attention to the infrequency of this laryngeal affection and to emphasize the fact that if it is recognized in time and urgent intralaryngeal measures are adopted, alarming complications can be prevented, and a satisfactory outcome can be obtained in the majority of cases.

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LEIOMYOMA OF THE PYLORUS.

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Since the stomach is the primary seat of approximately two thirds of all gastrointestinal carcinomata, it follows that the diagnosis of any tumor of the stomach is especially important in patients at the cancer age. For this reason we have deemed this case of leiomyoma of the pylorus of sufficient interest to justify its report, as it directs attention to benign neoplasms of the stomach occurring during the cancer age. In a fairly comprehensive review of recent literature it was interesting to note how meagre is the information relative to benign neoplasms of the stomach compared with the ample literature concerning ulcers of all types and carcinomata.

One of the most recent papers dealing with benign tumors of the stomach is that by A. MacK. Campbell. Campbell states that the extreme rarity of reported cases is astonishing, many clinicians of wide experience having never observed a case either in the living or on post mortem examination. Campbell cites Tilger as reporting only fourteen benign tumors of the stomach in 3,500 autopsies. In 7,500 necropsies at the Obuchow-Krankenhaus, four cases of gastric polyp were found.

Benign tumors of the stomach may develop in any part and may arise from any of the three gastric coats. They vary in size from a pea to a fetal head. The usual variations as regards pedicle formation obtain. With subperitoneal myomata a small pedicle is usually present. While there are twelve to fifteen varieties of benign gastric tumors, myomata are the most common. There are forty authenticated cases of gastric myomata on record. Frequently such myomata prove themselves to be malignant, showing areas of fibrosarcomatous or myosarcomatous degeneration (Campbell).

Mallory and Borst believe that leiomyoma of the stomach is second in frequency to carcinoma, and that in only rare instances does the leiomyoma grow rapidly and metastasize. Myomata are usually situated near the pylorus and may be single or multiple; they rarely exceed a hazel nut in size and are composed of nonstriated muscular fibres.

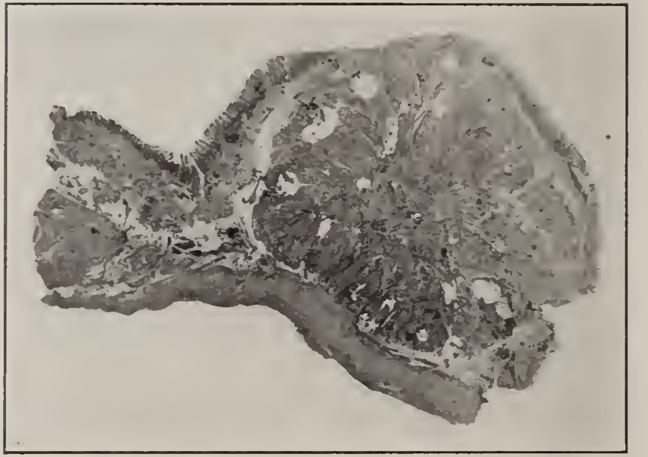

FIG. 1.—Photomicrograph showing entire encapsulated tumor of pylorus in submucosa. (Shapiro, Baltimore.)

Borst, in discussing leiomyoma, says that "these tumors develop in their usual form, as circumscribed, spheroidal, or as tuberous lumpy growths, which are separated from the surrounding tissue by a layer of connective tissue, and for that reason can be shelled out easily and completely." These tumors are for the most part not pure, those of mixed muscle and connective tissue being called fibromyomata. Pure leiomyomata appear oftenest in the stomach and in the intestinal canal, and also in the testicle and the region of the nipple.

Since the muscle fibres are bound together in bundles and strings which stretch in all directions, these new growths have a fascicular arrangement in which figures such as curls and waves are conspicuous. Leiomyomata resemble fibromyomata in the gross and they are frequently confounded. The leiomyoma is throughout benign; metastases are extremely rare. The leiomyoma often appears in pure form in the intestinal tube, in the esophagus, stomach, and intestine. These tumors are situated, according to Steiner, interstitially just under the serosa and under the mucous membrane and are often multiple. Steiner says that "intestinal myomata are of more frequent incidence than stomach myomata."

Submucous myomata of the gastrointestinal tract, according to Birch-Hirschfeld, form the predisposing cause of intussusception, and subserous myomata of the intestine may lead to diverticulum formation. Steiner and Böttcher observed myoma developing from the hypertrophied musculature of the gastrointestinal canal. Lübarsch and Cohen showed, in two cases of stomach myoma, that the tumor developed from the musculature of bloodvessels. In another case they found pancreas lobules and a well developed pancreatic excretory duct in a myoma of the stomach suggesting a congenital predisposition.

Hansemann and Schmorl found a very diffused myoma of the stomach which had established metastases in the liver and pancreas. Among the retrograde changes of myoma of the intestinal tract, Cohen observed fatty degeneration, edematous softening, calcification, and also hyaline degeneration of the musculature. Sarcomatous intestinal myomata have also been observed. Babes and Nanu believe sarcoma to be derived from muscle elements. Steiner, on the other hand, believes such sarcomatous myomata to be derived from interstitial connective tissue.

Fr. Henke, *Praktische Anleitung zur Untersuchung von Geschwulsten,* says that smooth muscle fibre tumors are usually found where tissue of this kind has previously existed. Henke speaks of combination forms, including leiosarcoma in which well developed smooth muscle elements are found along with polymorphous irregular sarcoma cells. He believes that sarcoma cells are derived either from the interstitial connective tissue or by transition of the smooth muscle fibres themselves. He notes the interesting finding of gland inlays in smooth muscle tumors of the stomach noted by Lübarsch (*Ergebnisse der Pathologie,* VI, 1901). He calls attention to the possibility of the epithelium of these gland inlays undergoing change to atypical forms of epithelium, i. e., to the epithelium of carcinoma.

Campbell makes the significant statement that frequently it is impossible or practically so, to differentiate these benign tumors from carcinoma or sarcoma except by a most painstaking pathological examination. In our search of the literature of benign neoplasms of the stomach in only one instance were we able to find a reported case of leiomyoma confined to the pylorus. Henke (*Mikroskopische Geschwulstdiagnostik*) gives Lübarsch as the reference for this case. The report of our case of leiomyoma of the pylorus is as follows:

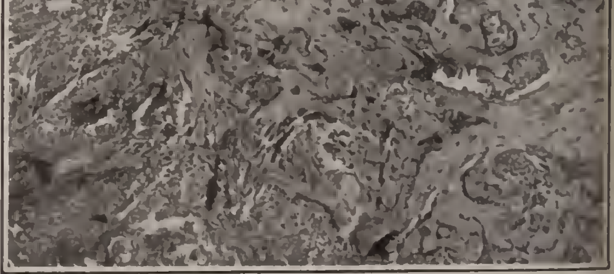

FIG. 2.—Low power photomicrograph showing details of central portion of tumor. Fibres cut in transverse and longitudinal section. (Shapiro, Baltimore.)

CASE. Man, fifty-eight years of age, white, of German extraction, was unable to recall disease of any severity which he had had up to his present illness. Family history: As far as the patient knew, there had been no cancer, tuberculosis, lues, or insanity in his family. He was questioned as to whether he had ever had typhoid, pneumonia, and the other commoner diseases of this climate, but it appeared that he had been singularly free from any previous illness. The patient had never complained of the commoner symptoms of indigestion, had never had nausea nor vomiting, and had had no pain bearing any definite relation to the taking of food before the present trouble became manifest. Neither had he ever passed blood by the bowel, to his knowledge.

Present illness: Admitted to the hospital in the service of Dr. J. R. Eastman, February 15, 1916. At the time of entrance he stated that he was unable to eat or drink without immediately regurgitating what had been previously swallowed. This inability had begun suddenly about February 1st. Previously he had not experienced difficulty in swallowing, and he insisted that the onset of this trouble was acute. He made no distinction as to the character of the food or drink as regards his inability to retain them. He was quite sure that he had never vomited blood or that the regurgitated fluids had even been blood streaked. He was positive he had never had blood in the stool. Again questioned, on the day following, particularly as regards an increasing difficulty in swallowing and subsequent regurgitation which had persisted for some time, he was positive that previous to February 1, 1916 (two weeks before admittance to the hospital), there had never been any such difficulty.

Physical examination: Was a spare, poorly nourished man, with flabby musculature, weighing 110 pounds, five feet seven inches in height; stated there had been a loss of fifteen pounds in the last two weeks, because he had had practically no nourishment.

Pulse was 80 a minute, of good quality, but the arteries were somewhat sclerotic. Heart tones were normal; no murmurs and heart not enlarged. Lungs clear; a slight cough with scanty expectoration. Four subsequent examinations of the sputum were returned as negative for tuberculosis. Had a lax, thin abdominal wall with flabby musculature; no points of tenderness in the abdomen, except immediately below the sternum. At this point or a little higher, said he perceived a blocking or stoppage of ingested food or drink. Also at this point, some muscular rigidity was demonstrable. The hooked finger test revealed no tenderness of the gallbladder. Percussion revealed a normal liver. Palpation of the appendicular region elicited no tenderness. The large bowel was slightly tympanitic.

Five different uranalyses were made, only one of which showed any abnormality, this one specimen exhibiting a slight trace of albumin. The specific gravity ranged from 1015 to 1022. Microscopical uranalyses were negative. X ray screening and plating were done after the administration of barium buttermilk. The radiographer reported that both plates and screening showed a stricture of the esophagus four to five inches above the cardiac orifice of the stomach. Immediately above this stricture there was a decided ballooning of the esophagus for two or three inches. It was also noticed during screening that a thin stream of the barium had finally found the way through the stricture. The radiographer made a diagnosis of benign esophageal stricture.

TREATMENT.

Since the patient appeared to be weak, three nutritive enemata a day and proctoclysis of one pint of water twice a day were ordered at once. Under this nourishment he appeared to recover his former strength rapidly, and at the end of one week was deemed sufficiently strong to withstand a gastrostomy.

When the abdomen was opened the usual examination of the upper abdominal organs was made and resulted in the finding of a hard, fairly movable tumor the size of a small walnut in the anterior wall of the pylorus. The edges of this tumor were fairly smooth, nevertheless it felt distinctly hard to the touch. The surrounding lymph gland areas were carefully palpated for enlarged glands, but this search proved absolutely negative. The finding of such a tumor in the pylorus of a man fifty-eight years of age suggested early carcinoma without glandular metastases.

Thus it was deemed proper to do a pylorectomy followed by a posterior no loop gastroenterostomy (Billroth No. 2). A Witzel's gastrostomy was also done. The removed pylorus was at once sent to the laboratory for a frozen section. A report of carcinoma was returned in fifteen minutes.

The patient recovered from the anesthesia without incident, and his preoperative nutritive enemas and proctoclysis were begun again. After the fourth day, milk was introduced into the stomach every three hours through the gastrostomy tube during the day. After the seventh day, broths and other liquids were given in the same manner. On the eighth day, the patient found that he could swallow water easily and without the slightest disposition to regurgitate. On the tenth day, milk was given by mouth and retained.

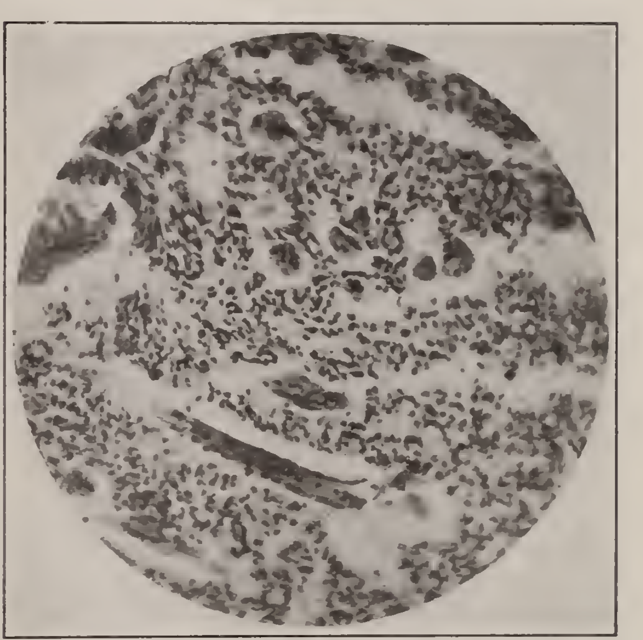

FIG. 3.—High power photomicrograph showing transverse and longitudinal section of tumor elements and of capillary vessels, imperfectly formed. (Shapiro, Baltimore.)

It became necessary, about the seventh day, to irrigate the stomach through the tube with warm water previous to each administration of milk or other fluids because of a moderate quantity of bile which had entered the stomach. The stomach was washed out with warm water until the returning fluid was clear, and the food was then permitted to run into the stomach by gravity alone after the stomach lavage before each feeding. No further difficulty was experienced. The patient had a formed stool on the seventh day after operation. At no time was it deemed necessary to give a cathartic.

Gross pathology. The specimen consisted of a fresh pylorus three and one half inches in length. In one wall of the pylorus there was a nodule the size of a small walnut. This nodule was hard, fairly movable, and with smooth borders. The cut section of the pylorus extended at least one and one half inch in each direction from the centre of the tumor. When the surrounding tissues were incised, the tumor, which was apparently encapsulated, was expressed cherry seed fashion. The pathologist who sectioned the tumor remarked upon the facility with which the tumor had popped out of its bed when he incised the overlying tissues. The tumor itself appeared quite hard, and was smooth in outline and without irregular edges. There was a fairly broad pedicle.

Microscopical pathology. The tumor was sectioned later by Dr. H. R. Alburger, formerly professor of pathology in the University of Indiana, whose report was as follows: "The section is taken at right angles to the surface and shows well the mucosa, submucosa, muscularis, and serosa. All of these coats are relatively normal, but there is shown to exist in the submucosa a neoplasm, made up of a distinctly typical tissue. The new growth is apparently growing from a central focus from which the bloodvessels, which are very conspicuous and of thin walled type, radiate. The growth is thus seen to be many lobed, each lobe with central blood supply, around which the characteristic tumor cells are growing. These cells are uniform in morphology and are elongated with long rod shaped nuclei of nonvesicular type. The interstitial tissue is small in amount. Diagnosis: Leiomyoma.

The possibility has occurred to me that the cells of this growth might have originated from the perithelium of the bloodvessels, but they do not correspond with any other example of perithelioma that I have seen."

A section was also submitted to Dr. Emil Ries, of Chicago, whose report is as follows: "After looking over the slide which you kindly sent me, I have reached the conclusion that it is a leiomyoma without any indication of malignancy."

CONCLUSIONS.

1. Benign neoplasms of the pylorus, especially the myomata, may simulate early carcinoma.

2. Even though the patient has reached the cancer age, benign neoplasm cannot be excluded.

3. Careful sectioning and study of benign gastric neoplasms is necessary for correct diagnosis.

4. The frozen section method cannot be considered an infallible method of diagnosis in this type of neoplasm.

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GRAVID UTERUS DUPLEX.

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Mobile.

Double uterus is so frequently reported that an enumeration of the cases would occupy several pages. Two horn, bipartite, duplex, and double uteri are so called according to the extent of the duplication. The varieties are numerous and differ in degree, some having a partition (partite) dividing the uterus into symmetrical halves, others are slightly bicornate, and still others are more divided where the rudimentary halves or horns remain more or less separate instead of coalescing through their whole length. The variety of double uterus in which the duplicate formation affects the whole organ is known as Uterus bicornis duplex; in this kind there are two distinct uteri, each having its own cervix and fundus and separate annexa (tubes and ovaries); usually each uterus has only one tube and ovary. Again, the type that has two bodies and one cervix, being the most frequent, is termed Uterus bicornis unicollis, whereas, if there is no connection between the halves of the organ, there being two distinct uteri and two separate vaginæ, it is termed Uterus duplex separatus.

Numerous cases of pregnancy have been reported in patients with double uteri. Morand, Bartholinus, Tiedmann, Ollivier, Blundell, and many others relate instances of double uterus in which impregnation had occurred, the fetus being retained until full term.

When there is simultaneous pregnancy in each portion of a double uterus, complication of circumstances may arise. Debierre reported a case of a woman who bore one child on July 16, 1870, and another on October 31st of the same year and both at full term. She had only three menstrual periods between her confinements. The question in this case would be: Was this superfetation in a normal uterus, or was there a double uterus? There would be in this case the possibility of one of the children undergoing protracted gestation or the other having a premature birth. Voight and Thilow have reported cases of triple uterus. My cases follow:

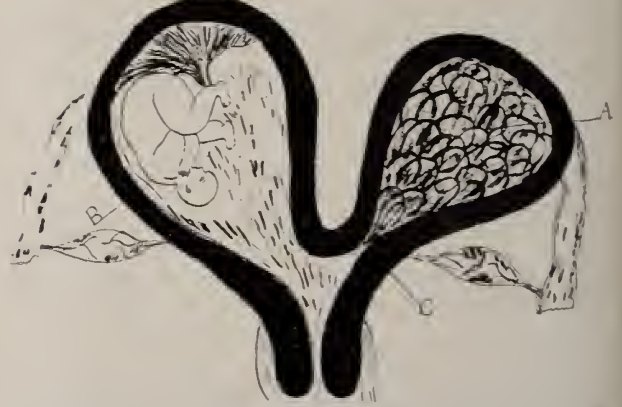

Fig. 1 (Case I).—Gravid uterus bicornis: A, blood clot; B, fetus; C, constriction of cervix.

Case I. Female, white, married, aged nineteen years, nullipara, complained of severe pains in abdomen and pelvis. The patient was well nourished, weight 120 pounds. Menstruation had been regular until four months ago, at which time it ceased. Examination by abdominal palpation revealed a large nodular mass in the hypogastric region. Vaginal touch revealed a boggy mass. After four weeks another examination demonstrated that the swelling had not materially increased. The patient was suffering intense pain and demanded surgical relief. On May 4, 1899, median laparotomy revealed two large tumors, about four inches in transverse diameter and six inches in the long diameter. Upon palpation of these two masses, semifluctuation was present, and both were of the same dark purple color. It was a question to me if pregnancy was present with a soft fibroid or some other tumor. Further examination showed that the masses joined each other at their lower or pedicle extremity, and that each had a normal tube and ovary attached to its upper and outer angle, thus clearly indicating that a double or bicornate uterus existed. I decided that an exploratory incision was the only way that I could determine the nature of the two bodies.

Incision into the mass on the right side showed a sac full of old congealed blood; this was scooped out and it was noted that the lower pedicle portion was obstructed, there being no outlet to the vagina except a filiform one. The conclusion was readily reached that the contents of the sac was old retained menstrual blood, dammed up by the cervical obstruction, and this would easily explain the cessation of menstruation four months ago. The mass on the left side having exactly the same appearance as that on the right side, was diagnosed as a similar condition. This tumor (?) was removed as in amputating a cervix. The other mass was likewise removed without opening it, and both stumps were treated by closing suture. The left mass was opened after removal, and behold! there was a four months' fetus. Attached to the cornu of each mass, as stated above, were a tube and ovary. These were left intact. If a diagnosis of pregnancy in the left cornu had been made unequivocally, it would have been proper to remove the right and leave the left uterus for complete gestation. It is now conceded to be good surgery or gynecology always to remove one of the cornua of a duplex uterus, especially in young women, so that there will be plenty of room to permit development of the gravid cornu.

This patient made an uninterrupted recovery and is now well and happy in the knowledge that she is rid of her double uterus.

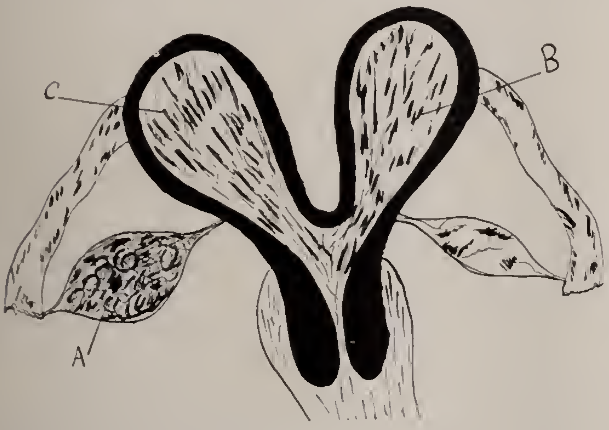

Fig. 2 (Case II).—Uterus bicornis; A, hemic cyst of ovary; B, left cornu; C, right cornu.

Case II. Female, colored, schoolteacher, aged twenty-eight years, single; menstruation began at the age of eleven years and continued regular. Not very well nourished, weight 118 pounds, this patient applied for examination and treatment because of severe pains in the lower abdomen and pelvis, which were always augmented during menstruation.

Physical examination by abdominal palpation showed tenderness in each iliac fossa, more severe on the right side, where a mass the size of a small apple could be felt; no mass on the left side could be palpated. Vaginal digital palpation revealed masses on both sides which were fixed and tender on pressure. The cervix was normal and could be felt in the median line. Speculum examination demonstrated a normal cervix with some mucous discharge. The diagnosis was salpingitis, cystic ovary on the right, and adherent appendix.

Operation (laparotomy) on June 14, 1916, disclosed the following conditions: A two horn uterus, each being normal in size and having attached to each upper angle a tube and ovary. The ovary on the right side was one large hemic cyst the size of an apple, that on the left side normal. Both uteri were in retroversion, and united at the cervix into one large neck with the bladder folded in between the cornua and behind the cervix. The appendix was glued behind to the cecum.

The appendix was removed, the two uteri were suspended by their round ligaments (Gilliam), and the cyst was removed. Both uteri were preserved in order to follow the case in the future as to pregnancy.

164 St. Michael.

TUBERCULOSIS OF THE BRONCHIAL GLANDS.

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The symptoms of tuberculosis of the bronchial glands are caused by the absorption of toxins and by pressure upon adjacent structures. Unless there is sufficient absorption of toxins, there is no marked toxemia; if the mediastinal structures sufficiently adapt themselves to the gradually increasing size of the glands, there may be no pressure symptoms. In these cases there is nothing to attract attention to the bronchial glands, the diagnosis is not made, and the future developments depend upon whether the processes become thoroughly sclerosed, remain potentially active, or become aggressive and prove dangerous by erosion of the esophagus, trachea, bronchi, and bloodvessels; by inducing pathological changes in the lungs, leading to the development of tuberculous processes, or by direct extension from the bronchial glands into the lungs.

The syndrome of tuberculous toxemia is the same as that from the lungs. The septic manifestations, the pulse, temperature, chills, and sweats are the same as in other septicemias; in the less violent types the septic symptoms do not appear; there is a tendency toward concealment, although the pulse and temperature may be sufficiently characteristic to lead to the correct diagnosis.

The pulse is usually increased in frequency and softer, but cases are found with a pulse of sixty and full pressure. A pulse of ninety-six, with lack of strength and a history of inability to work is suspicious. The relaxed tone of the vasomotor system, the lowered blood pressure, the insufficiency of the myocardium, the pressure upon the cardiac branches of the vagus, the chlorotic anemia and dyspnea, and the fever combine to increase the frequency of the pulse and to make it abnormally unstable and easily affected.

The fever as a rule is not high, frequently not over 99° F. According to Philippi it is usually under 38° C. and very labile; a slight cold or a little more effect of any kind, physical, mental, or emotional, is apt to send the temperature up; often there is a regular rise before or during menstruation. "Fever from the bronchial glands is harder to overcome than that from the lungs; there is a tendency to persist for years and it is very probable that most of the cases of chronic and intermittent fever with negative clinical findings are caused by tuberculous processes in the bronchial glands." (1).

We have found that many cases are subnormal. According to Lucas the temperature is very irregular and as apt to be below normal as above. There is often a morning rise in temperature, making the patients feel depressed in the morning and very irritable and weak, while they are better and stronger toward night because the fever has passed off. Malaria and typhoid are often diagnosed from the temperature, especially when there are no physical signs in the lungs.

Sweats are not as common as the general relaxed tone of the vasomotor system. There is a tendency toward increased dilatation and permeability of the vascular walls, shown in the lowered blood pressure, the exudative diathesis of Czerny, eczemas, erythemas, flushings, cold, clammy hands and feet, chillblains, etc. We have had cases of circumscribed erythema, especially in the interscapular region, which were markedly aggravated by tuberculin, menstruation, indigestion, physical efforts, and alcohol. Sometimes the erythema is over the trapezius and associated with the stiff neck symptomatic of concealed tuberculous processes in the bronchial glands.

The hematopoietic system is functionally depressed, and it may be that the oligochromemia or chlorotic anemia is largely responsible for many of the characteristic consequences of tuberculosis of the bronchial glands. The blood and clinical findings typical of chlorosis correspond very closely with those of tuberculosis. There is the same inability to produce enough energy; the same lack of muscular force; even if the will and desire for work are spared, there is not the strength for the persistent effort necessary to accomplishment. Often there is an indifference, a lack of interest in everything requiring effort. It is even possible that this fundamental weakness is somewhat responsible for the craving for alcohol, or for something to lift one up and to put some force into existence. Chlorotics are easily depressed and stimulated; feel bad in the morning and better toward night; get out of breath when walking against the wind or up a slope or carrying weights or talking; the dyspnea may be annoying and associated with pain around the heart or a stitch in the side. The cherry red lips contrast with the striking pallor; or the coloring may be brilliant and clear or sallow like soda biscuit; the nervousness, "stomach troubles," constipation, headache, "biliousness" are all well known chlorotic manifestations equally characteristic of tuberculosis which should receive careful study to determine whether there may not be a tuberculous foundation; this is especially true of young girls approaching maturity and young women. In answering this question, it is well to remember that tuberculosis of the bronchial glands cannot always be detected by a physical examination of the lungs, but may require its own methods for diagnosis.

The functional depression of the hematopoietic system and the toxemia amply explain the malassimilation and malnutrition characteristic of tuberculous processes; in the newly born and yearlings marasmus may result or rickets be favored (Wiener, 2). Hitherto apparently well infants, sound and well nourished, cease to gain weight; at first this is the only sign and the child seems well enough, but gradually the *habitus tuberculosis* of Pollak develops or in older children the *habitus phthisicus*. The pretuberculous or tuberculizable child does not develop normally. Infantilism, juvenility, the lymphatic diathesis, the slender frail form, the disproportionate growth of hair, a juvenile pelvis and genitalia all manifest the inhibition of development. The functional depression of the nervous system varies from the fretful irritability of weakness or sluggish lack of ambition and interest to pronounced neurasthenia and even hysteria. Again and again adult patients tell us that they knew a long time before they broke down that something was wrong because they did not feel right; there was a lack of nervous force; the general consciousness of something wrong is often sufficiently strong to force attempt after attempt to discover the flaw; often and often there is a deep, innate fear of tuberculosis; often one doctor after another is consulted because the instinct of the patient is not satisfied with negative findings; often the comforting assurance that there is nothing the matter and no cause for anxiety because nothing can be found in the lungs is based merely upon a physical examination of the lungs, and the possibility of tuberculous dangers is excluded without estimating the condition of the bronchial glands, although it is well known that in the majority of cases tuberculosis of the lungs is secondary to that of the bronchial glands. Vasomotor changes, chlorosis, neurasthenia, hysteria, impaired cardiac force, gastrointestinal disturbances, and menstrual irregularities are logical consequences and symptoms of tuberculosis of the bronchial glands and should never be accepted as primary conditions without a careful study of the mediastinum. Neuritis or polyneuritis may be the first manifestation of tuberculous toxemia; the spinal cord and the brain may suffer and sexual desires be stimulated; the toxins of closed foci are especially absorbed by the nerve tissues, and this absorption does not tend to lessen, corresponding to the improvement in the tuberculous lesions (Mircoli, 3).

The child or man may run the whole gamut of digestive disturbances, from a feeling of discomfort and distress or sensation of fullness after meals to the acid pains of hyperchlorhydria or gastric ulcer and the paroxysms of tabes; menstruation is especially disastrous, causing vomiting or spitting up of food after meals and loss of weight. The constipation is obstinate from lack of peristalsis; the headache and stiff neck are very painful.

Menstruation is apt to be irregular, either too frequent and excessive, or delayed and scanty, or entirely suppressed. Graefenberg (4) says: "Nearly all cases of primary dysmenorrhea are undeveloped sexually; the genital system resembles the infantile type and the tuberculous foundation may be revealed only by tuberculin reactions. We should, therefore, pay less attention to chlorosis and anemia as primary etiological factors and more to tuberculosis; instead of operative interference in the pelvis, which is often useless and harmful, we should first try the effect of tuberculin, which in many cases proves strikingly successful."

We have found this advice of Graefenberg's amply confirmed by our experience. A young woman of twenty-two years began spitting up her food after meals; there was lack of strength and appetite and loss of weight; the rest cure and feeding was faithfully tried without improvement; the x ray showed enlarged bronchial glands and peribronchial infiltration of the right lung; minute doses of tuberculin overcame the nausea and spitting up of food. We have come to consider menstrual disturbances of any kind, or a general exaggeration of any morbid factor at the time of menstruation, as warranting a thorough examination of the bronchial glands.

In tuberculosis of the bronchial glands there is always the possibility of erosion and perforation of the esophagus, trachea, bronchi, and bloodvessels. Usually this danger is not announced by preliminary manifestations pointing to its approach. The children seem well, and the catastrophe occurs without warning or without the clinical signs being understood. In penetration of the esophagus, as reported by Kelling (5), the patients were young adults inclined to "scrofula"; there were no symptoms to attract attention to the tuberculous processes in the bronchial glands until perforation of the esophagus occurred and crumbling, evil smelling masses were expectorated. In these cases the clinical signs pointed to gastric ulcer; there was also pain in the larynx, laryngospasm, and irritation and even paralysis of the vocal cords; there was pain behind the manubrium and some difficulty in swallowing, as the mouthful of food would stick in the esophagus for a moment before it passed the point of stenosis.

PRESSURE SYMPTOMS.

The tracheobronchial glands begin in the superior mediastinum and follow the trachea and bronchi down through the anterior, posterior and middle spaces on into the lungs. Behind the sternoclavicular articulation, extending down to the bifurcation of the trachea, the group known as the retrosternal glands of Zuber are in intimate relationship with the venæ anonymæ and the origin of the superior vena cava just behind the first rib and in front of the right border of the trachea, whence it descends almost vertically to the heart. This retrosternal group is often enlarged and often presses upon the superior vena cava. "Among the great vessels, aorta, arteries, and pulmonary veins, azygos veins, and superior vena cava, it is precisely the latter which is most often compressed on account of its immediate connections with the mass of tracheobronchial glands of the right side which are called the sternoclavicular glands." (Zuber, 6.) According to Rach (7), this compression of the superior vena cava, which in exceptional cases may even amount to obliteration (Tonnele), may cause intermittent cyanosis and edema of the face or even edema of, and hemorrhages into the meninges. It is probable that this compression of the superior vena cava may have something to do with the rapidly fatal cases of cyanosis, dyspnea, unconsciousness, and death so typically fatal in the bronchial gland tuberculosis of infants. It is also possible that the stasis in the meningeal circulation explains the association of tuberculosis meningitis with that of the bronchial glands, which was commented on by Strauss (8) in 1895. Pettentati (9) reports a case of obliteration of the superior vena cava by a thrombus from caseous mediastinal glands. Mancini (10) reports twenty-one cases of tuberculous meningitis of children; fourteen were under three years of age, seven under six, all were secondary to tuberculosis of the bronchial glands; in three cases there were solitary tubercles in the brain. Rossle (11) reports a case of diffuse tuberculous basilar meningitis in which there was considerable sclerosis with half caseated and half scarred lesions. Upon the base of the brain, from the chiasma across the pons to the medulla, there were many conglomerate tubercles and also in the cortex of the hemispheres and the choroid plexus; the superior surface of the cerebellum was covered with thick, grayish, yellow, caseous grandulations; the only other tuberculous focus in the body was in the enlarged bronchial glands.

Pollak (12) calls attention to the fact that in the tuberculous meningitis of children there are few suggestions of tuberculosis of the bronchial glands; as a rule the meningitis attacks children in apparently good health, and without the knowledge acquired at autopsies there would be no reason for suspecting that meningitis may be secondary to absolutely concealed tuberculous processes in the bronchial glands. Autopsies teach us that this association always exists, and it is inferred that the rapidity of meningeal processes leaves no time for slower developments. Goodman (13) in his paper on Lymph Node Rupture says:

> The digestive type starts in with fever and vomiting, followed by difficult breathing, cyanosis, unconsciousness, and death. In quite a few instances when the digestive type of symptoms is presented, there is also marked meningeal irritation, and from the symptoms which the child presents it is impossible to differentiate between this form of meningismus and a true meningitis. The more I see of these cases, the more I am impressed with the fact that a great many of the so called gastrointestinal disturbances with meningeal symptoms are often cases of mediastinitis with local suppuration and absorption rather than true intestinal toxemias.

Rach says that children with tuberculosis of the bronchial glands may remain apparently perfectly well and vigorous until all at once complications like suffocation and meningitis suddenly develop. Kraemer (14) compares the effects of pressure by enlarged bronchial glands upon the intrathoracic vessels with that of enlarged cervical and inguinal glands upon the vessels with which they are associated, and says: "Just as enlarged inguinal glands cause edema of the external genitalia and lower extremities, and enlarged cervical glands cause edema of the face and dilatation of the veins of the nose and face, so the mediastinal glands may cause pressure upon the return circulation from the head and the surface of the chest, causing cyanosis and edema of the face and hands and feet, unilateral dilatation of the veins of the face and neck, and over the surface of the chest." According to C. Weigert, the pressure of caseating bronchial glands upon branches of the pulmonary veins may cause their erosion and penetration, resulting in acute miliary tuberculosis, or hemorrhages. Pressure upon the walls of the bronchi or upon the trachea may obstruct the circulation, causing engorgement and rupture, with consequent spitting of blood and hemorrhages. It has been difficult to explain hemoptysis and hemorrhages persisting for some time, even for years, with no physical signs in the lungs and nothing to account for them, but hereafter the Röntgen ray showing the enlargement of the bronchial glands may explain them.

There is nothing more puzzling to the physician than the spitting of blood without apparent reason. This may be due to the pressure causing a vessel in the intima to become overstrained, or there may be an underlying tubercle; coughing or any unusual rise in blood pressure or strain upon the pulmonary circulation might cause such a vessel to rupture. In cases of repeated hemorrhages from the lung, nose, ear, and stomach, the patient has been called hysterical until finally the tuberculous focus was discovered.

Tuberculous processes in the bronchial glands may give no warning of their presence and develop insidiously until caseating erosions perforate the trachea or bronchi and cause sudden death. Goodman cites a case of Gerber's:

> The patient was a boy, aged six years, who was suddenly attacked with asphyxia and was dead before he reached the hospital. Death was due to the perforation of the anterior wall of the trachea and to the passage through the opening of a piece of cheesy lymph node which blocked the air passage. Gerber assumes that the condition causing death developed insidiously by the cheesy lymph node first infecting and then disintegrating the tracheal wall.

V. Gandiani reported a case of rupture of a caseated lymph node abscess into the trachea:

> The patient was a child aged three years, who three days prior to admission, became ill with cough, fever, and respiratory disturbances. The general condition was bad. Diphtheritic serum was administered. The child had a sudden attack of dyspnea, with rapidly progressive cyanosis and symptoms of asphyxiation. Tracheotomy was performed, but the child died half an hour later. At the necropsy the trachea was found to be surrounded by a large packet of lymph nodes as far as the beginning of the bronchi. The anterior wall a few cm. above the bifurcation presented an orifice the size of a lentil. Through the perforation in the trachea a fairly large cavity was reached, which was emptied by pressure from outside, and contained tough, cheesy masses, which also blocked the bronchi. The peribronchial lymph nodes were tuberculous.

Goodman cites eleven cases of sudden death from suffocation from blockage of the trachea or bronchi by caseous masses from perforating lymph nodes; the cases were all alike in the sudden progessive dyspnea. Two of these patients coughed, one paroxysmally like whooping cough; in two cases the diagnosis of diphtheria was made and intubation performed; one case acquired tuberculous meningitis. The onset is usually sudden, often in an otherwise apparently healthy child. Rupture into a bronchus may cause acute pneumonic extensions throughout a whole lobe or a whole lung (Rockhill, 15) or acute miliary pleurisy (Pesch, 16).

Pressure upon the sympathetic may cause irritability of the vasomotors, evidenced by rapid changes from pallor to blushes; unequal or unilateral flushing of the cheeks; a sharply circumscribed patch of color on the cheek; circumscribed reddening in the second intercostal space, associated with menstrual rises in temperature, a consciousness of unstable heart action, of flutterings and palpitations and quickened pulse; unequal pupils and protrusion of the eyeballs (Friedjung, 18).

It is considered probable that a certain class of gastrointestinal disturbances, characterized by lack or suppression of functional activities, may be due to pressure upon the sympathetic nerves, because these disturbances are present in tuberculosis of the bronchial glands when pulmonary tuberculosis cannot be proved and when the syndrome of tuberculous toxemia is not otherwise manifested. This class includes the dry tongue, mouth, and throat; the absolute lack of appetite; the insufficient production of gastric juice; the inacidity; the lack of intestinal secretion; the depression of pancreatic activities and lack of peristalsis; in consequence, there is excessive constipation, nausea, vomiting, and inability to eat. Food is distasteful and repulsive. The symptoms of overexcitability of the vagus system are directly opposite to those of the depressed sympathetic. There is hyperacidity, increased secretion of gastric juice and of bile, increased acidity of the urine, and an unmistakable general acidosis; increased peristalsis means increased frequency of bowel movements; the appetite is keen and may amount to bulimia. In this class of cases pain in the stomach is frequently a very early symptom and may be the first and only one. In Kelling's cases of perforation of the esophagus, the clinical picture was that of gastric ulcer. The fibres of the vagus are very liable to be compressed in erosion of the esophagus by enlarged bronchial glands, and this irritation is felt in the stomach as well as in the larynx; Barety (19) found in his autopsies that twenty-six per cent. had compression or adherence of the vagus fibres. Philippi says that hyperacidity is one of the first signs of tuberculosis. Indigestion is one of the most common causes of an examination. Diaphragmatic pleurisy causes pain in the epigastrium and abdomen, which strikingly corresponds to symptoms found in tuberculosis of the bronchial glands, and which suggests the irritation of the phrenic as a factor in gastralgias. The gastrointestinal disorders common in tuberculosis are probably caused by a combination of influences; irritability of the vagus, the sympathetic, the phrenic, and the effect of toxins; these separate influences can best be recognized by association with their other more specific manifestations. "A very common symptom of occult tuberculosis is pain in the stomach or abdomen, which is not influenced by eating. This pain is characteristic of diaphragmatic pleurisy, but also of tuberculosis of the bronchial glands (20). In both cases it is probably due to irritation of the phrenic by pressure. The pain from diaphragmatic pleurisy is often referred to the appendix, and operations have been performed because of this supposed appendicitis. Lucas (21) reports a case of a child with intercurrent bronchial trouble for over a year. She had lost in weight and had had some digestive trouble at one time, becoming so acute that she was operated on for appendicitis and the appendix was found normal." Many cases of tuberculosis of the bronchial glands show intense nervous dyspepsia, usually with hyperacidity and periodically recurring spasms of pain in the stomach, which may rival the true gastric crises of tabes (Philippi, 17).

It is possible that the rhachialgias and intercostal neuralgias preceding the discovery of tuberculosis of the spine may also be caused by enlarged bronchial glands, and the infection of the spine may prove to be a secondary condition. Rhachialgia is very common in tuberculosis of the bronchial glands; the upper dorsal vertebræ are often sensitive to pressure and are the seat of circumscribed pain; a sensitive spot in the supraspinatus fossa is typically suggestive of tuberculosis, almost pathognomic; irritation of the phrenic by an inflamed diaphragm is no more specific than its irritation by pressure from enlarged bronchial glands which causes the same pain in the neck, the ridge of the trapezius, the stomach, and appendix. Pain in the region of the trapezius muscle is one of the earliest symptoms of tuberculosis of the bronchial glands (Schlutzkin). So is stiff neck (Hollos, 22). Pains between and under the shoulder blades are very common; they may begin within the chest and radiate to the shoulder or interscapular region (Rockhill, 15) or extend down the arm and be very regularly exaggerated by menstruation (Philippi, 15). Pain over the root of the lung has been specific in many of our cases of tuberculosis of the bronchial glands, with little or no involvement of the lungs. This pain is exaggerated by menstruation and by overstrain of any kind; sewing, writing, physical or nervous strain would make the pain almost intolerable and in two cases prevented usefulness. Patients sometimes are afraid of chilling between the shoulder blades; experience has taught them that chilling of this sensitive spot is invariably followed by "bronchitis." Pain supposed to originate in the lung or pleura or muscles may possibly be a neuralgia, or rather an expression of a neuritis caused by pressure upon a larger branch and felt in its terminal areas. In examining patients, we are often impressed with the circumscribed areas of soreness and pain following the course of the larger bronchi in front and corresponding to their terminal areas. These are typically the second and third interspaces near the sternum; behind the manubrium at the point of bifurcation of the trachea; in the parasternal line from the fourth to the sixth rib, in erosion of the esophagus the fibres of the vagus are likely to be compressed and cause pain behind the manubrium. Just as irritation of the phrenic is felt in the cervical vertebræ, typical pains may follow accurately the insertion of the diaphragm from the sternum to the spine and be associated with a sense of irritation, provoking spasms of coughing seemingly due to pleurisy.

Pressure upon the fibres of the recurrent may cause pain in the larynx, laryngospasm, and paralysis of the vocal chords. Changes in the quality of the voice with a normal larynx and no professional strain upon the voice, is significant and may be a very early manifestation of enlarged bronchial glands. In these cases an examination of the larynx reveals nothing, but too much fatigue of any kind causes changes in the quality of the voice, weakness, hoarseness, or even aphonia, which disappears after sufficient rest, not of the voice only, but general. Physical and nervous or even emotional strain may cause weakness or hoarseness or loss of voice. Persistent pressure may cause symptoms of croup or diphtheria, and coughing varying from a slight clearing of the throat to the violent paroxysms of whooping cough. Barthez and Rillet (23) report cases of periodical hoarseness with a perfectly normal larynx. There was also spasmodic coughing like asthma, coming on usually in the afternoon for little or no apparent reason, but possibly as an expression of fatigue.

TRACHEOBRONCHIAL STENOSIS.

When the tracheobronchial glands enlarge they may form a tumorlike mass extending out across the level of the arch of the aorta, backward over the innominate veins, and upward over the clavicle and into the cervical glands. Under this pressure the trachea and bronchi are not so much constricted as flattened; the wall is thrust in laterally, stenosing the lumen and narrowing it. This tracheobronchial stenosis is much more apt to happen before they have acquired their definite shape and sufficient rigidity; that is, before the third year of life, after which the typical clinical picture changes and becomes complicated by secondary conditions. In the first two years of life the conspicuous consequences of tracheobronchial stenosis are dyspnea and cough. The dyspnea is caused by the difficulty in getting the air out of the lung; inspiration is easy because, as the chest is pulled out, the air passages are widened and the stenosis of the lumina is relieved. As the chest wall falls back and the air passages are compressed, the stenosis returns, the inspired air is imprisoned, expiration is prolonged and difficult. The passage of the air across the point of stenosis is apt to cause a whistling effect, making expiration strident and noisy; if there is sufficient accumulation of fluids in the bronchi and trachea, there may be wet sounds with the expiratory dyspnea, as if a column of fluid were rising and falling or as if the air was passing through it. According to the degree of stenosis, the expiratory dyspnea varies from loud and strident breathing to shrill piping and even whooping. At first the stridor and dyspnea are purely expiratory, but as the glands enlarge and the intima roughens, the air passages become swollen and congested, inspiratory dyspnea is as marked as expiratory. Corresponding to the specific pathological lesion, strident expiratory breathing is the most specific symptom of the bronchial gland tuberculosis of infants. The cough is highly characteristic, but may be confounded with asthma, bronchitis, or whooping cough, which it often closely resembles. The cough associated with whooping, like that heard in expiratory dyspnea, is equally pathognomonic and establishes the diagnosis without even the necessity of seeing the child. As a rule, the cough is very high pitched and resonant, heard at a distance, sharply metallic, and has been compared to the baying of a small hound (Pollak). For a time it may be the first and only symptom, but sooner or later the retention of air causes dyspnea. The cough is most specific when associated with whooping, which, according to Rach, is caused by compression of the main bronchus, usually the right, in the short space between the bifurcation of the trachea and the origin of the bronchus for the right or left upper lobe. After the third year this whooping does not develop. After it is once established it is apt to persist, and later on to resemble attacks of bronchial asthma and capillary bronchitis, which develop secondarily in consequence of the stenosis. Whooping may be induced by moving the child; it may persist during nursing and cease temporarily only during sleep. Variot and Bruder report a case of expiratory strident whooping in an infant six months old; the thorax was enlarged and hyperresonant on the left side; there was no retraction of the lower intercostal spaces, and no suffocative crises; intubation did not change the noisy stridor; the larynx was normal; there were no adenoids, and the nose was not obstructed; the persistency of the whooping through the tube proved that it must originate in the bronchi, and it was called *cornage respiratoire bronchitique*. The Röntgen ray showed compression of the right main bronchus by enlarged glands. If the child lives and the stenosis persists, the cough changes in accordance with secondary induced conditions. The pressure upon the bronchial vessels causes obstruction, resulting in congestion, irritation, edematous infiltrations, and chronic bronchitis; the bronchial glands become sensitive to any hyperemic agency and acutely irritated in consequence of overexertion of any kind, or from toxins from any source, acute infections, intestinal disorders, etc. These exacerbations are manifested by a tendency to "catch cold," the child always having bronchitis. With care and rest the excessive hyperemia disappears, the voice becomes natural, the child is better, the cough is lower pitched, wet and productive—more like that of chronic bronchitis. The irritability of the bronchial mucosa easily provokes exacerbations and all kinds of bronchitides, so that all chronic bronchitic processes should suggest the possibility of enlarged bronchial glands and the necessity for tuberculin and the Röntgen ray before making the diagnosis. Sanders (24) examined the sputum of persons over sixty years of age who expectorated nights and mornings, and found that tubercle bacilli were present in from 12.5 to 16.7 per cent., although there were no reasons for suspecting tuberculosis, and the diagnosis of chronic bronchitis had been made for years. The mother of one of our patients recently died at the age of seventy-four years, and just before her death the sputum was examined for the first time, and found to contain tubercle bacilli. The diagnosis of chronic bronchitis had been made all during her life. One daughter died of tuberculosis and a son narrowly escaped after a long and dangerous illness.

According to Combe, "the most important sign of tuberculosis in the nursling is the expiratory stertor suggesting asthma. This is an almost certain sign, occurring early and not encountered in other affections in infants. Inspiration is silent, while the expiration is noisy and prolonged, but the infant does not seem to notice it and keeps gay and smiling unless the disturbance becomes too severe and asthmatic." Lees reports a typical case in a child of four years, who had had attacks of asthma ever since it was two years old. There was never complete relief from the dyspnea, but it became worse at times, more especially during the night. The nocturnal attacks were often severe, but one doctor after another stated that there was nothing really the matter, that it was only asthma, because "nothing could be found in the lungs." The boy was thin and wheezed a good deal; the right heart was considerably dilated, and there were areas of dullness over the bronchial glands (25). Vergano (26) reports a case of persistent asthma from earliest childhood, which did not become tuberculous until the age of twenty-six years. It seems probable enough that when a child acquires dyspnea, cough, and asthma, that the fundamental factor may easily be pressure upon the trachea and bronchi, causing retention of air and difficult expiration; this is the typical condition of asthma, but the pathological factor responsible for its production is not always recognized. From asthma to emphysema is but a question of degree; simply a little more intraalveolar distention; simply a little more yielding of alveolar walls and emphysema results. This does not mean that the thorax becomes enlarged or barrel shaped; we have many cases of long, thin thoraxes with hyperresonance and emphysema. "As a consequence of persistent difficulty in expiration, the lung becomes gradually distended and emphysematous, with depression of the base and tympany over the emphysematous areas." (Rach, 7.) "Emphysema in children is usually very serious, because it is nearly always the result of tuberculous processes." (Hayashi, 27.) Years ago Hirtz showed that the so called essential emphysema of the lungs may be the manifestation of tuberculosis. Often it is preceded by asthma, and in neither case does any one suspect tuberculosis, largely because they are commonly supposed to be antagonistic. Hirtz is convinced that the so called chronic bronchitis, asthma, and emphysema may all be the logical consequences of tuberculous processes.

When the backward thrust of the retained air presses too greatly upon the point of stenosis, the bronchial walls may yield and form bronchiectasis, with the characteristic accumulation of purulent sputum not containing tubercle bacilli. When the swollen mucosa and stenosis prevent a sufficient entrance of air to expand the smaller bronchi, they may collapse and form atelectatic areas.

Enlarged glands at the hilum may press upon and impede the return circulation from the lungs, causing stasis, slowing of the blood and lymph currents, and a tendency to sedimentation, making the root of the lung the logical site for the origin of tuberculous processes. When we remember that the alveolar network of bloodvessels covers 150 square metres when fully spread out (Grancher, 28), and that all this immense content must return through the relatively narrow passage of the hilum, it is easily understood how a slight amount of pressure might cause stasis of the circulation in the regions near the hilum, and how these edematous areas favor the accumulation of tubercle bacilli along the peribronchial sheaths. If there is a coincident tracheobronchial stenosis, the tubercle processes will extend into a lung modified by secondary conditions; if the lungs are normal, the peribronchial extensions may remain beyond the reach of physical examinations until the terminal areas of the affected bronchi are involved. When there is no tracheobronchial stenosis and not enough pressure at the root of the lungs to cause edematous rales, peribronchitic infiltrations may advance through the lung without affecting the health or yielding any physical signs until the periphery is reached. According to Jordan, this happens in fifty per cent. of cases of tuberculosis of the lung. Sclerosed as fast as laid down, they may first be revealed as infiltrations of the apex or irritations of the pleura. A history of a slight sense of irritation just below the larynx and persistent hemming or very slight clearing of the throat too insignificant to notice, combined with attacks of pleurisy and pneumonia, possibly manifested for years or even from childhood, may explain may cases of atypical pneumonias with suddenly fatal endings not in accordance with the mildness of the physical findings which do not suggest such a result. It may be that many of these cases have been susceptible from childhood because of tuberculous processes in the bronchial glands and subpleural, inactive extensions. Very often the history shows lack of strength and vigor, still further confirming the hypothesis. The peribronchial infiltrations may lessen the elastic expansion of the lung and diminish the expansions of the diaphragm.

The consequences of tuberculosis of the bronchial glands may be meningitis; laryngeal disturbances resembling croup, diphtheria, and whooping cough; erosion of the esophagus, trachea, bronchi, and bloodvessels; asphyxiation; hemorrhages; hemoptysis; acute miliary tuberculosis; acute tuberculous pneumonias; chronic bronchitis; asthma; emphysema; bronchiectasis; atelectasis; pleurisy, and tuberculous peribronchial infiltration of the lungs. Von Behring says that the first verse of the song heard over the grave of a victim of tuberculosis was sung over the cradle of a child. Philippi says that the first act in the tragedy of pulmonary tuberculosis takes place in the bronchial glands. Baldwin has stated that natural resistance begins with the earliest infection of childhood.

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HIGHLANDS CAMP SANATORIUM.

PYORRHŒA ALVEOLARIS.

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It is not my purpose to present an academic dissertation on the theoretical aspect of pyorrhœa alveolaris nor to suggest any experimental line of treatment of a supposititious condition, but I will endeavor to state as clearly as possible the conclusions reached by a careful clinical study of the disease, its causes, and successful treatment. In order to reach a correct conclusion it is necessary, first, to become as familiar as possible with all the conditions attending the disease under consideration, and properly to value the various factors entering into the consideration. Failure to recognize and properly value a single factor results in an erroneous conclusion and makes successful treatment impossible.

Most of the research work which has been conducted relative to pyorrhœa alveolaris has been along the line of bacteriology or a study of systemic resistance to infection. The idea has prevailed that some specific organism is the cause, and numerous efforts have been made to isolate such an organism and to find a successful means of combating it, directly by local application, or indirectly through the blood stream. The local causes of lowered resistance have been almost totally ignored.

This attitude is the result of unsuccessful efforts on the part of those who have conducted local treatment. It has been assumed, and correctly so, that some factor has been overlooked, and that the missing link is either the organism or some systemic disturbance, instead of failure to discover all the local factors and to conduct surgical treatment correctly. Let us consider some of the fundamental principles involved. It is agreed that pyorrhœa alveolaris is the result of infection, but the bacteria causing the infection are practically harmless while normal resistance continues. In order to become effective resistance must be broken down. We have now established two points, namely, that bacteria must be present and resistance overcome.

When we consider that it is impossible to sterilize the mouth, and that even if it could be sterilized it would be impossible to maintain sterility, it naturally follows that the source of infection is the least important factor. Therefore what we must do is to study all the factors which contribute toward lowered resistance at the point of infection. If these factors can be eliminated and prevented from recurring, we need not worry about the form of bacteria, for they are present in every mouth more or less, even where there is no pyorrhea.

I do not mean to say that there is no need of maintaining a sanitary condition, but I refer to organisms which must exist in mouths which are kept scrupulously clean. A systemic disturbance undoubtedly will facilitate the establishment of an oral infection, but unless it is of such a nature that the patient is incapacitated in other respects, it is not an insurmountable obstacle to the restoration of health in the mouth. On the other hand, local injury will sufficiently reduce the resistance of the tissues, so that even when perfect health exists an infection may occur and continue until the cause of injury has been removed. Health of the tissues depends on cell vitality, cell vitality depends on proper blood supply, and proper blood supply cannot be maintained when there is anything present at a given point which interferes with circulation. These I believe to be the most important fundamental truths for us to bear in mind.

Now let us consider some of the typical forms of pyorrhœa alveolaris. I will take them up in the reverse order of their frequency.

1. An acute suppuration of the gingiva which is the result of lowered systemic resistance, where no local factors exist. These cases are extremely rare and almost invariably come to the attention of the medical practitioner. They respond to treatment of the systemic cause.

2. A general pyorrhea found in very filthy mouths, attacking all the teeth with varying degrees of severity. Such cases will probably be found to predominate in the public clinics and among the class of patients from the poorer sections. This form of pyorrhea is undoubtedly due to the long continued unsanitary condition of the mouth establishing inflammation through the irritating effect of masses of bacteria growing in the food debris and accentuated by the mechanical irritation of the resulting accumulations of calculus. The pyorrhea is not established at once, but is the final outcome when the breaking point has been reached. Establishment of sanitation restores health in such cases.

3. Localized pyorrhea; that is, when only certain of the teeth are affected. These cases are most numerous in the practice of the average dental practitioner. Now if pyorrhea is due merely to the presence of certain organisms or in conjunction with systemic disturbances, why does it attack only some of the sockets and not all?

For many years I have been studying this question and have never of late years failed to find the answer by a careful study of the teeth affected. Invariably the prime factor is trauma, and the most common cause of trauma is malocclusion. So important do I consider it that my first procedure in the treatment of pyorrhea is to relieve by grinding all teeth which are subjected to excessive stress through malocclusion. In most cases it amounts to a complete readjustment of the entire denture. It is worse than useless to perform a surgical operation on tissues which continue under stress. Such treatment would add to the injury, spread the area of infection, and make the formation of new tissue impossible. I believe it is safe to say that not one person in ten thousand has normal occlusion. Instead of the teeth becoming loosened through pyorrhea, in many instances pyorrhea is the result of motion of the tooth in its socket.

Other causes of trauma are crowns, bridges, and fillings impinging on the tissues, incorrect orthodontic treatment, rapid separation of the teeth, injury incident to finishing fillings, impaction of food in interproximal spaces, and in short any mechanical condition which causes inflammation. When the tissue is injured, hyperemia occurs, stasis is established, more or less necrosis of the tissues results, calculus is deposited, and the condition thus established continues until the cause is removed and correct surgical treatment given. Often unskillful treatment itself is productive of trauma, and instead of restored health a worse condition ensues, frequently resulting in a secondary infection more serious than the first.

I have treated many cases of Vincent's angina which were the direct result of such treatment. In order to treat pyorrhœa alveolaris successfully we must be thoroughly familiar with all of the phases exhibited and must recognize the many factors contributing to the condition. Only an extensive clinical experience makes this possible, and the failures of those not possessing such experience or the requisite skill should not prejudice others in their opinions.

It is impossible in the limited space at my disposal and unnecessary for me to give a detailed description of the treatment of pyorrhœa alveolaris. In general it is as follows:

1. Make exhaustive examination of each tooth and surrounding tissue, recording conditions.

2. Correct malocclusion by grinding, and remove faulty crowns, bridges, and teeth which are unfit for retention.

3. At successive sittings remove all calculus and necrotic tissue from crowns and roots of teeth, and trim overhanging fillings.

4. Polish all crowns of teeth perfectly.

Always avoid injury to soft and hard tissues. Lost teeth should subsequently be replaced and faulty dental operations corrected.

No medication is necessary if correct local treatment has been given, and systemic treatment is needed only when other than oral symptoms are present. The common use of emetine and other forms of ipecac during the past year or so justifies me in making special allusion to this subject, and I will quote from my discussion of the subject at a meeting of the First District Dental Society during the past winter:

> No drug will cure a surgical condition. Treatment of pyorrhœa alveolaris by emetine is fundamentally wrong, because we have to deal with conditions which no medication can remove, and the mere destruction of organisms is of minor importance. Of paramount importance is the removal of causes of lowered resistance, both primary and secondary, including the products of inflammation, such as deposits and necrotic tissue. Nothing but skillful surgery, intelligently directed, will do this. It is folly to expect to cure such conditions by the application of any medicament, especially when its sole function is the destruction of a single organism among many which are known to be present and exceedingly harmful to tissue.
>
> In my opinion, it is worse than a waste of time for a man who has definite knowledge of a condition, and ability to treat it successfully, to conduct experiments suggested by some one who evidently does not understand the condition, and who is trying to find a substitute method of treatment which can be successfully employed by those possessing neither knowledge nor ability. We who have made a special study and practice of pyorrhea treatment know this is an impossibility, and we cannot afford to encourage the belief that pyorrhea can be successfully treated by the use of any drug, or without the possession of extensive knowledge of the condition and a high degree of technical skill.
>
> When a patient applies to us for treatment, it is with the belief that we are expert and competent to achieve successful results. We can do this by methods well known to us. Why, then, should we try experiments? As a matter of fact, we have no right to do so under the circumstances. Furthermore, we should not create the impression in the minds of our fellow practitioners that we are groping

in the dark and do not obtain definite results. Those who are competent can successfully treat pyorrhea now, just as competent surgeons can treat other conditions successfully. Those who are incompetent never will be able to do so with or without drugs, and there is no use in their trying.

In conclusion, I would sum up as follows: When there is suppuration without either an unsanitary or traumatic condition, it is reasonable to suppose that the main factor is low general resistance to the organisms present.

When accompanied by an excessively unsanitary condition, we may safely assume that such condition has both overcome resistance and caused the infection.

When the pyorrhea is localized and some cause of trauma exists, why should we look any further for the cause of lowered resistance? How can we expect anything but a pyogenic infection in the presence of the necessary bacteria, contained in an ideal incubator such as the oral cavity?

Think of the result of subjecting a tooth to blows every few minutes or perhaps seconds. These blows varying from a few pounds to perhaps two hundred, concentrated at one point and in a direction unsupported by sufficient tissue. Then add to this a pocket which retains decomposable matter consisting of food débris and dead or dying tissue, deposits of calculus, and an insufficient blood supply. What could be more favorable for the establishment of an infection?

Or suppose that one of those abominations, an ordinary, badly fitted shell crown, is driven down into the soft tissues, producing a painful wound. The gum becomes engorged and swells up around the crown, food accumulates, and eventually after sufficient absorption has been taken to relieve the pressure, it settles down to a chronic state of progressive necrosis.

Is it reasonable in the face of such conditions to expect to find a method of treatment by medication which will restore health? Yet this has often been attempted, and failure has led to the erroneous conclusion that pyorrhea is not simply a local infection.

The correction of mechanical conditions together with delicate surgical treatment and proper sanitation will surely restore and maintain health. I know this because I have accomplished it many hundreds of times.

It is indeed gratifying to have so great an interest shown by the medical profession in the relation between oral infection and systemic disturbances. For years I have dreamed of the time when the medical profession would recognize oral infections as a cause and not an effect of the constitutional disorder, and it seems that the day has come.

We of the dental profession can help you in the treatment of many troublesome cases, and I am thankful that it is so.

8 West Fortieth Street.

Injuries of the Lower Back.—Roland Hammond (*American Journal of Orthopedic Surgery*, August, 1916) reports six cases of severe strain of the lower back, without demonstrable fracture, which were of long duration, marked disability, and which obtained but little improvement, as a rule, under many different methods of treatment.

CHAUFFEUR'S FRACTURE OF THE RADIUS.

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(From the records of the Department of Surgery, Vanderbilt Clinic, College of Physicians and Surgeons.)

During recent years the introduction of the self starter for the gasoline motor has greatly reduced the number of automobile fractures, but especially in commercial lines, the self starter is still somewhat of a luxury, and the fracture is still seen frequently enough to be worthy of study. Moreover, even among the laity, the danger of fracture from the kick back at the starting handle is recognized, the result being that the starting process is approached with due regard to the inherent danger, and this in itself has tended to reduce the number of fractures.

During the last few years the writer has been impressed with the large number of fractures coming under treatment which had been diagnosed as "sprain" and which had in some cases been cared for by physicians for a longer or shorter period as such. Among these were a surprisingly larger number of chauffeur's fracture. Their frequency was great enough to make it plainly apparent that in chauffeur's fracture we are apt to have that peculiar type which shows little or no bony deformity, which may easily be mistaken for a simple sprain of the wrist joint.

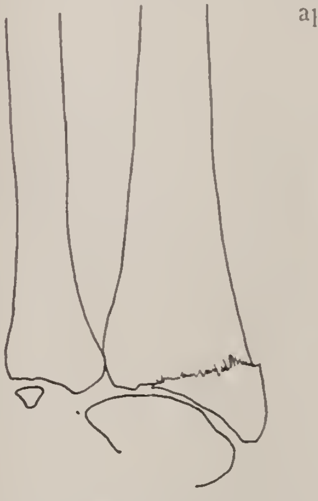

Fig. 1.—X ray tracing of the line of fracture in Case I, showing very slight displacement. Styloid of ulnar fractured and slightly displaced.

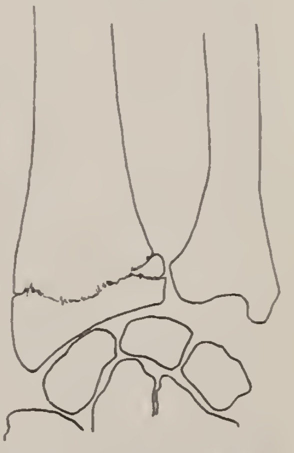

Fig. 2.—X ray tracing of the line of fracture in Case II, showing slight comminution and displacement backward.

The subject was approached from another viewpoint. Eight consecutive fractures were selected from the clinic records during the previous two years, constituting about twelve per cent. of all fractures about the wrist treated during that period. From the study of these fractures it was seen that bony deformity was the exception rather than the rule, and that the line of fracture did not coincide with what is generally considered as the typical site for Colles's fracture.

We find the earliest references to chauffeur's or automobile fracture about 1899 or 1900, but it was not until 1904, when Lucas-Championnière, in

France, and Madeling, in Germany, described the condition in detail, that the condition became recognized as a clinical entity. During the next few years numerous articles appeared both in Europe and America, and, in 1910, Thomas gave a definite description of the lesion. During recent years, little or nothing has appeared in medical literature, textbooks giving the subject only brief mention.

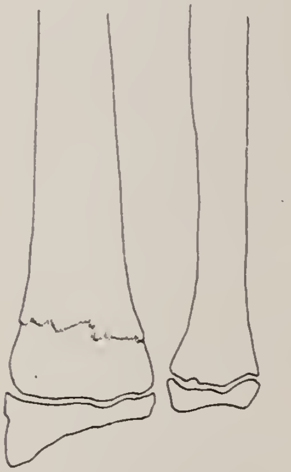

FIG. 3.—X ray tracing of the line of fracture in Case III, showing high transverse fracture above the epiphyseal line, with slight comminution and displacement backward.

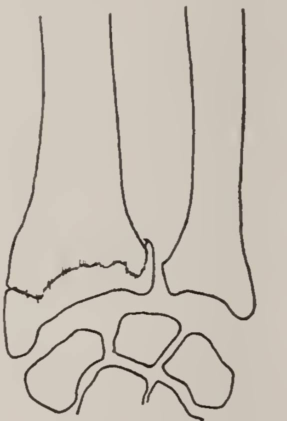

FIG. 4.—X ray tracing of the line of fracture in Case IV, showing old fracture with slight impaction.

The earlier writers pointed out that the fracture might be either direct or indirect, the former resulting from the handle of the cranking lever striking the forearm in such a manner as to cause a direct fracture of one of the bones of the forearm at the point of impact. This type is rare and does not differ from other fractures caused by direct violence.

Chauffeur's fractures of the indirect type are most common and are caused by the sudden and violent reversal in the direction of the cranking lever during the manual starting of the motor. It is explained by motor experts that after a gasoline motor has stood idle for a certain period, there is a change in the character of the gas in the cylinders by virtue of which the gas mixture loses its explosive properties. In order to start the motor fresh gas must be forced into the cylinders, and this may be accomplished by turning the engine through one or more revolutions. The motor power may either be the hand or any other force which will accomplish the same result. If the explosion is timed to occur before the piston reaches the highest point in the cylinder, that is, if the spark is advanced, the piston will be forced backward, causing a reversal in the direction of the starting handle which is usually transmitted to the palm of the hand which grasps the lever in the shape of a sudden and violent blow.

This force may act upon the radius in two ways; either by means of impaction transmitted through the palm in the region of the thenar and hypothenar eminences, or by means of hyperextension of the hand, which is transmitted to the radius through the strong anterior ligaments of the wrist joint. Theoretically, the cases due to impaction would show fractures identical with or approaching the lesions of Colles's fracture, while hyperextension would cause lesions with more of the characteristics of the so called sprain fractures of the lower end of the radius.

If a study is now made of a series of x rays of chauffeur's fracture, it is seen that in very few of them is the lesion that of the typical Colles's. In fact, in the present series of eight consecutive cases, no single one of them could be described as a typical Colles's fracture. The mechanics of Colles's fracture, according to Stimson,[1] is that of a force which acts either by splitting or crushing of the radius between the carpus and the diaphysis, or an action due to decomposition of force from a blow on the palm in a direction slightly inclined from the long axis of the radius. Fracture may result from hyperextension, but experiments upon the cadaver have shown that such fractures are usually low transverse fractures and not associated with posterior displacement and silver fork deformity.

Now this experimental fracture in the cadaver is of exactly the same type as that seen in chauffeurs. In only one case in the present series was the line of fracture as high as that seen in Colles's fracture. This case (Fig. 3) occurred in a youth eighteen years old before the fusion of the epiphysis and diaphysis, and showed very little displacement and slight silver fork deformity. The remaining cases without exception showed fractures running near or into the lower articular surface with little or no deformity. In only two cases was there any evidence of a tendency to impaction (Figs. 2 and 4) and in these cases the impaction was very slight. Displacement was absent in some cases, in others there was a slight amount of rotation backward of the lower portion through the long axis of the fragment. These fractures correspond almost exactly to the type of experimental fracture in the cadaver and probably are frequently due to hyperextension.

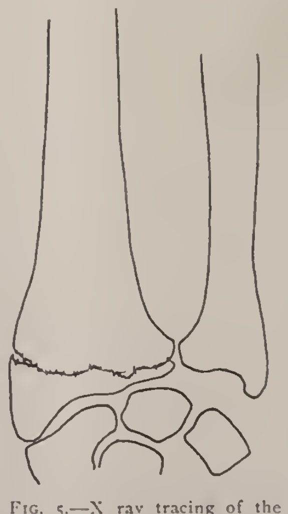

FIG. 5.—X ray tracing of the line of fracture in Case V, showing fracture similar to Case I, but passing entirely across the bone, without impaction or displacement.

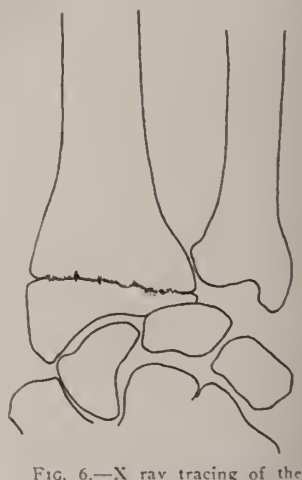

FIG. 6.—X ray tracing of the line of fracture in Case VI, showing fracture practically identical with Case V.

The symptoms vary according to the lesion. Personally I have come to look upon the slightly oblique fracture, which passes into the joint (Fig. 1), as the most typical form of chauffeur's fracture, and this was seen in two cases in the present series (I and VIII). Three other cases (Figs. 5, 6, and 7) are nearly identical with Case I, but in these the fracture can be made out to pass entirely across the carpal extremity of the bone, reaching the ulnar margin of the radius at the junction of the carpal and ulnar articular surfaces. In most of these cases (I, V, VI, VII, and VIII) there is little or no bony deformity and false point of motion is obtained only with great difficulty.

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[1] Stimson: *Fractures and Dislocations*, New York, 1912.

The patient presents himself with only a moderate loss of function and very little pain. Indeed, some chauffeurs are able to drive their cars for several hours after the injury has occurred. One patient drove his car for ten days after the injury and presented himself at the clinic only because of his inability to crank the motor. The wrist is usually swollen and shows areas of ecchymosis, and the physician is called upon to exercise considerable ingenuity to differentiate the injury from simple strain.

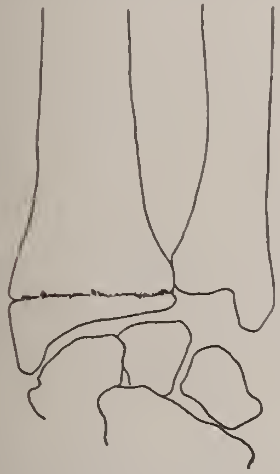
Fig. 7.—X ray tracing of the line of fracture in Case VII, also similar to Cases V and VI.

If we remember that a wrist sprained severely enough to cause the patient to seek medical advice is very rare, and if we also remember that this fracture may occur without deformity, the diagnosis becomes comparatively simple.

Given the history of the case, there is only one additional symptom necessary for the diagnosis, and this is the typical localized tenderness over the line of fracture. This has been called "wincing" tenderness, and is easily obtained by direct pressure over the line of fracture. It is most marked upon the second and third days and persists until the third week or even longer. If this line is carefully marked out with a blunt instrument, it will be found most commonly to run close to the articular margin,[2] and the tenderness will be found both on the palmar and dorsal aspects of the wrist; whereas, in sprain from the same cause, the tenderness is most marked interiorly.

There is usually no change in the relation of the styloids, although in about twenty-five per cent. of the cases reported the ulnar styloid has been fractured and sometimes displaced. Certainly any upward displacement of the tip of the radius is very rare.

It need hardly be stated that in this border line type of fractures a skiagram is especially advisable. The line of fracture is often indistinct, and unless the plate is so taken that all finer details are brought out, the lesion may easily be overlooked.

TREATMENT.

The treatment of chauffeur's fracture does not differ from that of the ordinary fractures about the wrist in any essential detail. Naturally cases showing linear fracture without displacement do not require reduction. The wrist may be put up in slight flexion to overcome the tendency to backward tilting of the lower fragment. In the exceptional cases with considerable displacement, the fracture should be reduced and the condition dealt with in the same manner as Colles's fracture.

The milder cases should receive early massage and passive motion and rarely require fixation longer than three weeks. In these cases a posterior moulded plaster splint has been found most satisfactory, the splint extending from the metacarpophalangical joint to a point just below the head of the radius. This permits limited use of the hand, the patient being allowed light work after the tenth or twelfth day.

When untreated, chauffeur's fracture sometimes results in permanent stiffness of the fingers and wrist joint, but early recognition of its presence followed by appropriate treatment is practically always attended by good results.

CASE HISTORIES.

Case I (Fig. 1). Fracture in man of twenty-one years, linear, oblique, showing very slight displacement. Styloid of ulnar fractured and slightly displaced. Treated as sprained wrist for ten days—not reduced. Functional results excellent.

Case II (Fig. 2). Male, aged twenty-six years. Showing slight evidences of comminution. Very slight displacement backward. Treated as sprain. Anatomical and functional results satisfactory.

Case III (Fig. 3). Male, eighteen years. Showing high transverse fracture above epiphyseal line. No impaction. Slight comminution. Slight displacement backward. Reduction easy. Results excellent.

Case IV (Fig. 4). Male, forty-eight years. Injured wrist four weeks before. Old fracture showing very slight impaction. Reduction not attempted. Massage and passive motion for three weeks. Functional result good. Anatomical result fair.

Case V (Fig. 5). Male, twenty-eight years. Line of fracture similar to Fig. 1, but passing entirely across the bone. No impaction or displacement. Did not return for treatment.

Case VI (Fig. 6). Male, thirty-five years. Lesion practically identical with Case V. Treated as sprain for four days. Stopped treatment after two weeks.

Case VII (Fig. 7). Male, thirty-one years; came into the clinic within one half hour of the accident. At that time the slight irregularity along the anterior margin of the lower end of the bone could be distinctly palpated as a sharp spicule of bone. Dorsally, nothing could be felt. Reduction was considered unnecessary. X ray showed line of fracture similar to Case V. Results excellent after three weeks.

Case VIII. Male, twenty-seven years. Line of fracture same as Case I. No displacement. Reduction unnecessary. Excellent results after four weeks.

140 West Seventy-ninth Street.

PSEUDOSCARLATINA.

By Bernard Frankel, M. D.,
New York.

For several years past I have observed among children—usually during the prevalence of influenza—numerous cases which, although resembling scarlet fever, differ from it essentially, and etiologically seem to be more closely related to influenza. They possess, however, a clinical entity of their own and, because of their resemblance to scarlet fever, I thought it most appropriate to designate them as cases of pseudoscarlatina.

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[2] The x ray tracings are made to show this line clearly. In the original negatives the line of fracture was frequently very faint.

A previous attack of true or pseudoscarlatina does not confer immunity against a new attack of the latter. The onset as in true scarlet fever is usually sudden, with elevation of temperature and a scarlatiniform rash, both however less pronounced; and the subsequent course is as a rule milder than that of true scarlet fever, the temperature being lower—although subject to irregular exacerbations—and the rash paler, more evanescent, and followed by more minute desquamation.

The two forms differ greatly as to complications. I have never observed acute nephritis complicating pseudoscarlatina, but more frequently than in true scarlet fever do its complications involve the throat, ears, the respiratory and digestive tracts, while a cervical adenitis is almost invariably present.

The angina ranges all the way from a very mild tonsillitis to a severe and even fatal septic sore throat; purulent otitis media at times occurs; while the respiratory tract involvement, usually beginning with a more or less severe rhinitis, may not pass beyond an acute bronchitis in the mild cases or eventuate in a more or less severe attack of bronchopneumonia in those of a severer type.

In a similar manner the gastrointestinal disturbances may manifest themselves only by anorexia, nausea, vomiting, and irregularity of the bowels in the milder cases; may take the form of a more or less severe acute enterocolitis—usually accompanied by enlargement of the spleen—in the severer ones; or may even, in the very severe cases, show symptoms closely resembling typhoid fever.

The prognosis is very good in mild cases, but in the severe ones often doubtful; recovery is tedious, interrupted by severe relapses, and followed by prolonged impairment of the general health.

The following interesting case, although not at all characteristic of the ordinary mild cases, may serve as a good illustration of some of the complications of the severe cases of pseudoscarlatina.

Case. In December, 1909, I was called to treat Levy, six years old, of Market Street, New York. The boy awoke that morning with a typical bright scarlet rash all over his body, his temperature at 10.30 a. m. was 103.5° F., his pulse 140, and respirations were 35. His throat was congested and the cervical glands were enlarged. It looked like a typical case of scarlet fever.

Within twenty-four hours the rash completely disappeared and the temperature, pulse, and respirations dropped almost to normal; but twelve hours later, at about 10 p. m., the temperature was again up to 103° F. and he began to cough. Physical examination disclosed medium sized moist rales over his right upper lobe posteriorly, but no dullness on percussion, except over his left lower lobe posteriorly, due to enlargement of the spleen. His bowels became loose, the stools small, with some mucus, and accompanied by tenesmus.

During the following three days the temperature, pulse, and respirations continued high, with at times slight morning remissions and irregular exacerbations; the respiratory symptoms remained about the same. Diarrhea was controlled by soothing and astringent enemata, but the spleen was now readily palpable below the costal arch, the abdomen much distended, and the tongue furred and heavily coated, not unlike the tongue of typhoid. The Widal test was negative.

Dr. Emmet Holt was kind enough to see the case with me then and fully confirmed my diagnosis of influenza, complicated by severe abdominal symptoms and by an impending bronchopneumonia. He also agreed with me that many of the symptoms made it necessary to eliminate typhoid, and that the treatment should continue to be sustaining and stimulant, avoiding expectorants likely to irritate the stomach.

Within the next few days bronchopneumonia did develop, but was soon resolved, the temperature came down by lysis, and the patient entered the stage of a slow convalescence with three or four lapses.

In other cases a more or less severe and sometimes even fatal septic angina is a frequent complication.

I am certain that many a busy practitioner, on looking over the records of his scarlet fever cases, will find that a good many of the mild recurring cases, as well as of the graver ones, accompanied by severe, possibly septic anginas, were in reality cases of pseudoscarlatina, although in a routine way pronounced even by the diagnosticians of the board of health to be cases of true scarlet fever.

It is the purpose of this communication, by endeavoring to put these cases in a class by themselves and to dissociate them from true scarlet fever, to focus upon them the attention of physicians endowed with better equipment and facilities for the necessary thorough study and research work. Bacteriological examinations especially will have to be carefully followed up.

Abstracts and Reviews

THE NEW PHYSIOLOGY.*

By Professor J. S. Haldane,
University of Oxford.

The lecturer opened with a brief review of the conceptions and principles which have guided physiological thought and investigation in the past. He pointed out that the original conceptions were dominated by the attitude of vitalism and that under this influence the observed phenomena which could not otherwise be explained were ascribed to vital action. Then, with the great advances which were made in chemistry and physics, and more especially in the field of biochemistry, a new orthodox creed sprang up and has persisted to the present day. This creed sought to explain all physiological phenomena in the terms of physics and chemistry and would make biology a mere branch of these two sciences. Such a creed would postulate a finality of knowledge in the domains of physics and chemistry, but it has become evident that our knowledge in these two branches is far from final and complete, and we are now struggling to go beyond the molecule and the atom and study electrical phenomena and those of radioactivity among others. On the physicochemical basis the physiological investigators sought the ultimate causes of the several phenomena of living tissue, but it soon became evident that neither chemistry nor physics was adequate to reveal and explain the ultimate causes.

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*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, October 14, 1916.

This mechanistic, or physicochemical doctrine, failed to recognize the fact that physiological response in living cells depended upon the maintenance of normal conditions of life in the cell.

According to Professor Haldane's view, therefore, the failure of both the vitalistic and the mechanistic doctrines necessitated new methods of approach if physiological advances were to continue. This was the the basis of the new physiology, as he termed it. The new physiology recognized that biological phenomena or physiological responses of living cells depended primarily upon the maintenance of the normal in the cell. The maintenance of the normal, in turn, rested upon a vast number of variable factors which interacted one with another in a multitude of different ways. It was then to be the duty of physiology to study the individual factors and their interactions—to trace out the normal phenomena of activity of living matter—rather than to seek their causes.

To illustrate the methods of this new conception, the speaker chose the physiology of respiration as the subject with which he was most familiar. Observation showed that normal breathing was irregular and was altered by extremely slight influences. Thus the mere effort of talking or laughing, slight exercise, and a host of other factors altered its rate, depth, and rhythm. The view commonly obtained that the depth of normal breathing could be increased by athletic training; and it was known that a period of excessive ventilation was followed by one of apnea. The breathing of an excess of carbon dioxide was known to increase respiratory ventilation, but this increase was not in direct ratio to the concentration of the carbon dioxide breathed. The apnea produced by superventilation was originally held to be due to cumulative vagus influences acting upon the respiratory centre, for the vagus was known to transmit stimulant and inhibitory influences to and from the centre. It was soon found that the alveolar air contained a constant percentage of carbon dioxide under normal conditions. Changes in rate or in depth of breathing were normally compensated by alterations in the other, so that the concentration of carbon dioxide in the alveolar air always remained the same. Pursuing these observations further, it was shown that the apnea of superventilation was due to the removal of a slight excess of carbon dioxide above the normal. Thus a lowering of the carbon dioxide by as little as 0.2 per cent. caused apnea. On the other hand, raising the carbon dioxide by an equal amount produced hyperpnea. The regulation of respiration was thus proved to be chemical, and the sole functions of the vagi in this connection were to aid in the coordination of the respiratory acts and to prevent unnecessary waste of time. There was no such thing as vagus apnea—apnea was solely of chemical origin and depended upon the excessive removal of carbon dioxide from the blood.

Proceeding further along these lines of investigation of normal phenomena, it was found that the carbon dioxide acted by virtue of its acid property. The introduction of new and extremely delicate electrical methods of measuring the reaction of the blood in terms of the hydrogen ion concentration, paved the way for the further study of the phenomena of respiration. It was soon proved that the hydrogen ion concentration of the blood was maintained at a constant level in spite of very great external changes. This constant was found to be dependent upon the maintenance of a balance between the alkali salts and the albuminoids of the blood. It was then but a step to show that the respiratory centre reacted to the hydrogen ion concentration and that an extremely delicate balance was maintained between the concentration of carbon dioxide in the blood and the alkali salts and albuminoids. Disturbances in this delicate balance were at once reflected in the respiration which was altered in rate and depth so as to increase or diminish the excretion of carbon dioxide. The state of the alkali albuminoid balance, in turn, regulated the carbon dioxide carrying power of the blood.

The net result of these investigations had been to show the existence of four normals or constants concerned with the regulation of respiration. These were: 1. The partial pressure of carbon dioxide in the alveolar air; 2, the regulation of the hydrogen ion concentration in the blood; 3, the response of the respiratory centre to the hydrogen ion concentration; 4, the regulation of the blood's carrying capacity of carbon dioxide.

After elaborating the principles of the new physiology by this brief outline of the understanding of the respiratory mechanism which they had given us, the speaker proceeded to indicate that the same methods could be applied to the other branches of physiological study. Thus it was pointed out that the composition of the blood in a similar manner was physiologically regulated in all its details. In the normal state the concentration of sugar remained constant within extremely narrow limits, and such extreme artificial variations as prolonged fasting and excessive intake of sugar did not alter the concentration of this substance in the blood. The same was true of sodium chloride and other salts and the author and his associates had recently attempted to measure the changes produced in the blood dilution as the result of the ingestion of very large amounts of water. They found that when water was taken very freely the kidneys responded with great diuresis, but the fluid excreted by them under such circumstances was little more than pure water. Even after extreme amounts of water were taken the blood serum showed only very slight diminution in its salt concentration when tested by delicate methods for determining its electrical conductivity.

It was pointed out, in further illustration, that it was hopeless to attempt to explain the functions of the kidneys on the ordinary grounds of physics and chemistry. Even the subject of nutrition had to be approached from the standpoint of the new physiology rather than from that of chemistry, as it was already evident that there was a delicately maintained balance of energy values through the substitution of one type of food for another.

The speaker emphasized that this new physiology was not a return to the creed of vitalism, but was pure biology. Its sole purpose was to seek out and recognize the phenomena which maintained the unified normal in living matter. It must recognize that each individual phenomenon was closely related to many others and that each was merely a part of the whole. The duty of the new physiology was to investigate the details of the parts of the whole and thus to add to our knowledge of the whole. Structure and action were manifestations of life, not physical and chemical phenomena merely. Protoplasm was everywhere in active relation with its environment, and the internal structure of cells and tissues depended upon the constancy of the composition of the blood. The converse was equally true—that the constancy of the composition of the blood depended upon the actions and structures of the cells and tissues. In the living organism, however, there was a very elastic state of adaptation for the maintenance of the normal. Investigation along the lines of the new physiology showed the existence of normals and their interrelations, but these could not be analyzed in the terms of the mechanistic theory on physical and chemical bases.

Such a new physiology bore directly upon medicine, for the latter had for its object the maintenance of health, and health was synonymous with normality. It behooved the physician to have a clear conception of the normal, so that he might interpret correctly the deviations from it, and much was to be gained if the tenets of the new physiology were applied to the study of pathology and pharmacology. Pathology should seek to discover the processes of defense and adaptation and the methods by which the organism tended to be restored to normal. Pharmacology should seek to discover how the normal might be restored through the help of drugs.

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Contemporary Comment

Fraudulent Infantile Paralysis Cures.—The U. S. Department of Agriculture has instructed Food and Drug Inspectors to watch all interstate and foreign shipments for fraudulent remedies advertised to cure infantile paralysis, as it is expected that the present epidemic will tempt unscrupulous persons to offer for sale so called cures or remedies for this dread malady. The inspectors, as stated by the *Saint Paul Medical Journal* for September, 1916, have been ordered to warn the public that any preparation put on the market or offered for sale as being effective in the treatment of infantile paralysis should be looked upon with extreme suspicion. Samples of all such medicines will be collected and investigated by the Department of Agriculture. Makers of such fraudulent remedies will be vigorously prosecuted wherever the evidence warrants action under the Sherley Amendment to the Food and Drugs Act. So called remedies for infantile paralysis which are offered for import to this country will be denied entry. Already inspectors have discovered shipments of a few such mixtures. The Department of Agriculture will do everything it can under Federal law to protect that portion of the public which is extremely credulous in times of panic and which grasps at anything which promises protection or relief. The sale of such products at this time is pointed out to be particularly threatening to the public health because many persons, relying on the false statements of impostors, neglect to secure competent medical advice and as a result not only is the safety of the patient endangered, but in the absence of proper sanitary precautions the likelihood of contagion is greatly increased. It is to be understood that the Federal Food and Drugs Act applies only to products which are shipped in interstate commerce, that is, from one State to another, or which are offered for import or export, or which are manufactured or sold within a Territory or the District of Columbia. Products which are made and consumed wholly within a single State are subject only to such State laws as may apply and are under the control only of State health officials. Persons buying or using a remedy made in their own State, therefore, must rely on the protection accorded them by their local health authorities.

Qualifying for the Practice of Medicine.—The Christian scientists are making a great ado about the effort on the part of members of one of our district medical societies to obtain information from legislative candidates concerning the attitude to be assumed by them in connection with requirements for the practice of medicine in the State of Indiana. Printed circulars are sent forth from Indianapolis with the reproduction of the letter sent out by the secretary of the medical society, and a reproduction of some rather sarcastic comments by a Kokomo newspaper that has a reputation of being a little lopsided on many questions that demand nothing more than a little common sense to settle satisfactorily. As a matter of fact, asserts the *Journal of the Indiana State Medical Association* for September 15, 1916, all that the medical profession has asked of candidates for the legislature is that they shall establish a standard of fitness for the practice of medicine, just as a standard of fitness is established for many other things. If a man is going to treat the human body, he ought to know something about the human body, and he cannot obtain this knowledge by reading Mrs. Eddy's *Science and Health; a Key to the Scriptures,* nor can he obtain such knowledge through a six weeks' course of massage training in a chiropractic school. Nothing more is asked than that the person who is licensed to practise medicine must have a suitable preliminary education, and that he shall have studied medicine and the allied branches relating thereto a sufficient length of time to make him acquainted with fundamental facts. When he has done this, he will have shown some fitness for the practice of medicine, and common sense as well as the protection of the people indicates that this method of securing competence is fair and just. As the medical men say in their letter sent out to candidates for legislature, "No exemptions should be made, and no discriminations permitted, and all should be measured with the same stick." We hope that the medical men of Indiana will make their influence felt among those who are candidates for the legislature, for the surest way to accomplish results is through the medium of politics.

Editorial Notes and Comments

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THE ENGLISH PHYSICIANS' SUBSTITUTE FOR GASOLINE.

One of the scarcities due to the war most keenly felt by our professional brethren in England is the dearth of gasoline. Practically all of that commodity used by England is imported, and the troubled state of the waters around that tight little island has caused many American shippers to fear lest their oil should be thrown on them by the forcible persuasion of a torpedo. The vast amount required by the expeditionary forces and the diversion of English ships formerly used for gasoline to other purposes have had their effect. Early in the spring of 1916 the Board of Trade appointed a committee to control the supply of gasoline and this body immediately put restrictions into effect which have grown more and more rigid.

This Petrol Committee has had the good judgment to favor the medical profession as far as possible so that physicians are allowed as much as they ask for up to a maximum of fifty gallons a month. This has been found insufficient, however, in some cases; the war has caused a shortage of physicians with a resulting increase in the work of those remaining. Leaking and wasteful engines, accidents, delay in filling requisitions, and many other things may cause physicians to run short of gasoline before their allotted time is up, so they have sought a solution of the problem in one of two ways, either a substitute for gasoline, or more miles to the gallon.

Many things have been suggested to replace gasoline either wholly or in part. Alcohol has been mentioned, but the supply is just as restricted if not more so than that of gasoline, although in the course of time the production of this fuel might be brought equal with the English demand, which could never be the case with oil. Benzole has been suggested, but at present there is a greater need for coaltar products either by the government or in the dye industry.

The most practical substitute which has been suggested is paraffin oil, a heavier grade distillate of petroleum than gasoline. To use paraffin oil alone as a fuel would mean the employment of a different carburetor, and whether or not the profession would be justified in going to the expense of such a change when the supply of paraffin oil is just as uncertain as that of gasoline, is debatable. A method which has been found by many practitioners to work well is to mix a small quantity of paraffin oil with the gasoline, in the proportion, say, of one to ten at first and then gradually to increase the proportion of paraffin oil, as long as the carburetors can take care of it. Of course two fuel carburetors can be obtained; the chief point of interest to the medical man is the problem of quick starting, especially in cold weather. The method which seems to have given the best results in practice is a two fuel carburetor by which the car can be started on gasoline and then switched to paraffin oil.

Many arguments can be adduced for and against the use of paraffin oil. What seems chiefly to exercise the minds of the British profession is the fear that even should they find an alternate fuel which is satisfactory and adjust their machines to use it, this too would soon be unable to fill the increased demand. Such a contingency is hardly likely to arise here if the United States should become involved in war, as our supply of crude oil is ample, but perhaps some ingenious Yankee can make a suggestion which will relieve our British cousins.

PENETRATING WOUNDS OF THE LUNG AND PLEURA.

At one time penetrating wounds of the chest were almost invariably fatal, or at least the mortality rate was exceedingly high. L. A. Lagarde, U. S. A., in his work on gunshot wounds, published in 1914, showed that the mortality of penetrating wounds of the chest in the French army during the

Crimean War was 91.6 per cent., in the British army over seventy per cent., and among those who survived to reach hospital in the American Civil War, it was sixty-two per cent.

With the introduction of small bullets of high velocity, however, it began to fall and the fall seems to have been progressive. For instance, in the Spanish-American War, it was 27.5 per cent.; in the Boer War fourteen per cent., and among the Japanese in the Mukden battle 3.67 per cent. Some fallacies have doubtless crept into the foregoing figures. Such extremes are very difficult to understand, for while the Japanese are, perhaps, a hardier race than either the Americans or British, and while their sanitary arrangements may have been more strictly enforced than in either of the other armies, the difference in the mortality rate is too great not to be regarded with distrust. Yet it is certain that the death rate from penetrating wounds of the lung and pleura are less deadly by far than was formerly the case. Indeed, unless a wound of this nature is quickly fatal, the prognosis is favorable. Dr. Hale White, in the *Lancet* for December 4, 1915, states that among the many cases in hospital since the outbreak of the war, he has not witnessed a single fatal one. The reason he gives is that the bad cases never reach England. Many victims are killed on the spot, some get no further than the field ambulance and casualty clearing hospitals, while others again succumb to their injuries in the base hospitals of France. Only those who are practically out of danger reach England.

In the *Quarterly Journal of Medicine* for July, 1916, Dr. R. D. Rudolf narrates his experience of treating gunshot wounds of the chest received in the battle zone, and points out that one of the first things that strikes the attending medical men is that apparently hopeless wounds, judging from their anatomical position in the chest, may give rise not only to no dangerous symptoms, but almost to no discomfort. That is, a bullet may pass clean through the lung without producing any lesion that can be detected by physical or x ray examination. Usually, however, there is at least some hemoptysis. Writing in the issue of this Journal for September 30th last, R. Murray Leslie points out that effects of penetrating wounds of the chest depend upon two factors: 1. The direction and site of the bullet track; and, 2, the presence of septic material within the thoracic cavity. Thus wounds in the middle of the chest or central zone are extremely dangerous. Wounds of the peripheral or lateral zone involve least risk, and wounds in the middle zone are more serious. Lateral, transverse wounds are much less dangerous than we should imagine, and as Leslie says, it is extraordinary with the modern small, high velocity bullet, how often the important structures in the posterior mediastinum escape injury.

No statistics have been given so far with regard to gunshot wounds in the French or British armies, but it seems more or less certain that the fatalities will be higher than in the Boer or Russo-Japanese War. Shell fragments and shrapnel wounds are more likely, by far, to carry in infected material from the skin and clothing than the small pointed high velocity rifle bullets. On the western front the war has chiefly been one of big artillery, firing explosive and shrapnel shells, and machine guns, while the high velocity rifle bullets which were the main causes of injury in the Boer and Russo-Japanese war, have not been much in evidence. Consequently, the wounds have been more greatly lacerated, tending to facilitate infection. A curious point with regard to infection of chest wounds is that although the entrance and exit wounds are generally septic, the bullet track in the lung appears, as a rule, to be sterile.

THE IMPAIRMENT OF HEARING BY EXPLOSIONS.

Wicart addressed the Académie de médecine on this subject on September 15, 1916 (*Presse médicale,* September 21st), stating that the damage done to the hearing by violent and long continued explosions on the battlefield could be minimized by a little care. The soldier should: 1. At the moment of the discharge or an instant later, forcibly swallow the saliva three or four times in succession, at the same time compressing the nostrils together. 2. During bombardments the external ear should be filled with cotton wick soaked in glycerin, and the ears and mastoid region covered with ear muffs of carded cotton. These precautions were simple but efficacious. When the men were taken by surprise and had not time to carry out these suggestions, they need not fear infection unless they were already suffering from mucopurulent nasal or pharyngeal catarrh, hypertrophied or atrophied turbinates, deviated septum, old cicatricial otitides, hardened wax in the ear, cephalic congestion following syphilis, malaria, rheumatism, or alcoholism.

The men in the trenches and those in the artillery should perform a daily toilet of the ear and nose by filling the former with glycerin and the nose and pharynx with camphorated oil, with essence of lavender or eucalyptus added, one in 100. Mentholated petrolatum has been used, but is distinctly inferior. The instillation should be made with the subject lying supine, his head thrown back for five minutes subsequently. Even if explosions have taken place these instillations should be made, because, if neglected, a suppurative otitis may be set up, although the drum membrane may not have been ruptured.

NEGLECT OF OPPORTUNITY.

Some ten years ago the up to date dean of one of our up to date medical colleges, in an address to the alumni of the school preparatory to a drive for a larger and more useful institution, made a special point of the need for better teaching and more thorough clinical application of the mechanical means of treatment of disease. The years have passed and there is no more instruction given in this school in either the theory or practice of such therapeutic measures, nor is there a more extensive use of these means in the hospital controlled by this college. Though this school has increased its facilities for doing work that "meets the requirements" of the powers that set the pace in medical education, it is significant that these requirements themselves do not include any department or any teachers of this very important branch of medical practice.

Progress in science consists in periods of quickening along certain lines that have become popular followed by periods of paralysis, or at least of strange inertia and neglect in those directions. Medical science has, in the past, made much of massage and other mechanical means of cure, but at present chemistry seems to have quite ousted any very serious thought of physics in therapeutics. The value of the horizontal position for the seriously sick has held its own, the Trendelenberg and Fowler's positions are considered useful, but active physical measures are well nigh ignored. This neglect has been taken advantage of, in fact has led to the very existence of a host of healers with high sounding titles who reap a harvest of shekels and who in doing so must, by inference, help their patients in some degree, and also give rise to the suspicion that the medical profession does not know its business as well as it might.

It is very well to say that those who are benefited by the simple methods of these sects, whose theory is nonsense and whose practice is usually unskilled, are not sick but simply need muscular exercise—passive if no other. A man or woman who needs exercise is sick as well as one who needs hydrochloric acid or morphine, and it is just this sort of people who make up the majority of the clientele of every physician who has to treat other than the poor.

It is not only these indolent, ambulant patients who benefit by and fairly demand mechanical treatment. The bedfast sick are often helped to recovery by judicious massage and passive movements, while the repair of injured joints and bones is wonderfully facilitated by such help. The time saved in convalescence and the more perfect outcome in function has made thorough thermal and mechanical treatment after injuries a most important matter in European countries, and during the present war it has been brought to even greater perfection.

Physical means of treatment, especially massage, has in times past fallen into disrepute because of its abuse by those who practised it, and no doubt its present neglect by the profession is due, in large part, to a desire to shun apparent association with those who, in the absurdity of their theory and the indiscriminateness of their practice, savor strongly of the charlatan. It would be better, however, to defeat these people with their own weapons used conscientiously than to ignore the good in their methods. At any rate our institutions of medical teaching should give full theoretical and clinical presentation of all physical methods which can be applied with advantage in the cure of disease.

SYPHILIS AND WORKMEN'S COMPENSATION.

A workman was injured by an accident in a sawmill at Traverse City, Mich. Under the workmen's compensation law payments were made for a period of nineteen weeks, when the employer refused to make further payments, upon the ground that the employee's continued disability was due to syphilis, which retarded the healing of the wound.

The Michigan Supreme Court decided that payments must be continued. Justice Person in the opinion said: "The consequences of the injury extend through the entire period, and so long as the incapacity of the employee for work results from the injury, it comes within the statute, even when prolonged by preexisting disease."

The opinion is published in the issue of *Public Health Reports* for September 29, 1916, page 2725.

ALCOHOL IN THE TROPICS.

F. Lucas Benham writes a spirited letter on this subject to the *Lancet* for September 23, 1916. "In a review of Woodruff's *Medical Ethnology* in the *Lancet* for June 10, 1916, p. 1172," he states, "your reviewer speaks of the author's 'surprising conclusion that those who drink alcohol in the tropics enjoy better health than abstainers.' I cannot see anything surprising in this. I should rather be surprised if the contrary were maintained. It is, as in other climates, a matter of *quale, quantum*, and *quando*. I should have thought that there was plenty of evidence in print of the wholesomeness of alcoholic beverages everywhere. To give a single instance of an active, hard working man in tropical Africa, let me refer your reviewer to Sutherland's *Adventures of an Elephant Hunter*, p. 169. I think that he will admit that there are, at any rate, exceptions to his own views. Nowadays, when there is so much bigoted antagonism to the use of alcoholic drinks, and it is often looked upon as a virtue to abstain, it is as well to take broader views and recognize the beneficence of their action, and to encourage the moderate and judicious use of them. What would the British nation have been without beer and wine, and what would it sink to if it gave them up entirely?"

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News Items

Rush Society Lectures.—The first lecture in the series for this year was given in Thomson Hall, College of Physicians, Philadelphia, Thursday evening, October 19th, by Dr. John Scott Haldane, of Oxford University, his subject being the New Physiology.

The Medical Club of Philadelphia held a reception on Friday evening, October 20th, at the Bellevue-Stratford Hotel, in honor of the following past presidents of the club: Dr. Hobart Amory Hare, Dr. James M. Anders, Dr. Edward E. Montgomery, Dr. L. Webster Fox, Dr. S. Lewis Ziegler, Dr. James C. Wilson, Dr. Samuel D. Risley, and Dr. McCluney Radcliffe.

Masonic Hospital at Elizabethtown, Pa.—Free Masons of Philadelphia have presented to Elizabethtown a hospital thoroughly modern in all its appointments. The building is of Gothic design, is built of granite with limestone trimming, and cost $60,000. This is the first of three buildings which the Philadelphia Free Masons are to give to Elizabethtown, the others to be connected with the hospital by corridors.

Surgical Experience in a Base Hospital.—At a meeting of the Northern Medical Association of Philadelphia, to be held on Friday evening, October 27th, Dr. Hermann Fischer, of New York, will deliver an address on Six Months' Surgical Experience in a German Base Hospital. The profession in general is invited to attend, and all physicians who have had experience in base hospital work are invited to discuss the subject.

Philadelphia Hospital to Be Rebuilt on Present Site.—Members of the medical board of the Philadelphia Hospital met on Monday, October 16th, and unanimously approved the plan of rebuilding the hospital on the present site at Thirty-fourth and Spruce Streets, instead of establishing a district hospital as had been suggested. There is now $1,000,000 available for expenditure on the hospital, and plans have been drawn for one large building.

State Medical Society of Wisconsin.—At the annual meeting of this society, held in Madison on October 4th and 5th, Dr. H. E. Dearholt, of Milwaukee, was elected president, and other officers were elected as follows: First vice-president, Dr. Joseph Smith, of Wausau; second vice-president, Dr. J. F. Pember, of Janesville; secretary, Dr. Rock Sylvester, of Waupun; treasurer, Dr. A. R. Hall, of Ripon. Next year's meeting will be held in Milwaukee.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, October 23d, North Branch of the County Medical Society, Section in General Medicine, College of Physicians; Tuesday, October 24th, West Philadelphia Medical Association; Thursday, October 26th, Pathological Society, Northwest Branch, County Medical Society; Friday, October 27th, Neurological Society, County Medical Society, South Branch of the County Medical Society; Medical Club (directors).

Surgeons Wanted in the War Zone of Europe.—Major Louis Livingston Seaman, M. D., president of the British War Relief Association, Inc., calls attention to the scarcity of medical men in some of the armies of Europe, notably on the eastern frontier. He says that he is prepared to guarantee full officer's pay and traveling expenses to one hundred and fifty competent surgeons for six months' service in Europe, or until the close of the war. Major Seaman will be glad to furnish all details regarding the work; his address is 247 Fifth Avenue, New York.

Medical Society of the United States.—The first meeting of this newly organized society was held in St. Louis, Mo., on October 3d, 4th, and 5th. The first day's business consisted of committee reports on organization and arrangement, with the address of the president, Dr. A. H. Ohmann-Dumesnil, and a scientific program in the afternoon. The scientific program was continued through October 4th and 5th, with a reception for the president-elect, Dr. Emory Lanphear.

Ether Day at the Massachusetts General Hospital.—The seventieth anniversary of the use of ether as an anesthetic during a surgical operation was observed on Monday, October 16th, in the new Moseley Memorial Building of the Massachusetts General Hospital, Boston. Dr. Henry P. Walcott, president of the corporation and chairman of the board of trustees of the hospital, opened the meeting, and addresses were delivered by Dr. Herbert B. Howard, superintendent of the Peter Ben Brigham Hospital, Boston, and Dr. Haven Emerson, health commissioner of New York.

The Wesley M. Carpenter Lecture.—The late Dr. John B. Murphy, of Chicago, had been invited to give this lecture, and at the time of his lamented and untimely death the address was nearly completed. Dr. Philip H. Kreuscher, the collaborator of Doctor Murphy, presented the work as the joint effort of himself and Doctor Murphy, at the New York Academy of Medicine, Thursday evening, October 19th. The subject of the lecture was a Clinical and Experimental Study of the Metastatic Arthritides, based upon eight hundred clinical cases, and illustrated with lantern slides. Dr. George E. Brewer, of New York, gave a brief appreciation of Doctor Murphy and his place in American surgery.

An Appeal for Help for Albania.—The Balkan Relief Fund, through its secretary, Mr. William Willard Howard, makes an urgent appeal for financial aid for Albania. Mr. Howard, who has just returned from his third trip to that country, says that already two hundred thousand women and children have died of starvation, and he believes that the entire population will die of famine and pestilence unless help is forthcoming. Mr. Howard is planning to return to Albania with a shipload of food. Arrangements have been made for the ship which is ready and waiting. Contributions in any amount, from the price of a loaf of bread upward, may be sent to the treasurer of the Balkan Relief Fund, the Reverend Frederick Lynch, 70 Fifth Avenue, New York.

Personal.—Dr. A. H. Roler, of Evanston, Ill., has been appointed assistant to the American Embassy at Berlin. His duties will be to observe the conditions of British prisoners in Germany and of German soldiers imprisoned in Russia.

Dr. S. R. Klein has been notified by the Illinois State Civil Service Commission that at the civil service examination held in Springfield, June 10, 1916, he received ninety-two per cent. of the possible 100 marks, and is therefore first on the eligible list of candidates for the position of State pathologist and biological chemist.

Dr. R. Tait MacKenzie, physical director of the University of Pennsylvania, who has been serving as a major in the Medical Corps of the British Army for the past year, returned to Philadelphia a few days ago and will resume his duties at the university.

Dr. A. W. Downs, formerly professor of physiology at the Medico-Chirurgical College, of Philadelphia, has been appointed professor of physiology at McGill University, Montreal, and head of the department.

Dr. George Bain Jackson has been appointed professor of anatomy at the State University of Iowa.

Dr. A. Gale Straw, of Manchester, N. H., returned home October 2d, after serving for nearly a year with the American Ambulance Corps in France.

Dr. Francis Leroy Satterlee, Jr., of New York, is suffering from the aftereffects of x ray burns received in 1897. Since early summer skin grafting has been tried at various times without success. Two weeks ago, the middle finger of the right hand was amputated, and on Monday, October 9th, another operation was performed. It is feared that it may be necessary to amputate the hand.

Health Insurance in Canada.—The National Liberal Party of Canada, led by Sir Wilfrid Laurier, has adopted a plank for compulsory health insurance of wage earners, maternity benefits to be included, as part of its program for the election following the conclusion of the war. Leading Canadian newspapers anticipate that in order to retain its popularity, the Conservative party will adopt a similar progressive program of social legislation. It is expected, therefore, that health insurance laws will be enacted in Canada in the early days of reconstruction. Compulsory health insurance of wage earners, based on joint contributions from the State, employers, and employees, has been established in Germany, Austria-Hungary, Russia, Great Britain, Holland, Norway, Rumania, and Serbia. In most of these countries both cash and medical benefits are provided for the insured workers, and effective campaigns for the prevention of sickness have become general.

Gifts and Bequests to Hospitals.—The Hospital for Deformities and Joint Diseases, New York, has received from Mr. Herbert Kauffman, of Pittsburgh, through Dr. H. C. Frauenthal, a gift of $1,000,000, to be used for the erection of a new building and for an endowment fund.

Among the gifts announced at the September meeting of the Yale Corporation is one of $10,000 for the Silliman Lectureship Fund, from the estate of the late Augustus E. Silliman.

The will of the late Eckley B. Coxe, Jr., of Philadelphia, contained public bequests amounting to $880,000, including one of $100,000 to the Children's Hospital, another of $10,000 to the same institution, one of $25,000 to the Pennsylvania Epileptic Hospital and Colony Farm, and one of $50,000 to the Orthopedic Hospital.

A contingent bequest of about $60,000 to endow the chair of bacteriology in Jefferson Medical College, Philadelphia, is contained in the will of the late Dr. James Y. Shearer, of Sinking Springs, Pa.

State Hospital Superintendents Hold Meeting.—The twenty-eighth semiannual meeting of the association of trustees and medical superintendents of the State and incorporated hospitals for the insane and feebleminded of Pennsylvania will be held on Monday and Tuesday, October 23d and 24th. Monday's session will be held in the Bulletin Building, Philadelphia, where the association will hold a conference with the Committee on Lunacy of the Board of Public Charities, and on Tuesday the association will meet at the State Hospital for the Insane in Norristown, Pa. Dr. Francis X. Dercum, professor of neurology at Jefferson Medical College, will read a paper entitled A Plea for the Intensive Treatment of Recent Cases, which will be discussed by Dr. John A. Lichty, of Pittsburgh, Dr. H. W. Mitchell, of Warren, and Dr. Frank Woodbury, of Philadelphia. Mr. William M. Donaldson, a trustee of the State Hospital at Harrisburg, is president of the association, Dr. H. W. Mitchell, superintendent of the State Hospital at Warren, is vice-president, and Dr. Henry J. Klopp, superintendent of the State Hospital at Allentown, is secretary.

Clinical Congress of Surgeons of North America.—The seventh annual session of this congress will be held in Philadelphia next week, with headquarters at the Bellevue-Stratford Hotel. The program of clinics and demonstrations for Monday will be posted on bulletin boards on Saturday afternoon, October 21st, and on each afternoon, beginning Monday, October 23d, the complete program of the next day's clinics will be announced in a similar manner, while a printed program will be issued each morning. While the chief attraction will be the clinics in the operating rooms of the thirty or more cooperating hospitals, a series of demonstrations, pathological, röntgenological, borderline subjects, etc., has been arranged, which it is believed will prove of great interest. On Monday evening, the presidential address will be delivered by Dr. Fred B. Lund, of Boston, and the new officers will be inaugurated, and on each of the three following evenings there will be general meetings. On Friday evening, there will be a public meeting under the combined auspices of the congress, the Philadelphia County Medical Society, and the Department of Public Health and Charities of Philadelphia.

Medical Society of the County of New York.—A stated meeting of the society will be held in Hosack Hall, New York Academy of Medicine, Monday evening, October 23d, at 8:15 o'clock. Dr. A. J. Rongy will read a paper on the Treatment of Contracted Pelves, with Special Reference to Pubiotomy, which will be discussed by Dr. George L. Brodhead, Dr. George W. Kosmak, Dr. Ralph Waldo, and Dr. J. Clifton Edgar. Dr. Louis Fischer will present notes on the Diagnosis of Abdominal Distention in Children and the subject will be discussed by Dr. Charles Gilmore Kerley, Dr. Henry Koplik, and Dr. Max Einhorn. Dr. Fred H. Albee will deliver an address on Experiences in Bone Surgery in France, which will be illustrated with motion pictures, and the subject will be discussed by Dr. H. H. M. Lyle, Dr. C. L. Gibson, and Dr. Samuel Lloyd. The 111th annual meeting of the society will be held on November 27th.

Army Medical Corps Examination.—The surgeon general of the United States Army announces that preliminary examination for the appointment of first lieutenants in the Army Medical Corps will be held early in January, 1917, at points to be hereafter designated. Full information concerning this examination can be procured upon application to the Surgeon General, United States Army, Washington, D. C. The essential requirements to secure an invitation are that the applicant shall be a citizen of the United States, between twenty-two and thirty-two years of age at the time of receiving a commission in the medical corps, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, of good moral character and habits, and shall have had at least one year's hospital training as an intern after graduation. Applicants who are serving this postgraduate internship and can complete it before October 1, 1917, may take the January examination. In order to perfect all necessary arrangements for the examination, applications should be forwarded without delay to the surgeon general of the army. There are at present 228 vacancies in the Medical Corps of the Army.

Case Fatality and Crippling from Poliomyelitis.—A report issued by the Department of Health of the City of New York shows that the total number of cases of suspected poliomyelitis put under quarantine by the board up to October 11th, was 9,177; of these 250 were found, after careful clinical study at the hospital, not to be cases of poliomyelitis, and were deducted, leaving a total of 8,927 true cases. The total number of deaths recorded by the department was 2,343, a fatality of 26.24 per cent.

Cases may properly be divided into three classes, as follows: Those treated in the hospitals of the department of health, 4,474; total number of deaths, 653; case fatality, 14.59 per cent. Cases admitted to twenty-seven other hospitals in the city, 2,663; total number of deaths, 387; case fatality, 14.53 per cent. Cases in the home, 2,040, which may properly be subdivided into: Those left at home because home conditions were adequate for isolation, those which were too severe to be removed, and those not reported to the department until the death certificate was presented. Total number of deaths, 1,303; case fatality, 63.87 per cent. The high percentage of fatality in this group is mainly due to the fact that the major portion of the cases comprised in it were of the severest type.

From August 21st to October 13th there were discharged from the hospitals of the department 2,058 cases; of these 66 per cent. showed evidences of paralysis of some degree, 18 per cent. showed that paralysis had wholly disappeared, 15 per cent had not shown paralysis at any time in the course of the disease. Of 2,715 cases, followed up carefully in the homes, it has been found that 1,885 have a serious paralysis of one or both lower limbs and are unable to walk; 530 more were partially paralyzed in the lower limbs, although still able to walk: 273 had one or both arms totally paralyzed. Judging from the cases already visited by the agents of the relief societies operating under the Committee on Aftercare, between seventy-five and eighty per cent. of the cases with persistent paralysis will fall in the class of people who usually obtain medical services free.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-first Communication.

VALVULAR DISEASE OF THE HEART.

In the consideration of heart affections space will not be taken for a discussion of prophylactic, dietetic, or hygienic measures, extremely important though all these are; attention will be paid, however, to the medicinal measures advocated, and to the pharmacological basis for such advocacy.

In aortic incompetency there is a relative innutrition of the tissues of the whole body, including, of course, the heart itself. In such a condition some measure is essential which will increase the volume of blood thrown into the arterial system per unit of ventricular contraction. Such a measure is the administration of digitalis. This drug adds such vigor to the contractions of the heart that an increased volume of blood is thrown into the aorta and its tributaries at each beat of the heart and is thrown forward with much greater vigor, so that there results a more nearly adequate distribution of the blood throughout the body.

Some objection has been raised to the use of digitalis in aortic valvular incompetency on the ground that the lengthened diastole permits increased regurgitation; but this objection involves a lack of recognition of two important points. The first is that the increased length of the diastole is possibly more apparent than real. The pause between two systoles is somewhat lengthened by digitalis, but a large part of this pause is occupied by delayed relaxation of the ventricles. Systole is more complete under the action of digitalis; and though diastole is also more complete, its relative time is actually briefer, owing to the less prompt relaxation from systole; in other words, diastole occupies a smaller percentage of the time involved in a cardiac cycle than before the administration of the drug. As a result, though there may be an actual slowing of the heart under digitalis (about 0.6 per cent., in my series of experiments with the normal human being), there is probably little additional opportunity for regurgitation from the aorta because of this factor.

A second point of advantage gained by the action of digitalis, which is of importance in regard to possible regurgitation, is the increased force given to ventricular contraction by this drug. If the elasticity of the arteries is not seriously impaired, the rebound from this ventricular thrust must inevitably tend to advance more fully the blood stream in the arterial tree, thereby limiting to a considerable degree the possibility of aortic reflux. These two factors warrant the use of digitalis in aortic incompetency. Then there is the additional consideration that the increased nutrition provided for the heart muscle itself renders available greater potential energy for the systolic effort.

In mitral incompetence there is increasing interference with the venous circulation, pulmonic when the initial lesion is sinistral, and systemic if the right side is primarily involved, although ultimately so in either lesion. Under treatment with digitalis there is usually a gratifying improvement which is explainable pharmacologically as follows: Digitalis acts on the whole musculature of the heart, as is shown by the beneficial action of the drug in auricular fibrillation; therefore we may expect an augmented auricular contraction in mitral incompetency after administration of digitalis, with a possible tendency toward delayed relaxation. Then, if we accept the tentative hypothesis that the wave of contraction affects the ventricle in the papillary muscles first, we should expect that a better approximation of the leaflets of the mitral valve would ensue from digitalis stimulation, provided there is no actual stenosis. The peculiar arrangement of the deeper sinospiral fibres indicates that in the more vigorous contractions of the digitalis heart, the major force of the blood stream tends to be diverted even more directly into the aortic antrum and thus somewhat more away from the region of the mitral orifice, thereby lessening the tendency to mitral reflux.

(*To be continued.*)

Complement Fixation in Acne vulgaris.—Albert Strickler, John A. Kolmer, and Jay F. Schamberg (*Journal of Cutaneous Diseases,* March, 1916) studied the question of etiology in acne vulgaris by means of the complement fixation test. A review of the literature of this disease shows that the causative factor in this affection is not as yet definitely determined. The various organisms employed as antigens in this study were Bacillus coli and the staphylococcus isolated respectively from the feces and the lesions of the patients with acne. Other antigens employed were the syphilitic antigens, staphylococci from abscesses, and colon bacilli isolated from the feces of children who were free from acne. Not only were acne cases tested, but also the blood in various nonacneiform skin diseases, and also patients without any skin affection. In this study the serums of 128 patients were used: of this number fifty-seven were patients with acne vulgaris, nine with acne rosacea, ten with seborrheic dermatitis, twenty-six with nonacneiform skin affections, and twenty-six from syphilis and other diseases, but free from cutaneous affections. In acne vulgaris, forty-eight, or 84.2 per cent., showed positive fixation with B. acne antigen: with the antigen of the staphylococcus derived from acne lesions the proportion of fixation was sixty-four per cent.; the same proportion occurred with the antigen of staphylococci from abscesses. With the antigen of the colon derived from the feces of patients suffering with acne, the proportion of positive fixation was 63.1 per cent., while the control colon gave only thirty-two per cent. positive fixation. These results would seem to indicate an activity on the part of the colon bacilli in the pathogenesis of some cases of acne vulgaris. In acne rosacea, of which disease nine serums were tested, six, or 66.6 per cent., reacted positively with the Bacillus acne antigen, forty per cent. gave positive fixation with the staphylococcus, and fifty-two per cent. gave positive fixation with the colon antigen. In seborrheic dermatitis ten serums were studied; of this number three gave positive results with Bacillus acne, twenty-five per cent. gave positive results with staphylococcus. With the antigen of colon bacilli from acne patients, complement fixation occurred with forty per cent. of the serums, and in eleven per cent. with the antigen of colon bacilli of normal patients.

Nonacneiform Skin Diseases.—Twenty-six persons suffering from different forms of eczema, furunculosis, lupus, etc., were studied. In squamous eczema, the complement fixation tests were negative; in vesicular eczema, a number of positive results were obtained especially with the antigen of the cocci and Bacillus acne. These reactions, with those observed in acne rosacea and seborrheic dermatitis, may be interpreted as indicating that the staphylococcus and Bacillus acne of the skin exert a pathogenic influence in skin diseases other than acne vulgaris, although not intimately concerned in the latter. In syphilis and noneruptive diseases, the serums did not absorb complement with any of the bacterial antigens employed. This study (*Ibidem,* March, 1916) would seem to show that Bacillus acne is not specific for acne, but may be a normal inhabitant of the sebaceous follicles, capable of assuming pathogenic powers under favorable conditions in other skin diseases. The complement fixation reactions also tended to show the activity of the colon bacilli in certain skin diseases, particularly acne vulgaris, acne rosacea and seborrheic dermatitis. Just what role the colon bacillus plays in the pathogenesis of acne vulgaris no one can tell, but that it is a factor in a large group of cases seems to be borne out by serological findings.

A New Remedy for Syphilis, Luargol, or "102."—N. S. Bonard (*Lancet,* September 23, 1916) tells how, as the result of extensive investigations, Danysz of the Paris Pasteur Institute, produced a compound of dioxydiaminoarsenobenzol containing silver bromide and antimony. The silver increased the antiseptic properties of the original arsenical and the antimony was introduced for its spirochetocidal and trypanocidal properties. Animal experiments proved the new preparation to be ten times as active as arsenobenzol against trypanosomiasis and only slightly less than ten times as active against syphilis in rabbits. It was shown to have the further great advantage of having its therapeutic dose far below its toxic one. It was tried in man and was proved to be far superior to salvarsan or neosalvarsan in the treatment of syphilis. Bonard investigated the action of this new preparation in 100 cases of human syphilis in its different stages and obtained the best results in all cases. Thus, he found that it acted more rapidly than salvarsan or neosalvarsan, or any of the other organic arsenicals and failed to cause serious complications or reactions in any of the cases. It was given in solution in distilled water and sodium hydrate, either in concentrated solution or diluted with normal saline, and was injected intravenously in the same way as the other arsenicals. In syphilis without nervous complications the doses for men should be 0.15, 0.20, 0.25, 0.30, 0.30, 0.30 gram repeated at intervals of two to four days; for women the dose should be 0.10 gram increased as above to a maximum of 0.25 gram, and given at the same intervals. The injection should be made very slowly if the concentrated solution is used, and fairly so when using the diluted solution. The contraindications for its use are the same as for salvarsan or other arsenical, but it can be given in any case, whatever the conditions, if the initial dose is small enough and the increases are gradual. The best results were obtained from the administration of small repeated doses as outlined. Following the first dose slight fever without serious gastrointestinal symptoms or headache was often encountered. The patient should be prepared for treatment just the same as if salvarsan were to be given. Recently a sodium salt of the preparation, readily soluble in distilled water, has been prepared and is more convenient for clinical use. With this, as with all other organic arsenic preparations, we occasionally encounter a reaction with alarming symptoms of congestion of the face, dyspnea, urticaria, weakness of the extremities, convulsions, and headache. This reaction is never dangerous and is due to the formation of a fine precipitate in the vessels. It seems to be due to the condition of the patient's blood in respect to the several mineral salts present. It cannot yet be stated that luargol is the best remedy for syphilis, but it certainly is an advance over all other methods.

Syphilis of the Nervous System.—John A. Fordyce (*Medical Record,* September 30, 1916) considers that the best procedure is to give provocative injection of salvarsan to patients with a negative blood and a positive spinal fluid, and take the Wassermann at stated intervals. If the Wassermann remains negative, subarachnoid treatments may be begun at once. When both blood and fluid are positive, two or more injections of mercury should precede the intravenous administration of salvarsan, and after two or three doses of the latter the intraspinal injections are begun, supplemented by intravenous injections. In paresis, intraspinal injections are best begun after the first intravenous treatment, while the intervals between doses are regulated by the patient's reaction. Where subdural injections are well borne, they may be given in a series of four to six, one to two weeks apart, with a rest period of four to six weeks before giving another course. Ogilvie's modification of salvarsanized serum is now used by Fordyce, in which method salvarsan is added directly to the blood serum. Blood serum removed indifferently from patients acts as well as autogenous serum, and the most important step in the technic, next to absolute asepsis, is the use of a nearly neutral salvarsan solution. The blood is removed from an arm vein and centrifugated, the serum is pipetted off and again centrifugated to secure complete removal of red cells. To eight to ten c. c. of this serum 0.05 to 0.5 mgm. salvarsan is added, and the mixture is incubated at 37° C. for thirty minutes. General paresis patients tolerate larger doses than those with tabes or other forms of cerebrospinal syphilis. The initial dose for tabetics should be 0.05 to 0.1 mgm., depending on the bladder involvement and the amount of pain present, and the quantity is gradually increased up to 0.2 to 0.3 mgm., if the patient will tolerate it. Activation of the lesions after the first injection is not a contraindication, but calls for care. There seems to be no limit to the number of injections that can be given. Success depends largely upon whether the morbid process is an active meningeal inflammation or a degeneration of essential nerve structures. Active inflammation with a strongly positive fluid gives a hopeful outlook, while degeneration with atrophy and sclerosis, with negative or weakly positive fluid, does not present so encouraging a prognosis. All patients at the end of the first year of infection should have a spinal puncture, whether or not they have any signs of the disease. If the fluid is negative to all tests, they may be assured that there is little danger of later development, whereas a positive colloidal gold test with persistent Wassermann in high dilutions, points to an impending paresis.

Sugar Content of the Blood in Diseases of the Skin.—Hans J. Schwartz, Walter James Heimann, and Harry C. Mahuken (*Journal of Cutaneous Diseases,* March, 1916) discuss the question of hyperglycemia in general, and show that in normal people sugar is present in the blood varying from 0.07 to 0.11 per cent. A definite increase appears soon after meals, and no blood test should be taken until three and one half hours after a meal. The method the authors employed was the micro method of Bang. A large number of different dermatoses were considered, and the diseases divide themselves broadly into two classes. First, those that show a marked increase, and second those that show no increase. In the first group are included acne, seborrhea and sycosis; and in the second group practically all the remaining dermatoses. Sixty cases of acne, seborrhea and sycosis were studied; of this number twenty-six showed excessive sugar and twenty-four did not. There were thirty cases of acne, twenty-three of the simpler type and seven of the indurated: of the former, seven showed marked increase, while of the latter, not one was normal. It has been shown that there is an increased sugar blood content, in association with or preceding the menstrual flow, which is transitory. This fact is of interest, as acne commonly becomes aggravated during the menstrual period. Twenty-four cases of seborrhea were studied, of which ten were normal, four on the border line, and ten showed a marked hyperglycemia. There were five patients suffering with sycosis vulgaris: of this number one was normal, and four showed a hyperglycemia. A summary shows that of patients with seborrhea and pilosebaceous disease forty-three per cent. had hyperglycemia. Of the other dermatoses, eighty-nine cases were examined, and but fifteen showed a high sugar content. There appears to be a force at work causing this association between diseases of the pilosebaceous follicles and an excess of blood sugar.

Treatment of Hemorrhage with Normal Blood Serum.—H. H. Forbes (*Annals of Otology, Rhinology, and Laryngology,* March 1916) states that an important point in operative work is that the prophylactic value of serotherapy is obtained twenty-four to forty-eight hours after the injection, and persists for at least three weeks, sometimes lasting two or three months, when the blood will have been found to have again the former anomalies of coagulation. In obtaining the serum, it has been observed that the specimen secured by centrifugating the blood is not as active as when allowed to clot in the test tube. Antitoxic serum has been used in cases with beneficial results. Human serum acts to advantage by protecting against anaphylaxis, no matter in what dose it is employed. However, direct transfusion from one person to another is fraught with certain dangers; especially is it desirable to ascertain that the serum of the giver does not agglutinate the red corpuscles of the recipient, or vice versa. Horse serum, which can be obtained in large amounts, seems to yield more uniformly satisfactory results than any other animal serum. Beef serum has a tendency to induce anaphylactic symptoms, i. e., chills and fever, cyanosis, vomiting, headache. To obtain full therapeutic action, serum older than two days should not be used. Precipitated blood serum in the form of powder has yielded good results in hemorrhages after tonsillectomies and turbinectomies.

Prophylaxis and Curative Treatment of Gastric Ulcer.—W. W. Hamburger and B. Halpern (*Archives of Internal Medicine,* August, 1916) find that a 2.5 per cent. solution of sodium chloride causes complete arrest of the action of pepsin; a 0.25 per cent. solution, little, if any, inhibition, and a 0.1 per cent. solution, actual acceleration of its action. Hydrochloric acid itself, while favoring peptic activity in 0.1 per cent. solution, almost completely inhibits it at 0.7 to 0.9 per cent. The chlorides of potassium, barium, ammonium, etc., act like sodium chloride. Certain other salts act in a much lower concentration than the chlorides. Thus, disodium hydrogen phosphate causes partial peptic inhibition in a one in 2,000 dilution, and complete inhibition in a one in 200 dilution. This is probably due to the fact that this salt is slightly alkaline, as pepsin is extremely sensitive to alkalies, and stronger alkalies such as sodium carbonate or hydrate, magnesium carbonate, and calcium hydrate act even more strongly on pepsin than sodium phosphate. It is suggested that sodium chloride or phosphate be used in the treatment of gastric diseases in which the control of peptic digestion may be desired, e. g., to promote healing in chronic ulcer. They may also be used in the prevention of gastric and duodenal ulcer. To control peptic digestion completely and permanently, however, the total acidity of the stomach must be completely neutralized, as hydrochloric acid protects pepsin from the inactivating effect of salts. For this purpose sodium carbonate, magnesium carbonate, and calcium hydroxide afford the maximum neutralizing value, and should be used in place of or in addition to the alkalies generally employed in gastrointestinal therapeutics.

Eusol in Septic Endocarditis.—J. Allman Powell (*Brit. Med. Jour.*, September 23, 1916) records the case of a young girl moribund from what was clinically a subacute, septic endocarditis secondary to erysipelas. Stock vaccine twice caused an abrupt fall in the fever but failed to affect the progress of the disease. One injection of forty mils of eusol was given intravenously, preceded by 300 mils of normal saline solution. The improvement was manifest in a few hours and went on to complete recovery without a repetition of the treatment. The patient has remained well for the five months since the treatment.

Gas Gangrene.—Cuthbert Wallace (*Brit. Med. Jour.*, Sept. 16, 1916) regards as the most important measures those directed toward the improvement of the circulation through the infected parts. These include the avoidance of tight bandages, the removal of hematomas and effusions, and the suture rather than ligature of the injured vessels. Amputation of an extremity should never be performed for crepitation in the subcutaneous tissues alone. When, however, the main blood supply to a portion of an extremity has been cut off the indication is for immediate amputation below the vascular lesion. In ordinary cases excellent results may be secured by free incisions combined with the complete ablation of all infected muscles.

Diarsenol in Tertian Malaria.—Frank C. Neff (*Jour. A. M. A.*, October 7, 1916) reports his experience of five cases of chronic, recurrent tertian malaria in children. All of the cases had proved wholly refractory to treatment with quinine. Diarsenol was given intravenously in doses of 0.1 to 0.4 gram. In all cases the initial dose of 0.1 to 0.2 gram controlled the symptoms and freed the blood from parasites. In two no further doses were given, as the patients were removed from hospital. In the others second or third doses were given as the parasites returned to the peripheral blood and paroxysms recurred after several weeks. All three, however, were permanently cured by the drug after two or three doses in all had been given. These results agree with those of some other recent writers in showing the effectiveness of arsenobenzol in malaria with quininefast parasites.

Perforated Celluloid as a Wound Dressing.—S. R. Douglas (*Lancet*, September 23, 1916) reports that in cases with large wounds and the loss of extensive areas of skin there is a great tendency for the ordinary dressings to adhere to the granulations and to cause great pain to the patient when they are changed, as well as to damage the healing tissues and delay recovery. This may be avoided by the use of a sheet of celluloid, perforated with holes one and a half mm. in diameter. Such sheets are readily obtainable in commerce. They are stiff, but may be softened and made perfectly pliable by soaking for a few hours in a five per cent. phenol solution. They are then applied to the surface of the wound, to which they will conform perfectly. When they harden they act as splints as well as preventing the adhesion of dressings; they reduce pain, provide for drainage, and when removed leave a healthy granulating surface which heals promptly.

Ventricular Premature Systole.—J. E. Greiwe (*Jour. A. M. A.*, October 7, 1916) points out that this form of cardiac irregularity is of exocardiac origin and, so far as the heart is concerned, is a functional disorder. Its commonest cause is some form of intoxication and it is frequently found associated with such conditions as constipation, intestinal stasis and toxemia, gallbladder disease, infections of the teeth, tonsils, nasal accessory sinuses and the genital tract, and with renal disease. Its treatment should, therefore, comprise the discovery and elimination of the cause in each case. Where such a plan does not give full relief and in cases in which no cause can be found, the condition can often be much improved by sufficient exercise out of doors. In still others resort may be had to digitalis in moderate doses to depress the activity of the vagus. It should be borne in mind, however, that digitalis should not be prescribed from the outset merely because a patient has extrasystoles.

Treatment of Toxemia of Dementia præcox.—Bayard Holmes (*Western Med. Review*, September, 1916) makes the suggestion based upon the study of this condition in a group of cases, that the putrefactive amines developed in the intestine by bacterial action play an important etiological role in dementia præcox. He therefore advocates the addition to the diet of foods and beverages which contain calcium and magnesium to combat the spasmophilic condition, and further, that the formation and absorption of the amines in the cecum be prevented by cecal lavage through an appendicostomy. This lavage should be given at bedtime and six hours after the last meal of the day. The lavage solution should consist of half a cake of dry yeast, emulsified in water and strained through gauze, fifteen grams of glucose, and water to make four litres. The fluid should be introduced at 104° F., and the patient should be encouraged to evacuate during the lavage each time the rectum fills. The yeast is used with the idea of deaminizing the toxic bodies and of preventing their formation.

Temporal and Subconjunctival Medication.—Robert B. Sellers (*Texas State Journal of Medicine*, September, 1916) advises the use of subconjunctival injections in certain ulcers with deep craterlike bases, or in serpigenous ulcers. In any acute infection following cataract operation this form of treatment is also indicated. Mercury cyanide, one in 5,000 to one in 4,000, has been used with success subconjunctivally in interstitial keratitis. In penetrating wounds of the cornea he recommends a solution of one in 1,500 mercury cyanide injected deeply beneath the conjunctiva at the outer canthus. The eye should first be cocainized and the needle inserted at an acute angle until it strikes the orbital plane, when the course is changed and the needle passed almost straight back into the deep tissues of the orbit. When giving injections of salt solution the strength should vary from two per cent. to five per cent. and the dose should be about fifteen minims. Two cases of toxic amblyopia due to alcohol and tobacco are reported, in which both optic nerves were white and the sight practically gone. One thirtieth of a grain of strychnine nitrate was injected once daily into the temporal muscles, restoring vision to normal in four weeks.

Complete Functional Restoration after Section of the External Popliteal Nerve.—Dujarier Bourguignon, and Perpère, at a meeting of the Société de chirurgie, Paris (*Presse médicale,* August 10, 1916), reported a case of complete section of this nerve due to a bullet wound, with additional incomplete paralysis of the internal popliteal, in which freshening of the neuromatous nerve ends seven months after the injury and suture with linen was followed in five months by reappearance of galvanic excitability, beginning return of voluntary movements ten months later, and later gradual complete restoration of function.

Treatment of Infantile Convulsions.—Clifford C. Grulee (*Texas State Journal of Medicine,* October, 1916) uses an anesthetic in extreme cases to control the convulsions. He prefers chloral hydrate given in an initial dose of from two to five grains, followed by one to two grains every four hours. It is given well diluted, and into the rectum, the buttocks being held together to prevent expulsion. Fifteen grains of calcium lactate given by mouth every four hours prove beneficial. The diet should consist of foods which are low in sodium and potassium salts. To promote the absorption and retention of calcium, it is well to give codliver oil and phosphorus, one half teaspoonful to one teaspoonful three times a day.

End Results in Cases Operated in for Salpingitis.—E. MacD. Stanton (*American Journal of Obstetrics,* June, 1916) discusses the results obtained in one hundred cases operated in by himself for pelvic peritonitis of tubal origin. From his experiences he deduces that the woman with a pelvic infection should be given a fair chance to recover without operation. Many cases clear up entirely if left alone. As a rule, therefore, the first attack should be treated conservatively until it is proved that convalescence is not going to be reasonably prompt. Recurrent cases, however, especially if there have been a number of attacks, should be subjected to operation at the first safe opportunity; likewise, patients who after one definite attack, have never had reasonably complete relief. On six of the author's patients, with the onset sudden and severe and the diagnosis uncertain, an operation was performed within thirty-six hours; acute purulent salpingitis and early peritonitis were found, and all recovered. Since, however, under rest in bed, with immobilization of the affected region, the temperature will usually reach normal about the eighth or ninth day, it is preferable in the average case to defer operation until a relative immunity against the infecting organism has been established. If, with a normal temperature, the general state continues to improve, the operation should, in fact, be deferred as long as absorption of the inflammatory exudates persists. In abscess cases, there usually develops after several days an afternoon fever of septic type. Here Stanton operates at once, and has had excellent results even when simple drainage of abscess cavities was alone justifiable. As for the method of operation, the author prefers the abdominal to the vaginal route. By the former route the offending tubes may in most cases be safely removed, if the indication exists. Yet the chances of an excellent result after simple but thorough drainage, as advised by Fenger, are so good that a patient's life should never be seriously endangered by attempts to do a complete operation. A point to be remembered, moreover, is that a unilateral salpingectomy done previous to infection of the other tube is usually followed by infection of this tube. Among forty-one drained cases, the results could in no way have been bettered by vaginal instead of abdominal drainage. Regarding preservation of the ovaries Stanton, viewing the general as well as the local results of their removal, is inclined toward conservatism and taking chances on the necessity of a second operation. He also argues against hysterectomy, which, beside the additional slight operative risk, may result in a vaginal atrophy or vaginitis far more troublesome than any uterine complications the patients are otherwise likely to have.

Treatment of Acute Anterior Poliomyelitis.—Louis Fischer (*American Medicine,* September, 1916) reports a series of twenty-five cases, only one of which was fatal. These cases were treated with intraspinal injections of convalescent human serum. The dose administered was from ten to fifteen c. c. Before injecting the serum about fifteen to thirty c. c. of spinal fluid was withdrawn. In cases where the fluid was under great pressure from forty-five to sixty c. c. were taken off. One injection of the serum usually proved sufficient, although the dose was at times repeated after twenty-four hours. The injections were followed by severe febrile reactions. Nausea and vomiting may develop. Excellent results were obtained with intraspinal salt irrigations at a temperature of 105° to 106° F. In order to induce sleep, three to five grains of chloral hydrate should be used.

Treatment of Genital Tuberculosis in the Male.—John H. Cunningham, Jr. (*Surgery, Gynecology, and Obstetrics,* October, 1916) concludes: 1. Post mortem and clinical findings show that in the majority of cases of genital tuberculosis, active tuberculosis exists elsewhere in the body, the genitourinary tuberculosis being a secondary infection. 2. In tuberculous epididymitis, tuberculosis of the vesicles and prostate usually exists on the corresponding side, whether or not the condition can be demonstrated by physical examination. 3. In cases of genital tuberculosis there is often tuberculosis of the bladder and kidney, and a cystoscopic examination with catheterization of the ureter should be made in each case, before the possibility of such associated infection can be eliminated. 4. The best treatment for the local condition, in most instances, is to remove the scrotal focus by epididymectomy or by castration; this should be followed by injecting the vas deferens with a dram of crude carbolic acid, in the hope of eradicating the disease from the genital tract. 5. The destruction of the local focus by this procedure is but the first step in the process of immunizing the patient against fresh outbreaks of the disease. Hygienic measures and the use of tuberculin should be used to aid further, in a rational way the immunizing power of the body against remaining lesions.

Miscellany from Home and Foreign Journals

Blood Cultures in Epilepsy.—William B. Wherry and Wade W. Oliver (*Jour. A. M. A.*, October 7, 1916) state that C. A. L. Reed described an organism obtained in cultures from the blood of epileptics and believed this organism to be the cause of the disease. He named it Bacillus epilepticus. Wherry and Oliver made repeated attempts to cultivate this, or other organisms from five of Reed's cases, but entirely without success. They also examined one of Reed's cultures and found it to belong, apparently, to the Bacillus subtilis group. H. Caro and D. A. Thom also report (same issue of the *Jour. A. M. A.*) on their inability to isolate any organism in 160 blood cultures from seventy epileptics representing all stages of the disease. They cite, further, a personal communication from M. M. Canavan, who also had uniformly negative results in an exhaustive bacteriological study of seventeen cases of epileptics in which there was post mortem examination.

Bronchiectasis of the Upper Lobes.—Thomas McCrae and Elmer H. Funk (*Jour. A. M. A.*, Oct. 7, 1916) state that, owing to inadequate differentiation between tuberculosis and bronchiectatic lesions, the opinion prevails that the apices and upper lobes are uncommon sites for bronchiectasis. This site for the disease is probably, however, more common than is usually believed, and the authors report five post mortem examinations in which it occurred. In four it was associated with tuberculosis and in all there was marked thickening and adhesion of the pleura, which is believed by the authors to be one of the important elements in the etiology of bronchiectasis. None of the patients showed evidence of syphilis. The clinical features of the disease should make its diagnosis possible even in apical cases. There is typically a long standing chronic cough, considerable expectoration which does not contain the tubercle bacilli, and constitutional disturbance is not marked. Röntgenographic study may aid in diagnosis and should always be undertaken.

Cardiac Disturbances in Left Sided Intercostal Neuralgia.—C. Lian, at a meeting of the surgeons of the Fourth French Army (*Presse médicale*, August 7, 1916), directed special attention to this condition, of which he has recently seen four cases. In the more severe forms, the cardiac disturbances are such as to constitute actual attacks of angina pectoris. In the less severe, there occur paroxysms of palpitation, or of dyspnea and palpitation, following physical exertions and at times accompanied by a dizzy malaise or syncopal tendencies. All these disturbances appear coincidently with a left sided intercostal neuralgia. Upon examination, the characteristic sensitive spots are noted, together with a permanent or orthostatic slight cardiac acceleration, or, at least, a very marked and persistent acceleration upon exertion. This symptom complex arises through the same pathogenic mechanism as peripheral pains in angina pectoris, but the reflex phenomena are inverted, a morbid state of the intercostal nerves or dorsal posterior nerve roots reacting, through the rami communicantes, on the sympathetic fibres of the cardiac plexus. According to its situation, indeed, intercostal neuralgia may be complicated by other visceral disturbances—esophageal, gastric, or intestinal. Differentiation of these cases from instances of thoracic pain complicating certain cardiac diseases is based upon observation, in the former, of the characteristic points of tenderness in intercostal neuralgia, of involvement of one or more of the uppermost left intercostal nerves, of the sudden and simultaneous onset of the neuralgia and visceral disturbances and of a marked hyperesthesia to pin pricking in the zone of neuralgia. The area of hyperesthesia exceeds the precordia in vertical breadth anteriorly, but narrows down low in the axilla and posteriorly, finally passing into another broad area adjoining the spinal column and corresponding in situation and vertical breadth with the anterior area. The hyperesthesia extends beyond the midline for one or two cm. both anteriorly and posteriorly. The diagnosis is confirmed by treatment with analgesics and rest, the beneficial effects on the neuralgia and cardiac disturbances proving simultaneous. After three weeks to a month the patient may resume physical activity, though permanent disappearance of the symptoms may not occur for several months.

Etiology of Beriberi.—W. M. McDonald (*Journal of Tropical Medicine and Hygiene*, August 1, 1916) points out that the rice theory of beri beri is by no means applicable to all cases and outbreaks of the disease. In various outbreaks in the Malay Peninsula and Aden there was no change in the diet preceding the onset of the epidemics, and in a series of cases among prisoners at St. Helena the diet did not include rice. From a comprehensive study of the circumstances under which the disease occurs, the author has been led strongly to believe that beri beri is a specific infectious disease, transmission of which is dependent in some way on overcrowded sleeping accommodations. The disease experimentally produced in men and animals by subjection to a special diet is not true beri beri, but a multiple neuritis due to some deficiency in diet and simulating the true disease. Crowded sleeping accommodation is the only factor common to all recorded outbreaks of beri beri. In the Malay States all the tin mines have at some time been scourged with beri beri, the miners sleeping huddled together, whereas among the agricultural laborers there the disease is extremely rare. Beri beri is very common among sailors, who sleep in cramped quarters, and among coolies inhabiting common lodging houses. The decrease in beri beri in the Japanese army and navy, attributed to changed diet, coincides with hygienic improvements particularly in sleeping accommodation. The small incidence of the disease in women and in children and old people, which does not fit in with the rice theory, is explained by the fact that these do not work under crowded conditions. In an outbreak in a group of 580 men encamped near Aden an increase in the number of cases at intervals of about two months pointed to an infectious disease with an incubation period of about that duration. The outbreak ceased after the institution of an isolation camp and the provision of larger tents on a larger area so as to prevent overcrowding. The evidence appears to point to a protozoal origin of beri beri, and to the bedbug or body louse as the agent of transmission. That attempts to transmit the disease by these insects have failed may be due to the necessity of the parasite undergoing a developmental phase in the insect host, as occurs in the mosquito in the case of malaria. As in yellow fever, the blood in beri beri may contain the infective organism only during a certain stage of the disease. At all events, improvement in housing and sleeping accommodations should be considered an especially important prophylactic measure where beri beri is endemic or epidemic.

Relation of Arteriosclerosis to Epithelial Malignancy.—Frank Warner (*Surgery, Gynecology, and Obstetrics,* October, 1916) concludes: 1. Of the 206 cases of carcinoma of all organs and regions examined, 105 showed arterial obstructive changes. This gives us substantially an equal division between endarteritis and normal vessels. 2. Fibrotic changes were present in 118 cases, or fifty-seven per cent. 3. Lymphocytic infiltration was present in eighty-five cases, or fifty-seven per cent. 4. Endarteritis and the anatomical changes of old age cannot be looked upon as a constant factor in the production of cancer as shown by the fact that normal vessels were present in almost half the cases. 5. The same holds true of fibrosis or even acellular connective tissue without fibrosis. 6. Lymphocytic infiltration, while present in less than one half of the cases, plays a role that is protective rather than etiological. 7. Certain biochemical factors of a local or internal or general type are probably causative of some cases of cancer.

Syphilis in the Southern Negro.—H. L. McNeil (*Jour. A. M. A.,* September 30, 1916) took routine Wassermann and luetin reactions in a large series of adult hospital cases without selection in order to determine the prevalence of syphilitic infection in the Southern negro. The results showed positive reactions to one or both of the tests in forty-two per cent. Since hospital cases are known to show a higher incidence of syphilis than is found in the healthy population as a whole, the tests were made also on 200 healthy negroes with the result that there were twenty-eight per cent. of positive reactions. The tests were also made on a group of healthy negro children and only ten per cent. of the cases reacted positively, showing that a large proportion of the adult syphilis was acquired. A similar study of white persons of a corresponding social scale showed about the same proportion of positive reactions as was found among the negroes. The cases studied in hospital were further analyzed, with the result that several diseases were found to be so commonly associated with syphilis, that the latter must be considered as playing a causal role. Such diseases included aortic aneurysm, aortic incompetency, a mild form of bone and joint pain, and fistula or stricture of the rectum.

Fractional Examination of the Stomach Contents.—Elbridge J. Best (*Jour. A. M. A.,* October 7, 1916) follows his critical review of the more acceptable methods of gastric analysis in the light of recent advances in our knowledge of the physiology of the gastric secretion, by pointing out the inadequacy of making a single extraction of a test meal at a given interval after it was taken. Such a plan fails to reveal the condition of gastric function. This, and other defects, can be overcome by the following technic. An Ewald meal of two slices of bread without crusts and two glasses of water containing twenty-five drops of a one per cent. solution of phenolphthalein is given on an empty stomach. Within half an hour a Rehfuss tube is passed and allowed to remain during the entire time of the examination. Samples of three to five mils of gastric contents are withdrawn at intervals of half, one, one and a half, two, and more hours after taking the meal. A syringe is used to remove the samples, and following their removal air is blown into the stomach to insure emptying of the tube. Each sample is titrated for free hydrochloric acid and total acid by the Töpfer method, and the last one is also alkalinized to test for the presence of phenolphthalein, which gives an index of the emptying capacity of the stomach. Such a plan is simple and gives a complete picture of the curve of gastric activity and the regurgitation from the duodenum. The ferments may also be determined if desired.

Notes on Radiography of the Gallbladder.—Nel MacLeod (*Archives of Radiology and Electrotherapy,* September, 1916) gives a review of twenty-nine cases in which the gallbladder when x rayed showed that seventeen presented abnormal shadows. Of these, nineteen were operated in and the interpretation was confirmed. Of the twelve cases with negative reports, one early case proved to have no calculus on post mortem examination, and a gallbladder shadow was overlooked. In twelve of the cases it was doubtful whether the symptoms were of gallbladder or of gastrointestinal origin. Nine of these twelve cases furnished no radiographic abnormality. Ten of the twenty-nine cases had typical biliary calculi and nine of these ten cases furnished positive radiographic results. The first ten were examined with ordinary tubes, the last eighteen with Coolidge tubes. The power was obtained from the public alternating current supply, a Siemens four k. w. transformer and a high tension rectifier being used. The spark gap was from four to four and a half inches, in one case being three and a half inches. With the ordinary tube, the milliamperage was two to three, with the Coolidge tube, eight to twenty-two. The length of exposure varied from ten seconds to two minutes. The a. c. distance from plate was twenty-three and a quarter to twenty-seven inches. The patients were all examined on their backs. The central ray was always directed perpendicularly to the plate, preferably through a marked point in the right epigastrium, one and a quarter to one and a half inch from the middle line. Compression was made in every case with a rubber cushion which, inflated fully, measured ten by seven and a half by seven inches; the cushion was contained in a double silk cover, thus always securing the same degree of inflation.

Relation of Migraine to the So Called Acidosis of Children.—J. A. Lichty (*Archives of Diagnosis*, July, 1916) points out that a mistake is commonly made in interpreting periodical vomiting in children and infants as being attacks of "acidosis" when in reality they are precursors of a permanent tendency to migraine. In children with cyclic vomiting Lichty has nearly always found a hereditary history of migraine in one or more forebears. In some, in fact, he has witnessed the transformation from cyclic vomiting to typical "sick headaches." The term acidosis is not comprehensive enough to cover cyclic vomiting. It is only a symptom, which may arise in any case in which a period of starvation has been gone through. Thus in cyclic vomiting of children with the usual acetonuria, the acetone, with the acidosis it betokens, is not the cause of the condition, but merely a result. In addition to seeing eight or nine cases of cyclic vomiting, later called acidosis, and finally passing into fully developed attacks of migraine, the author has obtained every now and then, among seven hundred cases of migraine, a history of bilious attacks with obstinate vomiting in childhood and migraine coming on at puberty.

Significance of Apical Pleuritis in the Diagnosis of Pulmonary Tuberculosis.—E. Sergent (*Presse médicale*, August 24, 1916) accords much significance to pleuritis over the lung apex, not only in the diagnosis of tuberculosis, but in the differentiation of its various stages and forms. It accounts, moreover, for certain wrong and conflicting conclusions commonly reached in interpreting physical signs at the pulmonary apex. At autopsy the apex is often found more or less adherent to the parietal pleura and chest wall. Pain in the inner part of the supraspinous fossa and above and below the clavicle, persistent and unaccompanied by indications of neuralgia or neuritis, is a pleurodynia and signifies apical pleuritis. According to the extent and thickness of the latter, percussion is negative or reveals a more or less complete dullness; palpation yields corresponding results, and inspection may show a sinking in of the infraclavicular and supraspinous soft parts. Auscultation, where the pleural thickening is marked, may show reduction or abolition of the vesicular murmur, and in acute or subacute pleuritis, reveals slight, circumscribed, friction sounds, which the inexperienced or careless may mistake for rales and dry crackling sounds. X ray examination shows a veiled or opaque condition at one or both apices; if coughing fails to remove this, either a marked pleural thickening or an apical consolidation exists, whereas if it causes the shadow largely to disappear, there is slight pleural thickening with the parenchyma remaining free. Pupillary inequality, the pupil on the affected side being dilated or contracted according to whether sympathetic irritation or paralysis exists on that side, and also a supraclavicular adenitis, just behind the clavicle and against the outer margin of the sternomastoid muscle, are frequent accompaniments of apical pleuritis. The adenitis is noted in the form of an elongated node, practically parallel with the clavicle, varying in size from a small bean to a Lima bean or even larger, usually hard when small and soft when large, the latter condition indicating as a rule an active pleural lesion, while the small, hard node signifies an old, healed one. Anatomical and post mortem studies showed that this type of glandular enlargement is far more closely related to pleural than to pulmonary disease, and when present is consequently a sign of apical pleuritis. The latter, revealed by coincidence of a number of the signs already mentioned, is to be taken as an important indication of tuberculous disease and is one of the chief stigmata of an old, cicatrized lesion. Whether tuberculosis is active at the time is recognized through the general signs as a whole, the fever, loss of weight, anemia, dyspeptic disturbances, low blood pressure, and endodermal tuberculin test.

Heart Affections in Soldiers.—J. C. Meakins, Thomas Lewis and others (*Brit. Med. Jour.*, Sept. 23, 1916) found that by physical signs alone it was possible to eliminate about forty per cent. of the men admitted with cardiac symptoms as unfit owing to definite crippling organic disease of the heart. Of the remainder, the majority had indefinite physical signs and symptoms, such as dyspnea, palpitation, vertigo, or fainting. The determination of the fitness or unfitness of such men for service, and of their limitations when fit, was possible only by careful determination of their capacity for enduring mild, graded exercise. The several exercise tables used are given, as they were found to be easy to execute and gave very satisfactory results, both in grading the heart's capacity and in developing that capacity to its maximum. By these exercises an additional five per cent. of the original group were found unfit for service. In all about fifty to fifty-five per cent. of soldiers suffering from cardiac symptoms were found fit for some form of military duty by the tests. All of the men in this group were suffering from what has recently been called "irritable heart."

Distribution of Typhoid and Paratyphoid Infections.—C. J. Martin and W. G. D. Upjohn (*Brit. Med. Jour.*, September 2, 1916) have made observations upon 627 patients and 151 normal persons, carefully controlled quantitative agglutination tests being used for diagnosis. In many cases these were also controlled by the isolation and identification of the organisms. Agglutination was found for one or more of the enteric group of bacilli in 464 cases, of which 213 were against paratyphoid A and 113 against paratyphoid B. Of 138 cases agglutinating only Bacillus typhosus, twenty-five were cases of typhoid fever, the remainder being accounted for by previous inoculation. On the basis of these observations and the returns for almost 100,000 men, the incidence of typhoid fever amounted to less than one half of one per cent. of all forms of sickness. This low figure was evidently due to prophylactic inoculation. An interesting observation was made in the course of these studies which showed that infection by one of the paratyphoid organisms often produced a rising typhoid agglutination titre in inoculated subjects which preceded the development of paratyphoid agglutinins by a week or two. This proved a confusing element in the use of the agglutination test for diagnosis.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

Stated Meeting, Held January 19, 1916.

Dr. A. R. STEVENS in the Chair.

Narrowing of the Lower End of the Ureter Due to Gonococcus Infection.—Dr. LEO BUERGER presented a case which he regarded as unusual, since he was able to demonstrate a narrowing of the lower end of the ureter, caused by infection with gonococci. Cases of this sort were rare, and the presence of gonococci as the causative agent had been seldom demonstrated. The patient, L. B., single, male, was referred to Doctor Buerger, the complaint being that for more than one year the urine had been cloudy, in all probability the result of a gonorrheal infection, because there was a history of infection of the eyes at the onset of the disease. Gonococci had, however, not been demonstrated and the patient had been treated as having a case of cystitis, possibly tuberculosis, during the whole time.

Cystoscopic examination revealed a remarkable bladder picture, the left half of the trigone, the paratrigonal region, and the sphincteric region being occupied by numerous red follicles, some of which had undergone cystic degeneration. Urine obtained from the right kidney showed a normally functioning organ, the urine being negative, except for a trace of albumin. Ureteral catheterization of the left side was somewhat difficult, owing to a distinct narrowing of the lower end of the ureter, no flow of urine being obtained until the catheter was pushed up to a point twenty cm. above the meatus. When this point had been passed by the ureteral catheter, a copious flow of turbid and slightly bloody urine was obtained. The first specimens collected during a period of ten minutes were discarded and the last specimens were submitted to the bacteriologist, who reported pus and a pure culture of gonococcus. Gonococci were also demonstrable in the bladder urine. The diagnosis of gonorrheal cystitis, gonorrheal ureteritis, possibly pyelitis of the left kidney with distinct inflammatory stenosis of the lower end of the left ureter, was made. Subsequently the patient received autogenous gonococcus vaccines, and at a second cystoscopy, the left ureter and pelvis were thoroughly washed with ten per cent. argyrol, the same stenosed condition of the lower end of the ureter having been encountered. The improvement was almost immediate, and within three weeks the urine was clear, and gonococci were absent.

Doctor Ware asked whether Doctor Buerger thought it was an ascending infection, or whether it was in some way metastatic. It was difficult to explain how the condition could be unilateral if it resulted from an ascending infection. Furthermore, the stenosis being rather far distant from the ureteral orifice, pointed rather to its being a descending infection.

Stricture of the Ureter.—This paper, by Dr. GUY L. HUNNER, of Baltimore, appeared in our issue for July 1, 1916, page 5.

Dr. HENRY DAWSON FURNISS was much pleased to hear what Doctor Hunner had said, for his large experience with this condition in women had given him better facilities for appreciating strictures than in the male. for in women he was able to use much larger instruments. Many of the strictures that they encountered were of large calibre and offered no obstruction to a No. 6 or 7 catheter. His first case had been operated in by a good man in New York city for gallbladder disease. The patient had had an ureteral stricture, at the vesical end, with dilatation of the ureter and renal pelvis. He dilated the stricture, but it could not be kept open. Subsequently he removed the kidney, and four months later she had an attack on the other side. When she had the attack in the one kidney she went through a cycle lasting ten days. She would come in almost blinded, with intense headache, and urinating only nine or ten ounces daily. She would be dilated with a No. 20 French bougie through a Kelly cystoscope, and then she would have a bad time for twenty hours. The next day the urine output would be twenty-five ounces, and she would feel better. At the end of ten days she was back at the beginning of the cycle, showing ureteral obstruction.

Another case showed the same kind of stricture. One of these was from a girl who at first had attacks every four to six months, and finally had them every Wednesday. The specimen showed very little cortex. It was doubtful whether the kidney held over 100 c. c. There was obstruction in the ureter, just at the pelvic junction. In the other one, the cortex was a little thicker, but there was a definite stricture below the pelvis of the kidney.

Doctor Furniss said that Doctor Hunner had done good work in showing that many of these kidneys could be saved, and his results were better than most of the New York men had had. He had also brought out the fact that most of these strictures were apt to occur in the so called rheumatic conditions. Doctor Furniss said he himself believed that the arthritic conditions were dependent upon an infected kidney. He had had a number of cases of arthritis which had cleared up after the pyelitis was cured. One of these patients came in complaining of pyelitis; she had a temperature of 104° F. and complained of pain in her knees, and she also had endocarditis, etc.

If a stone had come down the ureter and had become impacted, it would usually cause a stricture; if the stone was not imbedded in the tissues, it would move up and down, and as soon as it was displaced the stone might get into the kidney. That idea might seem rather far fetched, but in the Post-Graduate Hospital this year he had demonstrated a stone in the ureter, with none anywhere else. The patient was operated upon and the ureter was found to be dilated. This was explored, but no stone was found, and he thought that possibly the house surgeon through some manipulation had loosened the stone and that the patient had passed it. Before she left the hospital, she was radiographed and a stone was revealed in one of the calices of the kidney. She refused further operation and left the hospital with the stone in the kidney.

Doctor Lowsley said that apropos of Doctor Buerger's inquiry regarding specimens, it might be interesting to know that he himself had examined some 350 specimens rather minutely, measuring that portion of the ureter which passed through the vesical wall, and had found the average of all these cases to be 1.7 cm. There was a considerable variation, ranging from 0.75 to three cm. Out of these cases he had found eight, where there had been a very definite and decided stricture of the ureteral orifices, and all the strictures which had been acquired had been bilateral. In all of the cases there was decided induration of the ureter and narrowing of the ureteral lumen. He had no specimens where there was a normal ureteral orifice with stricture above.

Dr. Paul Pilcher felt very much confused on this subject and was inclined to agree with Doctor Buerger. He had examined many cases in both males and females, and frequently found these cases of stenosis in some portion of the ureter. Aside from an occasional case, he had not met with constriction or stenosis in the lower portion of the ureter. The cases of hydronephrosis, aside from those due to stone or tuberculosis, or actual secondary inflammatory periureteritis, had been due mostly to anomalies, or twists or bends of the ureter—actual anatomical deviations of the ureter. He had followed Doctor Hunner's work for years and had been much impressed with it. He did not think that they could judge their cases intelligently without going to Baltimore and seeing them handled by Doctor Hunner.

Doctor Pilcher could not understand the pathology of the condition. It did not seem logical that a stricture of the lower ureter should occur after an attack of tonsillitis. He himself was more impressed with the possibility of some connection with the intestine or to a condition in the pelvis or bladder wall as being the origin of some of these infections. He had never seen a real stricture with round cell infiltration which could be permanently dilated with a soft bougie. If there was an actual stricture with round cell infiltration, with a cicatricial formation, they must use a solid instrument, such as the olive bougie, to dilate it permanently. His own experience with stricture had been mostly with anatomical deviations. He wanted to go to Baltimore and see these cases in order to be more thoroughly convinced.

Doctor Bugbee had been much interested in Doctor Hunner's work and was desirous of knowing more of the etiology and pathology of these conditions, but he could only repeat what had been said, that it was a question of what was called a stricture. They often met with narrowings in the ureter. They were common; and he had found that if a No. 7 F. catheter could be passed, it could not properly be called a stricture. The question of diagnosis was an important one. He had tried the direct method in some cases, and believed that very often with the indirect cystoscope they could pass obstructions that could not be passed with the direct instrument. He would not feel like making a diagnosis with a stiff instrument such as Doctor Hunner had shown. Prolapse of the ureter and distortion were so common that it was important to use a soft catheter which would go through a very narrow kink.

An x ray picture should be taken with such a soft catheter in position, with patient first lying down and then standing up. He had often found in the female with an infected kidney that pus and débris would collect in the lower part of the ureter and cause a temporary obstruction, and that in a few days after passing a catheter the symptoms would disappear. Such a case might well be mistaken for a stricture. The metal bulbs devised by Doctor Buerger were valuable aids in making a diagnosis of stricture of the ureter. They ought to have a standard of some kind to go by to determine what form of obstruction should be considered a stricture. If they considered No. 7F as a stricture, they would probably see a great many of them It was a most interesting subject, and he had greatly enjoyed Doctor Hunner's address.

Doctor LeWald said that the lack of definite cicatricial tissue led him to believe that there might be an analogy between cardiospasm of the esophagus and spasm of the lower end of the ureter.

Doctor LeWald was very much interested in the presentation by Doctor Hunner of a concretion in the vermiform appendix. He had seen two similar cases recently. In one case by means of the Röntgen examination Doctor LeWald had suggested the possibility, and Doctor Douglas had found the concretion just outside a ruptured appendix. In the other case Doctor Douglas had operated upon a ruptured appendix and found a concretion which on x ray examination proved to be of sufficient density to have made discovery possible prior to operation, had there been an x ray examination. They ought to keep this possibility in mind and always have the patient examined with the rays where time permitted.

Dr. Victor Pedersen said that it was impossible to add anything to what had been said. He agreed with Doctor McCarthy that in some of Doctor Hunner's cases there might be an undoubted stricture, by which he meant a definite fibrous change in the mucous membrane itself exactly as a stricture in the urethra was constituted. Doctor Buerger's suggestion, that these cases be cystoscoped in the indirect method aso, before making a definite diagnosis, was important and practical.

For many years there had been a recognized standard of calibre for the urethra and there should be one for the ureter. They knew that the ureter was narow at the pelvis, where it originated from the kidney, where it entered the bony pelvis at the pelvic brim, then where it passed forward to reach the bladder and again at its outlet. In that connection, what Doctor Bugbee had said was valuable; they should agree upon some size which was considered normal.

His own work was about equally divided between the two sexes, and he had two women now under his care with stones in the ureter exactly where it turned forward along the pelvic floor to enter the bladder, and he had been wondering whether they might have been held by some change in the uterine appendages or by the uterine artery where it crossed the ureter, making compression, and stimulating stricture formation.

Doctor Hunner expressed his appreciation of the discussion and of the criticisms which had been offered. It would be a sad state of affairs for a man to go away from home and read papers before other societies and expect to get off without criticism. Criticism did great good and made them think more acutely and observe more closely.

Regarding Doctor Buerger's comparison of positions and methods in cystoscopy, he had always thought the knee chest position, which carried the kidneys down toward the diaphragm and tended to straighten out any ureter kinks, was a better position than that with the patient on the back, which conduced to laxity of the ureter with chances for the renal catheter to catch in the pockets or kinks. It would seem that they would be more liable to get such temporary obstructions by the male than by the female method.

As to what sort of an obstruction should be called a stricture, he did not know what was the standard in New York. He himself found obstruction to a catheter almost every day, but when they found an obstruction at a certain level every time they tried to catheterize a given patient and felt a grating in going through the scar tissue as if going past a stone, it was difficult to see how the condition could be called anything but a stricture. Doctor Buerger had asked about the pathological material. The speaker was glad his patients had not furnished pathological material, but he had studied ureter strictures from the pathological laboratory. He did not know what better evidence could be required than that found in these retrograde operation cases and in anastomoses of the ureter to the bladder. The operator had difficulty in getting away the infiltrated tissue and often had difficulty in determining which was stone and which was stricture, because of the dense area of chronic infiltration.

He did not see what better evidence could be desired; given a definite point of obstruction to the catheter tip, where they could actually feel the "hang" when the wax bulb was going and coming, and then hydronephrosis, and the relief to the patient and shrinking of the dilated pelvis after dilatation. They could hardly ask for better evidence. In the young woman of whom he had spoken as having but one kidney, no stricture could be recognized for over a year, but one was finally found. When she first came, the pelvic contents were only eight c. c., but finally they came up to twenty-two c. c. Such evidence seemed sufficient.

As to the gynecological conditions, they would naturally think that with all the operations in the pelvis pathological conditions were created in the ureters, but he had not included any such cases in the list reported. There was no such evidence in any case, excepting one which had been operated in for some pelvic condition, and a nurse had put in a strong carbolic solution as a bladder instillation. That was a case of postoperative stricture in the bladder wall, probably due to the carbolic burn.

As to the size of the pelvis: Of the sixteen noninfected cases, the pelvis was measured in ten instances, and averaged nineteen c. c. He had mentioned in his paper that there were three only of about normal size, or respectively of eight, eleven, and twelve c. c., but the others held fifteen to thirty c. c. One, which he had mentioned especially, measured 385 c. c., and was free from infection, but that was in a class by itself. Of the eighteen infected cases, the pelvis was measured in fifteen instances. Four were approximately normal, and averaged 130 c. c.

Stated Meeting Held February 16, 1916.

Dr. A. R. Stevens in the Chair.

Colon Bacillus Infection of the Bladder.—This paper by Dr. R. T. Morris was published in the Journal for April 1, 1916.

Doctor LeWald said that Doctor Morris had spoken of the association of Bacillus aerogenes capsulatus. It seemed possible that the aeroform bacillus would produce gas in the urinary tract, and that might be elicited by the x ray. That was now being done abroad in wounds infected by gas bacilli. Gas cast a very definite shadow in the radiograph, either by pushing aside the tissue or, as Doctor LeWald thought, the rays might become intensified in passing through the gaseous substances. This had made it possible in gas infections of the extremities to recognize the gas even before a culture was obtained. It was possible that Bacillus capsulatus aerogenes infection in the urinary tract might make itself recognized in that way.

Doctor Heyd, referring to Doctor Morris's idea about intestinal toxemia being a factor in the production of infection of the bladder, said that they had observed a number of cases of bacilluria in conditions of chronic constipation. Bishop had found that right sided bacilluria was twelve times more common than left sided, and the anatomical demonstration by Franke of connecting lymphatics between the cecum and right kidney lent additional significance to the probability of bladder infection from conditions of chronic intestinal stasis. In the cases that had been studied there were intermittent attacks of fever and prostration that might be interpreted as attacks of pyelitis.

Doctor Barringer asked if he had understood Doctor Morris to say that children treated one way or another would readily clear up. This was at variance with the experience of Cabot. He found that they readily cleared up so far as symptoms and pus in the urine were concerned; but a large number of these cases, examined years afterward, showed cultures of colon bacillus in the urinary tract, though free of symptoms.

Dr. Victor Pedersen said that the duration of the lesion was of some importance. He had had two such patients pass through his hands, one a child of twelve years, who had had a lesion for a year and a half, and a large number of wild diagnoses had been made, including malaria, etc. She had undoubtedly very badly damaged kidneys, worse on one side. In that case, dietetic and other efforts, including a liberal administration of bacterins, had had no effect. She died of systemic absorption. Operation was refused. She tolerated the vaccines well, but they did not reach the lesion. She ought to have had surgical intervention, but it was declined.

The other patient was a woman who had had the disease for a shorter period and was cured in a short time by the use of bacterin. It was probably a question of how badly the kidneys were damaged which decided how good was the response to the bacterin.

Referring to the case mentioned by Doctor Morris as having bacilluria without symptoms, Doctor Pedersen had seen an adult who showed bacilluria most of the time, but without symptoms of absorption, except a general out of sorts condition, and who had been cleared up by Bacillus bulgaricus given by mouth. Undoubtedly, she had intestinal stasis, and absorption was going on. The subject of the paper was interesting, and Doctor Morris was to be congratulated.

Doctor MORRIS, referring to the point brought up by several of the speakers, said that the colon bacillus might be present in the urine for months or years without showing symptoms. If one happened to find it, it might explain many obscure symptoms dependent upon some focal infection which needed attention for its own sake.

Rhabdomyosarcoma of the Prostate Gland.—Doctor J. BENTLEY SQUIER read this communication.

Doctor MACKENZIE said that just three years ago he had seen a patient with a history somewhat like that of Doctor Squier's patient, who gave a history of terminal hematuria coming on three months earlier. There was some enlargement of the prostate, per rectum, with absolutely no nodules, so far as could be determined. The prostatic tumor was removed suprapubically. It was distinctly encapsulated. The first microscopical diagnosis was lymphosarcoma, with some muscle fibres. He did not feel satisfied to report this as lymphosarcoma, and would like to have Doctor Squier see the specimen. The end of the patient was very much like that of Doctor Squier's patient. He made a good recovery and was lost sight of for a while. Four months later, Doctor Mackenzie wrote and received in reply a very incoherent letter, of which he could make nothing. Later, he wrote to the physician who had referred the patient, and found that the man was in a sanatorium. That was about six months after the operation. Doctor Mackenzie then wrote to the sanatorium and learned that the man had died on the day the letter was written. So far as he could learn, the man died of metastases in the brain or in the meninges. Death occurred about six months after operation.

As to the radical removal of the prostate through the perineum for malignant growths, and the subsequent incontinence, Doctor Mackenzie had had two patients in the service at Bellevue who became perfectly continent after such an operation.

Dr. VICTOR PEDERSEN asked if there was any relation between this and embryonal tumor of the kidneys. It would be interesting to know Doctor Wood's views, because all tumors known to contain embryonal tissue were extremely malignant, exactly as this tumor removed by Doctor Squier was vicious.

Doctor BEER had seen one sarcoma, and the report received was "spindle celled sarcoma"; he had also seen one case in a child which he took to be sarcoma. During the past week he had had a patient who seemed to have a large tumor starting in the prostate, possibly sarcoma. No operation was possible. Doctor Squier might like to see him.

It was gratifying to hear that Doctor Squier had obtained such excellent results, so far as control was concerned with Young's total prostatectomy. Some time ago Doctor Beer wanted to send a patient to Doctor Young to perform this operation, provided that he could assure the patient he would be continent, and Doctor Young wrote that he could not operate with any confidence. He stated recently that he had had one case in which he operated, and the patient was continent. Doctor Beer understood Doctor Squier to report nineteen cases which were satisfactory from this standpoint. If so he was to be congratulated. Was it a proper procedure? He preferred to operate in carcinoma of the prostate and neck of bladder from above downward. He did a wide Wertheim procedure through the pelvis, getting out the glands first, and taking out the bladder, seminal vesicles, and prostate in one mass by the combined abdominoperineal route. The patient was incontinent, but wore a tube in each ureter and kept dry. He had shown one such case recently a year after operation. The man was comfortable and had had no recurrence.

Doctor BARRINGER wished to substantiate Doctor Squier's end results. He had seen the patient a short time ago, when he had had enormous metastases in the perineum.

Doctor HEYD said that in the discussion at the time of operation various arguments for radical operation had been discussed. At the conclusion of the operation, it was considered that a most complete and radical operation had been done. The very rapid recovery without incontinence was a matter of gratification and the prognosis seemed hopeful. The fulminating character of the metastasis and the rapid recurrence pointed to an unusual degree of malignancy.

THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Third Annual Meeting, Held at Washington, D. C., May 11 and 12, 1916.

The President, Dr. J. W. JOBLING, of Nashville, Tenn., in the Chair.

(Concluded from page 770.)

Diagnosis and Treatment of Septicemia.—Dr. OSCAR BERGHAUSEN, of Cincinnati, averred that the term, septicemia, was preferable to bacteriemia. Pyemia was simply a complication of septicemia. They had made blood cultures in fifty cases having symptoms clinically resembling septicemia. Of these, fifty-seven per cent. were positive, the streptococcus being the prevailing organism, although the staphylococcus was occasionally found, or a bacillus of the colon type in terminal infections. Of twenty-three patients with a positive blood culture, seventy-four per cent. died and twenty-six per cent. recovered. Of seventeen patients with a negative blood culture, thirty-five per cent. died and sixty-five per cent. recovered. This showed the value of the blood culture in suspected cases of septicemia, not only in the diagnosis, but also in a prognostic sense. The total white count varied from 7,100 to 25,000 in the patients who recovered; from 7,000 to 30,000 in those who died. Ordinarily in this series a low white count indicated a bad prognosis. However, this was not invariably the rule. The differential white count was of the greatest importance. When the polymorphonuclear count approached ninety per cent., particularly when the white count was low, the prognosis became grave. In most of these cases the antistreptococcic serums obtainable on the market were employed, before the writer saw the patients; in none was a cure reported. In thirteen patients autogenous vaccines were employed in addition to the regular symptomatic treatment, and of this number, seven recovered. In true septicemia, the prognosis depended upon the state of health of the patient, the type of organism causing the infection, and the complications which might develop. The longer the course of the disease, the more favorable the prognosis. These patients should be treated as consumptives, at least they should have plenty of fresh air and should be fed as liberally as possible without deranging the digestion. The hot pack was indicated in septicemia marked by high temperature and erythema, and in the absence of more serious complications, with stimulation before and after the pack. Digitalis might be employed to enforce the heart's action in the beginning, though they could not thereby prevent the onset of the endocarditis. Of the antipyretics, quinine was the most important and should be used in small doses and often. Apparently good results had been obtained by hypodermoclysis. They believed the continued use of autogenous vaccines was justified. Spinal puncture was indicated when symptoms of meningismus developed.

Intravenous Therapy: The Use of Sensitized Bacterins Intravenously, Especially in Pneumonia.—Dr. William Egbert Robertson, of Philadelphia, Pa.; Dr. Claude P. Brown, and Dr. Allen G. Beckley, of Glenolden, Pa., recalled that up to the present time bacterins had been given therapeutically most frequently in chronic, localized infections, less often in general infections. Treatment had usually been with the nonsensitized type and the mode of administration had been subcutaneous. Very little clinical use had been made of the intravenous administration of sensitized bacterins. Because sensitized bacterins, from a theoretical standpoint, seemed to give a quicker response in the production of immune bodies, and because with the intravenous mode of administration an immediate action of the bacterin might be secured with no attendant local reaction, the authors had employed serobacterins intravenously in a series of cases.

One case of typhoid, treated in this way, gave severe reactions after injections of the bacterins. Satisfactory recovery occurred. Severity of reaction after the intravenous use of sensitized bacterins was typical in typhoid cases in general and was much more pronounced than in pneumonia treated in the same manner. In eleven cases of pneumonia two procedures were followed, some patients receiving a polyvalent bacterin composed of sensitized pneumococci alone, others a mixture of sensitized pneumococci, streptococci, and staphylococci. Those receiving the pneumococci alone experienced no sharp reaction, while those receiving the mixed bacterin reacted with chill and subsequent rise in temperature, accompanied by a marked change in the total white count and polynuclear increase. Of the eleven cases treated, ten ended in prompt recovery. The eleventh case, which terminated fatally, was complicated with nephritis. In the cases treated no detailed attempt was made to study the type of the infecting organism, but of seven cases in which this was done three were of type I, three of type II, and one of type III.

Treatment of Tuberculosis pulmonalis by Tuberculin.—Dr. A. N. Sinclair, of Honolulu, Hawaii, considered that the most notable proof of the value of tuberculin was seen in the difference in the results obtained at Leahi Home before and since the adoption of tuberculin treatment. No attempt had been made to classify the cases, because as soon as classification was attempted, considerable opportunity for error was offered. Out of 309 cases before the period tuberculin was used, 27.2 per cent. of patients either improved or were able to return to their former occupations, while out of 506 patients treated after tuberculin was adopted, 50.1 per cent. were enabled to resume their former occupations. Another proof of the value of tuberculin was the almost immediate and continuous improvement that had occurred in many cases that did not receive treatment at Leahi Home, but who had tuberculin treatment. Patients having suspicious signs of tuberculosis, but in whom the diagnosis lacked confirmation, offered golden opportunities for the administration of tuberculin; there was no valid argument against its use in the nontuberculous. Tuberculin afforded a means of diagnosis, not alone from observation of the reaction to its injection; the speaker had invariably noted that such patients at once began to put on weight, gaining from three to six pounds the first month of treatment; patients in whom tuberculin treatment was begun so early that diagnosis was questionable, seldom, if ever, failed to be restored to health. Failure in the use of tuberculin might rest on three factors; on the tuberculin itself; on the dose, and on the selection of unfavorable cases. The dose should be regulated, not by the "rule on the bottle" method, but by the immunizing method. The production of antibodies to the tubercle bacilli was accomplished more safely and just as certainly by continued small doses as by large ones. He never went above 0.003 mg. and rarely above 0.002 mg. As long as a patient was steadily improving there was no need to increase the dose. The great danger in using tuberculin was producing too great focal reaction. They had had no means of gauging this—it was suggested that the albumin content of the sputum be adopted for this purpose—the amount of albumin indicating the amount of destruction of lung tissue. Increasing albumin content meant the dose was too large, or it should be discontinued—a decreasing content and no improvement meant the dose was too small. This index of doses must be considered in conjunction with other indications.

Election of Officers.—The following officers were elected for the ensuing year: President, Dr. Richard Weil, of New York; vice-president, Dr. John A. Kolmer, of Philadelphia; treasurer, Dr. Willard J. Stone, of Toledo; secretary, Dr. Martin J. Synnott, 34 South Fullerton Avenue, Montclair, N. J. Members of the council: Dr. Arthur F. Coca, of New York; term expires 1921; Dr. William H. Park, of New York; term expires 1920.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Pulmonary Tuberculosis. By MAURICE FISHBERG, M. D., Clinical Professor of Tuberculosis, New York University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases, New York. Illustrated with 91 Engravings and 18 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. 639. (Price, $5.)

This is a work intended to help the general practitioner in his efforts to overcome the tuberculosis scourge, and is based on many years' experience with the related problems in New York city. The author takes pains to show that institutional treatment is not the only effective method of handling the phthisical patient, careful home treatment yielding practically the same results, while less costly to the patient and community. He has also become convinced that incipient tuberculosis is not necessarily curable, while, on the other hand, advanced tuberculosis is not necessarily hopeless. Stress is laid on predisposition as a greater factor in the disease than mere infection with tubercle bacilli, which, after all, produce the disease only in a certain proportion of those infected. In a survey of data on the portals of entry of the infection Fishberg finds no agreement among authorities as to the most common route. In the diagnosis the author warns against giving, in adults, undue weight to a history of exposure to tuberculous infection; in children, however, and especially infants, such a history is of great significance. He places great reliance on "emetic cough" as a diagnostic sign in doubtful cases, after whooping cough has been ruled out. The rectal method of taking the patient's temperature is urged as most trustworthy. In general, the methods of diagnosis of the disease at various ages and under varying conditions are taken up in great detail. In the treatment, while allotting most space to hygienic and dietetic measures, Fishberg likewise discusses extensively the drug treatment, which, he feels, has at times been undeservedly slighted owing to an all pervading therapeutic nihilism. Due attention is paid, e. g., to creosote, ichthyol, arsenic, mercury, codliver oil, etc. The author has little or no faith in tuberculin therapy, and advises the practitioner to abandon it in favor of drugs, by judicious use of which results may be obtained without incurring risk. In hemoptysis he has had satisfactory results from emetine, as originally recommended by French observers. Amyl nitrite in ten to fifteen drop inhalations he has found efficient, but he has discarded adrenaline and believes ergot to be actually harmful. A pleasing feature is the correct rendering of Latin prescriptions, so frequently marred by errors of spelling in textbooks. A special, very complete chapter on artificial pneumothorax is included. On the whole, the practitioner will find the work very helpful. The views expressed reflect recent etiological, pharmacological, and other advances so well that the addition of this work to the already voluminous literature of tuberculosis seems amply justified.

Alcohol. Its Influence on Mind and Body. By EDWIN F. BOWERS, M. D. New York: Edward J. Clode, 1916.

This work of Doctor Bowers is not a scientific one; it is not a dispassionate examination of alcohol as a medicine or a beverage, but an *ex parte* book, less violent than the customary teetotal attack, but of the same stripe. It is strange that alcohol, man's invariable companion since before the dawn of history, apparently never allows an impartial judgment regarding itself, but seems to stir up as much excitement and intolerance as a topic as it is well known to do when taken in excess as a beverage. The "temperance" writer invariably ignores such plain and unequivocal testimony as that of Dr. Abraham Jacobi, for example, who has often told how alcohol and nothing else saved the lives of numerous children under his care for diphtheria. It is pretty well known now that alcohol is in no sense a stimulant, but an anesthetic of the same physiological kind as ether, although less potent. This fact is triumphantly announced by the total abstainers, as if it settled the alcohol question; it settles nothing, and a genuinely scientific inquiry should be set on foot to ascertain, if possible, why mankind has always demanded a large supply of a powerful narcotic to be constantly within easy reach. Let us grant that alcohol produces deficiency, is guilty, in fact, of all the crimes attributed to it—why has man clung to it and not cast it from him like a venomous reptile?

We have been betrayed into writing an article on alcohol itself, instead of confining ourselves to Doctor Bowers's excellent book; for excellent it is, despite its partisan character. Doctor Bowers says he has weighed alcohol and found it wanting; that it produces deficiency in industry, in health and length of life, in physical, mental, and moral well being. There is a statement to the effect that rarely is there a drunkard who is fond of apples; it is definitely proved, alleges the doctor, that apples are an antidote for the alcoholic craving. We hope no other statement in this book is so baseless as this; the reader has only to remember the popularity of apple toddy in order to splinter the argument. Another mistake, common among prohibitionists, is referring to men who have been induced to stop the use of alcohol as "cured." As one drink will start such a man on a spree, "cured" is not the exact word; he is as much a drunkard as ever—potentially. On the whole, however, the arguments against alcohol are well and temperately stated, and the book is interesting—an important consideration.

The Dream Problem. By Dr. A. E. MAEDER, of Zurich. Nervous and Mental Disease Monograph Series, No. 22. New York: Nervous and Mental Disease Publishing Co., 1916. Authorized Translation by Dr. FRANK MEAD HALLOCK and Dr. SMITH ELY JELLIFFE, of New York. Pp. 43.

This little work is one of those classified by the genuine Freudists as *omnino damnanda;* the writer is a follower of Jung, who sees more in a dream than sex matters and retrospection. To him the dream has also a certain prophetic character in that its correct analysis will serve to point out the direction in which the patient must go in order to be cured. Like other works from disciples of either school, this will appear to some readers as an ingenious masterpiece of interpretation, and to others as wild and somewhat degenerate nonsense. To the latter it is a mystery why every slim and upright object, a steeple, a horse's leg, a telegraph pole, must symbolize *membrum virile,* and why the ploughing of a field in a dream means sexual intercourse (page 32). To the Freudist it means nothing else; to the Jung disciple, however, it seems to mean in addition the dreamer's life work. Doctor Maeder gives a full analysis of two dreams from both Freud and Jung viewpoints; as we have always maintained, the theories of these men certainly deserve examination.

Charity Inspector and Social Investigator. Examination Instruction. A Course of Instruction for Candidates for Institutional Inspector, Social Investigator, Inspector State Board of Charities, Charity Application Investigator, etc. 1,500 Official Inspection Questions and 1,000 Questions and Answers, and Specimen Civil Service Examination Questions, etc. By SOLOMON HECHT, Associate Editor, Civil Service Chronicle, and JULIUS HOCHFELDER, LL. M. New York: Civil Service Chronicle, 1916. Pp. 148. (Price, $3.)

This comprehensive handbook, in the guise of lucid question and answer, makes immediately available an encyclopedic knowledge of the best practices in the conduct of public and private charitable institutions. It contains a careful digest of the 500,000 words of text of the New York State laws relating to charities, and reviews the recent notable reforms in the administration of public charity in New York city. To those who have been cognizant of the lax methods which have prevailed in many such institutions, and the hardships, unnecessary disease, and vicious practices which have been the inevitable result of these methods, this book is a welcome statement of present official standards of administration in New York. The Honorable John A. Kingsbury, commissioner of public charities of the city of New York, at the price of intense hostility from the Messrs. Bumble of Beadledom, has accomplished notable reforms. By his revision of methods of expenditure of the $10,000,000 spent annually for public charities by New York city, Commissioner Kingsbury has placed the public heavily in his debt, for he has created an aroused public sentiment concerning the right treatment of dependents and defectives. Incidentally he has caused a demand for exact knowledge of administrative standards and methods, which this handbook supplies in full. Directors of charitable institutions, inspectors, investigators, and other social workers will find the volume to be an invaluable aid, inspiration, and guide. To physicians whose duties bring them into contact with charitable institutions, such as hospitals, asylums, orphanages, and reformatories, in New York or elsewhere, this book is almost essential.

I. K. Therapy (Immunkörper, Immune Substances) in Pulmonary Tuberculosis. With a Summary of Cases and Forty-two Illustrative Charts. By William Barr, M. D., D. Sc. (Glas.), D. P. H. (Camb.), District Tuberculosis Officer for the West Riding of Yorkshire. New York: William Wood & Co., 1916. Pp. 82. (Price, $1.25.)

In the short space of fifty pages the author sets forth succinctly all that is of importance regarding the theory of action of Spengler's Immunkörper, the methods of its administration, its indications and contraindications, the reactions which it may produce, its use in special cases, and the general considerations regarding its probable value and limitations. The results of its administration in a series of forty-seven cases are discussed from several aspects and the general impression is given that the preparation is a valuable adjunct to tuberculosis therapy. The conclusions, however, seem to be based on far too small a series of cases to be regarded as in any way definite, and this fact is well recognized by the author himself. Unlike another small volume recently published on this same subject, the present one is moderate and very conservative, and its author has confined himself to the results of his own experiences, and has refrained from any indulgence in over enthusiasm, although he believes the preparation, I. K., has not received the recognition which is justly due to it.

The National Formulary. Fourth Edition. By Authority of the American Pharmaceutical Association. Prepared by the Committee on National Formulary of the American Pharmaceutical Association. Official from September 1, 1916. Published by the American Pharmaceutical Association, 1916. Pp. xl-394.

The fourth edition of the *National Formulary* occupies a somewhat anomalous position, as it is a legal standard for medicines and preparations described therein, though prepared by a committee of pharmacists for the American Pharmaceutical Association. It differs from the Pharmacopœia in that the latter is the product of a committee appointed by a joint convention of pharmacists and physicians which meets decennially, whereas the *National Formulary* is a product of a committee of the American Pharmaceutical Association alone. The makers of the two official standards, however, work in close cooperation, so that there is no clash of authority, the *National Formulary* practically acting as a supplement to the Pharmacopœia. In the fourth edition, which has just been issued and became a legal standard on September 1st, practically all of the preparations are included which have been dismissed from the Pharmacopœia. As the name indicates, the *National Formulary* is composed mainly of formulas for galenical preparations and serves a valuable purpose in furnishing authoritative standards for such preparations. The present edition goes much further and contains a considerable list of drugs and chemicals for which it provides standards. The work of revision has been done with care and discrimination, and this new edition will prove a valuable addition to the library of every physician. In it will be found formulas for many popular mixtures, many of which are now prescribed under proprietary names. It is to be regretted that the revisers have followed the Pharmacopœia in adopting the word "mil," which is an abbreviation of milliter, as a substitute for the well known term cubic centimetre. It is true that there is a slight difference between the two, but this difference is so slight as to be negligible for all practical purposes. Now that the new term has been adopted in the *British Pharmacopœia*, in the *United States Pharmacopœia*, and in the *National Formulary*, we shall have to think in "mils" instead of cubic centimetres when using the metric system. This adds another to the already numerous difficulties which confront those who wish to popularize the use of the metric system.

Interclinical Notes

Eloise Robinson has a sketch in the *Outlook* for October 11th, called The Hay Field; she overlooks entirely the importance of her subject to a large class in the community who stand in awe of ragweed and goldenrod. We find ourselves introduced, however, to coneflowers and the flaunting fireweed, which sound attractive, and to the "incomparable old gold of brown eyed Susans."

* * *

Frank Marshall White describes in the *Outlook* for October 18th an execution by electricity in Sing Sing prison, and reports an address by Warden Osborne on capital punishment, wherein about all the possible objections are set forth. The duties of the various attendants are described, with the exception of those of the doctors, which makes the cited comment of Doctor Squires, the prison physician, read somewhat oddly: "It's the dirtiest work of the medical profession."

* * *

Schoolitis is the new complaint diagnosed by the family physician on the front cover of *Leslie's* for October 5th, which shows a red headed boy in bed, the young mother devoured with anxiety, and the old and experienced family physician, who promptly diagnoses the character of the trouble.

* * *

The *Nurse* for October exhibits the skill and artistic taste in the editing, which characterize this unusual periodical. The acknowledged wit and humor of Dr. William Brady are enlisted in an article on Man's Archaic Food Tube. Dr. John B. Huber writes on the new treatment of diabetes, a treatment which, the Journal has pointed out, goes back at least as far as Guelpa, who introduced it to the physicians of Paris in 1910. It is a pleasure to meet Dr. S. Adolphus Knopf in these columns; he writes on the open air treatment of tuberculosis. Dr. Thomas Grant Allen is another professional contributor. Papers by nurses and lay writers, with the capable assistance of a skilled photographer, round out an excellent number.

* * *

Albert Jay Nock, in an article on Prohibition in Kansas in the *North American Review* for August, among other good things, wrote the following: "This theory (we must make people good) brings forth two serious practical abuses: First the pernicious confusion of vice with crime and the consequent tendency to erect vice into crime—the confusion of the offence *malum in se*, or that which is opposed to the general reason and conscience of mankind, with the offense *malum prohibitum*, about which the general reason and conscience of mankind is divided. In Kansas, for example, several persons told me that the prohibition law was not invariably enforced, but that it was, on the whole, enforced as well as the laws against murder and burglary!"

* * *

According to the *Survey* for September 23d, in an article by Edith Shatto King, an alumnus of the University of California recently had an attack of pneumonia. He was in a hospital bed for five weeks. When he was convalescent and had paid his bills he found that his illness had cost him, for hospital care, physician's services, and nursing, something over $350. Then he began to make comparisons. For four years, while a student in the University of California, he had paid an infirmary fee of $6 a year, and that infirmary fee had entitled him to all the medical advice, treatment, hospital care, and nursing that he might require, and at no further cost, no matter how protracted or serious his illness. Now, no longer eligible to the privileges of the University infirmary, he had paid out for a single illness money enough to have endowed such infirmary privileges not merely for one person but for three, and not merely for one lifetime but in perpetuity. At present the system provides, in addition to the entrance examinations and dispensary services already described, hospital care, including food, shelter, medical and nursing services; drugs; bacteriological and x ray examinations; and every attention that can be obtained at the best modern hospitals. Every device of diagnosis or treatment that modern medicine has discovered is brought to the aid of the student.

Meetings of Local Medical Societies

Monday, *October 23rd.*—Medical Society of the County of New York; Poughkeepsie Academy of Medicine (annual).

Tuesday, *October 24th.*—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Woman's Hospital Society, New York; Therapeutic Club.

Wednesday, *October 25th.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

Thursday, *October 26th.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Interne Society of Seney Hospital, Brooklyn; Hospital Graduates' Club, New York; New York Physicians' Association.

Friday, *October 27th.*—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

Saturday, *October 28th.*—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 11, 1916:

Banks, C. E., Senior Surgeon. Directed to discontinue operations for the prevention of the spread of poliomyelitis in New York; detailed to attend a meeting of the National Association for the Study and Prevention of Infant Mortality at Milwaukee, Wis., October 19-21, 1916; granted two days' leave of absence on return to station at Milwaukee, Wis.

Brooks, S. D., Senior Surgeon. Granted seven days' leave of absence from October 9, 1916.

Brown, B. W., Surgeon. Relieved from duty at New York, N. Y., and ordered to rejoin station at Boston, Mass.; directed to proceed to Petersburg, Va., for duty in connection with the Southern Sociological Congress.

Foster, M. H., Surgeon. Ordered to discontinue Service operations in the prevention of the interstate spread of poliomyelitis at Philadelphia, Pa.; directed to rejoin station at Stapleton, N. Y.

Fricks, L. D., Surgeon. Relieved from duty at Boston, Mass.; directed to rejoin station at Hygienic Laboratory, Washington, D. C.

Frost, W. H., Passed Assistant Surgeon. Directed to represent the Service at the meeting of the American Public Health Association, Cincinnati, Ohio, October 24-27, 1916; ordered to attend the meeting of the National Association for the Study and Prevention of Infant Mortality at Milwaukee, Wis., October 19-21, 1916.

Gardner, C. H., Surgeon. Relieved from duty at New York, N. Y.; granted twenty days' leave of absence, and directed to rejoin station at Buffalo, N. Y.

Gassaway, J. M., Senior Surgeon. Granted ten days' leave of absence on return of Surgeon Oakley to his station.

Gillespie, J. M., Passed Assistant Surgeon. Granted one month's leave of absence from October 12, 1916.

Glennan, A. H., Assistant Surgeon. Granted one month's leave of absence from October 11, 1916.

Guiteras, G. M., Surgeon. Directed to proceed from Key West, Fla., to Tampico, Mexico, for investigation of sanitary conditions.

Herring, R. A., Passed Assistant Surgeon. Relieved from duty at New York, N. Y.; directed to rejoin station at Louisville, Ky.

Heterick, R. H., Passed Assistant Surgeon. Relieved from duty at New York, N. Y.; directed to rejoin station at Vineyard Haven, Mass.

Hughes, T. E., Assistant Surgeon. Relieved from duty at Philadelphia, Pa.; directed to proceed to Ellis Island, N. Y., and granted one month and twenty-five days' leave of absence from October 6, 1916.

Hurley, J. R., Passed Assistant Surgeon. Relieved from duty at Baltimore, Md.; directed to rejoin station at Washington, D. C.; granted fourteen days' leave of absence from October 9, 1916.

Irwin, Fairfax, Senior Surgeon. Directed to represent the Service at the Clinical Congress of Surgeons of North America at Philadelphia, Pa., October 23-28, 1916.

Ivey, R. R., Assistant Surgeon. Relieved from duty at New York, N. Y.; directed to report at headquarters, New York Division, Coast Guard.

Jones, W. M., Assistant Surgeon. Relieved from duty at New York, N. Y., and at San Francisco Marine Hospital; granted twenty-six days' leave of absence from October 5, 1916.

Kalloch, P. C., Senior Surgeon. Relieved from duty at New York, N. Y.; directed to rejoin station at Portland, Me.

Kearny, R. A., Passed Assistant Surgeon. Relieved from duty at New York, N. Y.; directed to rejoin station at Boston, Mass.

Lombard, M. S., Assistant Surgeon. Relieved from duty at Philadelphia, Pa.; directed to proceed to New Orleans, La., for temporary duty in plague suppressive measures.

Oakley, J. H., Surgeon. Relieved from duty at New York, N. Y.; directed to rejoin station at Evansville, Ind.

Paine, Liston, Assistant Surgeon. Relieved from duty at New York, N. Y.; directed to proceed to Philadelphia, Pa., for duty at Marcus Hook Quarantine.

Parcher, George, Passed Assistant Surgeon. Relieved from duty at New York, N. Y., and at the Delaware Bay and River Quarantine and directed to proceed to the Marine Hospital, San Francisco, Cal., for duty; granted two weeks' leave of absence.

Pettus, W. J., Surgeon. Relieved from duty at New York, N. Y.; granted fifteen days' leave of absence; directed to rejoin station at Charleston, S. C.

Ridlon, J. R., Passed Assistant Surgeon. Relieved from duty at Baltimore, Md.; directed to report at Bureau for instructions; ordered to proceed to Tampico, Mexico, for investigations of sanitary conditions.

Roberts, Norman, Surgeon. Granted one month's leave of absence upon return of Passed Assistant Surgeon Parcher to station.

Robertson, H. McG., Surgeon. Directed to represent the Service at the Clinical Congress of Surgeons of North America at Philadelphia, Pa., October 23-28, 1916.

Robinson, D. L., Surgeon. Directed to proceed to Rockland, Me., for cooperation in preventing the spread of poliomyelitis from that point in interstate traffic.

Safford, M. V., Assistant Surgeon. Directed to proceed to Providence, R. I., from Boston, Mass., when necessary, to assist in the medical examination of arriving aliens.

Schereschewsky, J. W., Surgeon. Directed to represent the Service at the meeting of the American Public Health Association at Cincinnati, Ohio, October 24-27, 1916.

Schwartz, Louis, Passed Assistant Surgeon. Relieved from duty in the prevention of spread of poliomyelitis at Philadelphia, and resume immigration duties.

Spencer, R. R., Assistant Surgeon. Granted twenty-one days' leave of absence from October 23, 1916.

Stevenson, A. F., Sanitary Chemist. Directed to attend the meeting of International Association of Dairy and Milk Inspectors at Springfield, Mass., October 17-19, 1916.

Stoner, J. B., Surgeon. Relieved from duty at New York, N. Y.; granted fifteen days' leave of absence; directed to proceed to Ellis Island, N. Y., for duty.

Stout, J. D., Assistant Surgeon. Relieved from duty at the Marine Hospital, Stapleton, N. Y.; directed to proceed to Charleston, S. C., and report to the commanding officer of the United States cutter *Tampa* for duty; granted three days' leave of absence en route.

Thompson, L. R., Passed Assistant Surgeon. Directed to deliver an address on infantile paralysis at the meeting of the National Funeral Directors' Association at Columbus, Ohio, October 11-13, 1916; granted fourteen days' leave of absence from October 2, 1916.

Trask, J. W., Assistant Surgeon General. Directed to represent the Service at the meeting of the American Public Health Association, at Cincinnati, Ohio, October 24-27, 1916.

Waring, C. H., Assistant Surgeon. Relieved from duty at Baltimore, Md., and directed to report at the Hygienic Laboratory for temporary duty.

Weldon, Lon O., Assistant Surgeon. Relieved from duty at New York, N. Y., and directed to proceed to Ellis Island for duty; granted seven days' leave of absence from October 3, 1916.

Wildman, H. V., Jr., Assistant Surgeon. Relieved from duty on Coast Guard cutter *Seneca* and directed to proceed to Ellis Island, N. Y.

Williams, L. L., Senior Surgeon. Directed to visit San Luis Obispo lighthouse station to investigate typhoid fever.

Williams, L. L., Jr., Assistant Surgeon. Relieved from duty at New York, N. Y., and directed to proceed to Ellis Island for temporary duty; granted seven days' leave of absence.

Wynne, R. E., Assistant Surgeon. Directed to deliver an address on Public Health at Pendleton, S. C., October 24, 1916.

Young, G. B., Surgeon. Directed to proceed to Minneapolis, Minn., to attend the meeting of the Minnesota State Medical Association, October 11-13, 1916.

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the three weeks ending October 14, 1916:

Allen, D. G., Passed Assistant Surgeon. Ordered to the *Chester* for duty.

Bower, F. T., Assistant Surgeon. Commissioned an assistant surgeon from August 28, 1916.

Cecha, A. H., Assistant Surgeon. Commissioned an assistant surgeon from August 29, 1916.

Crawford, R. L., Assistant Surgeon. Detached from the *Connecticut* and ordered to the *Rhode Island*.

Curl, H. C., Surgeon. Detached from duty as force surgeon, Reserve Force Atlantic Fleet, and ordered to the Marine Barracks, Port Royal, S. C., ordered to duty on the *Michigan*.

Freeman, G. F., Surgeon. Detached from the *Tacoma* and ordered home to await orders.

French, G. R. W., Passed Assistant Surgeon. Detached from the *Maine* and ordered to the Naval Torpedo Station, Newport, R. I.

Garrison, P. E., Passed Assistant Surgeon. Detached from the *Dolphin* and ordered to duty with Expeditionary Forces in Santo Domingo.

Harper, John, Assistant Surgeon. Detached from the *Minnesota* and ordered to duty in connection with fitting out the *Arizona* and duty on board when commissioned.

Huff, E. R., Passed Assistant Surgeon. Detached from the *Scorpion* and ordered home to await orders.

Jacobs, I. W., Assistant Surgeon. Commissioned an assistant surgeon from August 28, 1916.

Langhorne, C. D., Surgeon. Resignation of commission accepted from September 29, 1916.

Leach, Philip, Medical Director. Detached from the Naval Hospital, New York, and ordered to command the Naval Hospital, Boston, Mass.

Lung, G. A., Medical Inspector. Detached from the Naval Torpedo Station, Newport, R. I., and ordered to command the Naval Hospital, New York.

May, H. A., Passed Assistant Surgeon. Detached from the Marine Barracks, Port Royal, S. C., and ordered home to await orders.

Mears, J. B., Passed Assistant Surgeon. Detached from the *Memphis* and ordered to duty with the Expeditionary Force in Santo Domingo.

Murphy, J. A., Surgeon. Detached from the *Michigan* and ordered to duty with the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

Noble, D. H., Passed Assistant Surgeon. Ordered to the Naval Hospital, Philadelphia, Pa.

Old, E. H. H., Passed Assistant Surgeon. Detached from the Naval Hospital, Washington, D. C., and ordered to the *Solace*.

Plummer, R. W., Surgeon. Ordered to the *Alabama* for duty.

Prioleau, P. F., Assistant Surgeon. Commissioned an assistant surgeon from August 29, 1916.

Smith, C. G., Surgeon. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to duty in fitting out the *Arizona* and duty on board when commissioned.

Strine, H. F., Surgeon. Ordered to the Naval Hospital and School, Washington, D. C., September 25, 1916.

Taylor, J. S., Surgeon. Detached from the *Rhode Island* and ordered to the *Connecticut*.

Trible, G. B., Passed Assistant Surgeon. Ordered to the Naval Academy, Annapolis, Md., September 25th.

Triebly, C. E., Surgeon. Detached from the *North Dakota* and ordered to the *Illinois*.

Wilson, George B., Medical Director. Died at Boston, Mass., October 1, 1916.

Wilson, H. D., Surgeon. Ordered home to await orders.

◆

Births, Marriages, and Deaths

Married.

Botbyl-Smith.—In Paterson, N. J., on Wednesday, October 4th, Dr. Burt W. Botbyl and Miss Sarah Holt Smith.

Buckley-Harvey.—In Quincy, Mass., on Thursday, October 5th, Dr. George Ambrose Buckley and Miss Mary Evelyn Harvey.

Freeman-Sprague.—In East Randolph, Vt., on Saturday, September 30th, Dr. Charles West Freeman, of Chicago, Ill., and Miss Ruth Sprague.

Died.

Babcock.—In Morrisville, N. Y., on Thursday, September 28th, Dr. Frankford Duane Babcock, aged sixty-nine years.

Floyd.—In Aurora, Col., on Thursday, September 28th, Dr. Edward A. Floyd, aged eighty-eight years.

Hamilton.—In Wichita, Kan., on Saturday, September 30th, Dr. Ernest E. Hamilton, of Wichita, Kan., aged sixty-one years.

Haney.—In Dalton, Ohio, on Monday, September 25th, Dr. Josiah C. Haney, aged fifty-two years.

Hudgins.—In Olive Hill, Ky., on Thursday, September 28th, Dr. Cecil Hudgins, aged fifty-seven years.

Hudson.—In Princeton, Ind., on Friday, September 22nd, Dr. Oliver L. Hudson, aged eighty-three years.

Hunt.—In Washington, D. C., on Monday, October 9th, Dr. Arthur L. Hunt, aged thirty-nine years.

Kilborn.—In New York Mills, N. Y., on Monday, October 2nd, Dr. Henry F. Kilborn, aged seventy-two years.

King.—In Richmond, Va., on Saturday, September 30th, Dr. Lawrence Y. King, aged forty-five years.

McMeekin.—In Saginaw, Mich., on Tuesday, October 3rd, Dr. James W. McMeekin, aged fifty-seven years.

Miller.—In Hagerstown, Md., on Thursday, October 5th, Dr. William P. Miller, aged forty-six years.

Sauermann.—In St. Louis, Mo., on Tuesday, October 3rd, Dr. Hans H. Sauermann, aged fifty-five years.

Stiles.—In Philadelphia, Pa., on Saturday, October 7th, Dr. William Stiles, aged seventy-four years.

Wilcox.—In Smithfield, Ky., on Monday, October 2nd, Dr. Josiah L. Wilcox, aged eighty years.

Wilson.—In Chelsea, Mass., on Sunday, October 1st, Captain George B. Wilson, Medical Director of United States Naval Hospital in Chelsea, aged fifty-three years.

Woods.—In Philadelphia, Pa., on Friday, October 13th, Dr. Matthew Woods, aged sixty-eight years.

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Original Communications

ANESTHESIA REVIEWED.

BY JAMES T. GWATHMEY, M. D.,
New York.

PART I.

Momentous advances have been made in the study of anesthesia during the past few years, especially with reference to the physiological action of the different anesthetic agents, and the adaptation of the agents and methods of administration to the patient or operative procedure.

Despite these advances, there is still a disposition on the part of some distinguished surgeons to minimize the importance of varying the agent and the method under different surgical circumstances. Hence, in some of the largest and most efficient clinics, such as those of the Mayos and Crile, nurse anesthetists are still employed—which means that one method is used in all cases.

The following review shows, to my mind, that the results and statistics of these clinics, excellent as they are, would be greatly enhanced by the adoption of the more scientific and flexible use of anesthesia, namely, by suiting the agent and the method to the individual patient and procedure.

My own conclusions in this regard may be stated briefly as follows:

1. There should be, connected with the clinic, one or more persons whose efforts are limited to the administration of anesthetics.
2. Such persons should perfect themselves in the ability to maintain, with the chosen method, the *lightest surgical* anesthesia consistent with the surgeon's best work.
3. The surgeon should let the anesthetist *alone*.
4. Inasmuch as anesthesia is still in an elementary stage of its evolution, the supervising anesthetist should be a *physician specially trained in this work*.

The following review, it seems to me, bears out these conclusions.

CLOSED ETHER AND A COLOR SIGN.

Bryant and Henderson (1), in a paper with this title, express the view that rebreathing is preventive of shock. We are not warranted in accepting this theory as a fact. They are right in stating that gas pains may follow the ether open drop method, but this is true only under certain conditions. For instance, if no preliminary medication is given, if unusual care is exercised to prevent the patient from being anesthetized too long, and if the operation is started as soon as the patient is unconscious, but not anesthetized, there might be hyperpnea followed by acapnia, and probably by gas pains and shock afterward; but under similar conditions this might also occur with the closed method. We deny that depression of the circulation and respiration, postoperative nausea, vomiting, intestinal paresis, and gas pains are incidental to etherization by open methods, unless by open methods the drop method is meant. The many thousands of cases anesthetized by the endotracheal and endopharyngeal method, in which method rebreathing is practically eliminated, and in which none of these features occur, would seem to disprove the acapnic theory; as would also the many thousands of cases anesthetized with the semiopen vapor mask method, in which the pulse and respiration are normal throughout. A more accurate conclusion would be, that given a patient properly prepared, ether may be used indifferently by either the open or the closed *vapor* methods. The principal point of the paper, "Keep the patient pink," is a life saving suggestion.

The statement that "to see closed ether given as a routine, one must go to France or Denmark," is a delightful provincialism, which is paralleled to a degree by a contemporary (2), who states that "ether vapor discharged into a large rubber bag is not generally used in administering ether vapor." The fact is that "discharging ether vapor into a large rubber bag" is one of the very best methods of administering ether. It was introduced by Woolsey, in 1912, and it has been used by the writer and others constantly ever since. It compares favorably with nitrous oxide and oxygen, and is probably safer. Falk (3) reported 800 cases by this method in 1913, and it is used daily in the French (Manhattan) and the Jewish (Brooklyn) Hospitals of this city.

This last cited contemporary, in reviewing the subject of warming ether vapor, employed methods similar to those of Seelig, whom he quotes in his investigations. Among other conclusions, they state that "the warming of ether vapor, however administered, is accomplished in the mouth, pharynx, trachea, and primary bronchi." It may be assumed from this that they had as indifferent success as Seelig (4) had in heating ether vapors. Seelig stated that, "even if we heat it (ether vapor) to a considerable degree, the gas will lose practically all its heat before we can deliver it to the patient." Again, he

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states, "the warmed ether vapor will not stay warmed unless it is held under pressure." It has been shown (5) that ether vapor can be delivered to the patient at any desired degree of heat, and regardless of pressure.

Both Davis (11), of Baltimore, and Nagel, of Montreal, have shown that the temperature is very greatly reduced by the "drop method" of ether. Davis has shown that it is not reduced when the ether is properly given. In the majority of cases reduction of temperature may not mean anything, as the temperature returns to normal a few hours after the patient is restored to bed. In certain borderline cases it may be the dividing point between life and death. The more "open" the method, the more dangerous becomes the "drop" ether, as the amount is necessarily increased, and the full toxic effect of the drug is reached in order to maintain anesthesia. With a semiopen or closed method, both the amount and the toxicity are immediately decreased.

RELATIVE VALUES OF SO CALLED WARMED AND UNWARMED ETHER VAPOR.

Seelig, Boothby, Cotton (6), and others held that it was impossible to deliver warm ether vapor to a patient. They should publicly acknowledge their error. This paper opens up the whole question of the value of warmed ether vapor. The warming of ether vapor is a demonstrated fact, and is no longer open to discussion. The question of its usefulness, however, is still disputed. We may state briefly that the value of warmed ether vapor is based upon, 1, theory; 2, laboratory experimentation; and, 3, clinical experience.

1. *Theory.* The theory of warmed anesthetics is based upon the presumption that inhalation anesthetics increase in value as their specific gravity decreases. The following table of anesthetics, arranged according to their specific gravity, falls in with the generally accepted statistics regarding their comparative safety, and seems to warrant the theory.

Specific gravity (after Baskerville). The specific gravities of the vapors, compared with air—one volume at 0° C. and 760 mm. barometric pressure:

Oxygen	1.105;
Nitrous oxide	1.52;
Ethyl chloride	2.22;
Ethyl ether	2.56;
Chloroform	4.21.

By heating chloroform, for instance, and giving it by the closed method, as will be shown later, it is probably equally safe and acts in exactly the same way as oxygen and nitrous oxide; which proves, in a measure, our contention that all anesthetics are increased in value when heated to the temperature of the blood.

LABORATORY EXPERIMENTATION.

As far back as 1873 or 1874, Clover found that by warming an anesthetic by rebreathing, the anesthetic was increased in value and safety. In 1905, the writer took up the different anesthetics, in regard to temperature, experimenting upon them as to safety, maintenance of body temperature, recovery from anesthetic and aftereffects. It was found, after using thirty-three animals, that it required over twenty minutes on an average to kill an animal with chloroform at 100° F. At room temperature, it required only a little over six minutes. It would thus seem that chloroform at blood temperature is three times as safe as chloroform at room temperature.

The same holds true with nitrous oxide and oxygen. It is almost impossible to kill an animal with warm nitrous oxide and oxygen. Using the same technic, it requires only nine minutes to kill an animal with nitrous oxide and oxygen at room temperature, but eighteen minutes with the gases heated to 98° F. The same holds true with ether; it takes much longer to kill an animal with warm ether than it does with cold. These are end results, and have never been successfully controverted. Certain surgeons and anesthetists held for a time that it was practically impossible to heat ether to body temperature; but this is disproved by the daily use in many clinics of ether heated and remaining heated until inhaled by the patient.

Body temperature. Davis, of Baltimore, has proved that patients lose only 0.29° F. with warmed ether vapor, against a loss of 1.02° F. with the open drop method. The temperature was taken per rectum immediately before starting and immediately after the removal of the anesthetic. The contrast in the general appearance of a patient anesthetized by warmed ether vapor, and another by the open drop method, is all in favor of the patient under the warmed ether vapor. With infants and those in very delicate health, why should not the ether be warmed as well as anything else required for their general health?

CLINICAL EXPERIENCE.

Only those who have actually used both warmed ether vapor and vapors at room temperature are competent to judge of this matter. Would-be critics, who view the question from a theoretical standpoint, and who have never used ether except at room temperature, have no voice in the matter. The fact that professional anesthetists, men who make their living by the administration of anesthetics, such as Teter, of Cleveland, Coburn and Hunt, of New York city, Ansell Cain, of New Orleans, McCormack, of Akron, myself, and many other professional anesthetists have tried both methods and are firmly convinced of their value, should certainly have more weight than that other equally good professional anesthetists who have been swayed by theoretical views, and who have not put the matter to clinical test, should disagree. The further fact that anesthesias are safer and easier to maintain in the summer time than in the winter, and much safer in southern than in northern climates, is borne out by the observations of many competent anesthetists.

PRELIMINARY MEDICATION.

Up to recent times, the value of preliminary medication has been more a matter of opinion than of fact. This refers especially to morphine. In a recent most valuable paper, Benjamin Franklin Davis (7), of Chicago, states: "Morphine alone, preceding local anesthesia, adds nothing to the efficiency of the anesthetic. . . . It makes the patient 'dopy,' and hence deprives the operator of the cooperation of the patient, which at times may be valuable." Bodine, in a personal communication, agrees with Davis that morphine adds nothing to the efficiency of the anesthetic; but states that he gives it in order to "get the *cooperation* of the patient, which is most valuable."

From a broad viewpoint, Bodine is right. A patient is certainly more tractable under morphine than without it. Davis further states, "the preoperative use of morphine should be abandoned, because of the disadvantages of imposing one powerful depressant of the medullary centres, namely, morphine, upon another—namely, ether." The writer has always looked upon *ether* as one of the most stimulating drugs in the whole pharmacopœia. It stimulates respiration, circulation, and every gland and organ of the body. It may be that Davis refers to ether used improperly by the drop method. If, however, it can be proved that morphine is responsible for the small number of cases of postoperative nausea and vomiting, it might be well to discard morphine and employ some other preliminary medication.

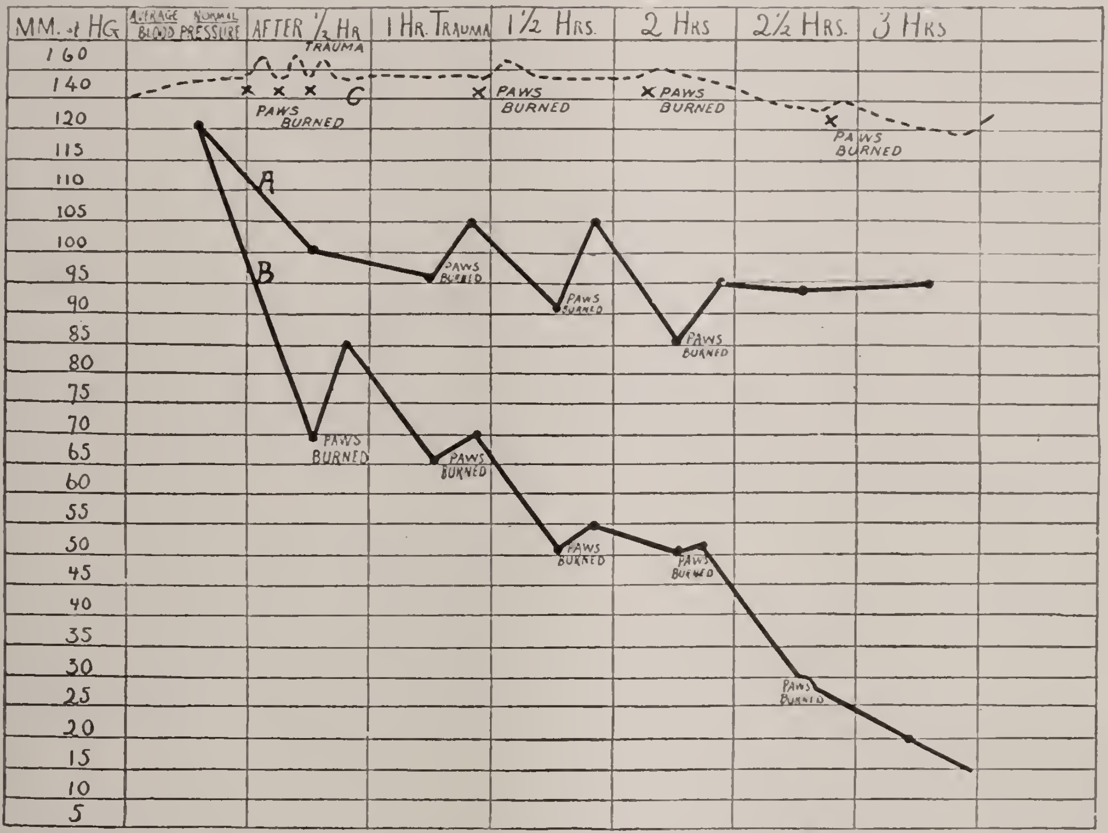

FIG. 1.—Composite tracings (Crile): A, Nitrous oxide (plus oxygen); B, ether (by the open drop method). Connell and Gwathmey: C, Ether by the endopharyngeal method.

Proper preliminary medication renders any anesthetic safer, and eliminates largely the possibility of reflex inhibition, during either local or inhalation anesthesia; it also renders the induction smoother, and the use of holding straps unnecessary. To withhold this, or some similar preliminary, and allow a patient to come to the operating room with all senses alert, usually means an ineffaceable scar on the memory of the patient. It is much easier to maintain an even plane of anesthesia with preliminary medication; and for this reason postoperative vomiting is decreased. Certain preliminaries seem to render easier the postoperative voiding of urine. Preliminary medication is probably employed in over sixty per cent. of the hospitals in the United States, and will be increasingly used as the facts upon which its use is based become better known.

In order to determine whether preliminary medication increases the *margin of safety* of ether anesthesia, experiments have recently been completed in the laboratory of the New York University and Bellevue Hospital Medical College, the detail work being carried out by Dr. E. J. Pellini and the writer. The full report of these observations will soon appear.

Experiments were carried out as follows: A number of animals received each an injection of morphine sulphate for the purpose of rendering them more tractable. Ten minutes later 0.5 c. c. of paraldehyde and one c. c. of potassium bromide per kgm. weight of animal in enough water to make a complete solution, were given by stomach tube. This was allowed to act for about forty-five minutes, after which the animal was placed on the table and anesthetized by the intravenous injection of seven per cent. ether in saline. The time and the quantity of ether solution used was noted *when complete anesthesia* had taken place, and *again when respiratory paralysis occurred*. The animal was then resuscitated by artificial respiration. A period varying from four to seven days or over was allowed for recovery. After this rest the *experi-*

ment was repeated with and without the preliminary medication, except for the morphine.

The following is a protocol showing especially the "margin of safety":

DOG NO. 20.—WEIGHT, 13 KILO.

Without Preliminary Medication.

June 15, 1915.	
10.30 a. m.	0.5 c. c. of 2 per cent. morphine solution.
11.34	Started intravenous ether administration.
11.38½	*Complete anesthesia, using 134 c. c.* ether solution.
11.42	Respiratory failure; *required only 99 c. c. more ether solution.*

With Preliminary Medication.

Sept. 7, 1915.	
2.50 p. m.	0.5 c. c. of 2 per cent. morphine solution.
3.10	6.05 c. c. paraldehyde and 13.0 grams potassium bromide.
3.59	Started intravenous ether administration.
4.01⅔	Complete anesthesia, using *87 c. c. ether solution.*
4.09⅓	Respiratory failure, required *245 c. c. more ether solution.*

From the foregoing we may note:

1. Anesthesia comes on sooner and less ether solution is used after the administration of preliminary medication.

2. The margin between complete anesthesia and respiratory failure is lengthened with preliminary medication, making anesthesia a safer procedure; in other words, "the margin of safety" is increased.

In every instance the animal was anesthetized more easily and with less excitement when preliminary medication was employed.

Preliminary to surgical operation, or as a hypnotic to replace or to assist morphine, this combination can be used with confidence; it has been most satisfactorily used in over 200 cases. When for any reason ether is contraindicated, it can be used as a preliminary to nitrous oxide and oxygen.

With the patient in the Sims position, give per rectum:

℞ Paraldehyde,
Potassii bromidi, } ....ãã ʒi vel ij;
Aquæ q. s. ad.................................℥iv.
M. Sig. Give thirty minutes before operation.

Crile (8) has demonstrated that when the administration of morphine precedes the induction of anesthesia, the acidity of the blood is less than in anesthetized animals which have not received this preliminary dose. Neither did the morphine when thus given interfere with the return of the blood to its normal alkalinity. If, however, morphine was given *after* acidity had been produced by the anesthetic, it delayed the time of neutralization; and if given in large doses it prevented the animal from overcoming the acidosis. It seems, therefore, that morphine, as a regulator of acidosis, should always be given before, instead of after operation.

Those who have given preliminary medication a thorough clinical test are firmly convinced of its value from both a psychic and a practical standpoint. The new preliminary, paraldehyde and bromide of potassium, admits of many variations, and should have a thorough trial. For instance, bromide of potassium, one to two drams, may be given in a quart of water, per rectum, the night before the operation. The paraldehyde may be given alone or in combination with morphine, one half to three quarters of an hour before the operation. Either drug may be given alone or in combination with the other. All authorities are agreed that paraldehyde and potassium bromide are among the safe drugs of the pharmacopœia.

LIGHT ANESTHESIA.

Gatch has shown very conclusively that, generally speaking, light anesthesia is safer and better in every way than deep anesthesia. McKesson (9) seems to bear out this theory in his study of blood pressure. He states that "any influence which reduces the pulse impact or pulse pressure, even though an increased pulse rate maintains an equivalent or greater output of blood, is a cause of arterial dilatation, or congestion, which may be of such general distribution as to be the cause of shock. This is one of the results of pushing an anesthetic to deep relaxation, which reduces the pulse pressure in the same way and at the same time that the skeletal muscle is relaxed, with a difference only in degree." The writer wishes to add his opinion that the lightest possible anesthetic consistent with the surgeon's best work, is the safest for the patient. The dangers of a light anesthesia are, first, the possibility of the surgeon beginning his work before the patient is fully anesthetized; and, second, reflex inhibition. This latter event is hardly possible under a good ether or nitrous oxide and oxygen anesthesia.

NITROUS OXIDE VERSUS ETHER ANESTHESIA.

A paper that possibly had more to do with the general acceptance of nitrous oxide and oxygen than any other, was published by Crile (10) in January, 1910. The writer, among others, was influenced by the accompanying chart (page 827). As his views have changed considerably regarding the comparative value of nitrous oxide and ether, it is high time that the results of the joint work of Connell and himself should be published.

The composite tracings in black (see chart) showed that "an animal under nitrous oxide anesthesia endured shock producing trauma better than an animal under *ether* anesthesia." Crile at that time ignored all other methods of giving ether except the "drop method." This experiment of Crile's was paralleled by Karl Connell, assisted by the writer, in the medical college laboratories of Columbia University, but with this notable exception; the ether was given pharyngeally by a vapor method in which the quantity of ether and the volume of air was known at all times. The dotted line tracing shows the result. Bearing in mind the fact that the ether in Crile's experiment was given by an expert, and by the "drop method," the caption for this chart as it now stands should read: An Indictment of the "Open Drop" Ether Method; or Ether, when Properly Given, is as Safe an Anesthetic as Nitrous Oxide.[1]

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[1] This chart was presented at the annual meeting of the American Association of Anesthetists at Detroit, in the discussion of Doctor Crile's paper on An Experimental Research Into Nitrous Oxide and Ether. Dr. Crile stated that, in addition to burning the dog's paws, the abdomen was opened and the peritoneum scraped in order to produce shock. In the article he does not state that this was done. The tracings, therefore, are not comparable. The chart does show very conclusively that under ordinary trauma the blood pressure is fully sustained when ether is given properly. In the writer's opinion, the results of all comparisons of nitrous oxide and oxygen to ether given by the drop method are worthless, inasmuch as the "drop ether" is not a scientific method.

If all of Crile's experiments with ether mean that the "drop method" alone was used in comparison with nitrous oxide anesthesia, then all of his deductions are erroneous. *Animals under ether, properly given, stand shock as well as those under nitrous oxide anesthesia.*

PART II; BEVAN'S THEORIES.

A paper by Bevan (12), comparing the different anesthetics and methods in common use, is full of misinformation, but is so excellent in arrangement that I propose to close this review by patterning my own criticisms according to his plan.

Bevan's paper considers all anesthetics from the following standpoints: First, safety; second, comfort; third, efficiency; fourth, control—avoiding anesthetics which cannot be withdrawn at the first appearance of danger; fifth, simplicity and general adaptability of method; sixth, aftereffects on blood, tissue, and viscera; seventh, complications—vomiting, etc.; eighth, effect on immunity against pus organisms, pneumococci, etc.

While following the outline of this paper as closely as practicable, it will be impossible for us to consider certain agents alone, as Bevan has done, for the reason that American and European statistics, as well as a knowledge of the physiology of the drugs under consideration, teach us that anesthetics in combination and sequence are safer than any single agent used alone. For instance, nitrous oxide should never be used alone; oxygen should always be associated with it, and in many cases ether makes it still safer; chloroform, too, is much safer when used with ether and oxygen. All anesthetics are increased in value by the use of oxygen, rebreathing, moisture, and warmth.

The views of Bevan are given in the left column of the parallel; those of the writer in the right column.

CHLOROFORM BY INHALATION.

Open drop method (Bevan).	*Closed method with rebreathing, preferably by the Roth-Drager apparatus (Gwathmey).*
1. Safety.	
The most dangerous of all inhalation anesthetics. Deaths from one in 1,000 to one in 3,000 on the operating table.	One of the safest of all inhalation anesthetics. Death on the table almost impossible.
2. Comfort.	
A most agreeable anesthetic to the patient.	Same.
3. Efficiency.	
The most efficient anesthetic. Anesthesia and relaxation profound and complete.	Same.
4. Control.	
The anesthetic can at once be stopped on the appearance of danger signals, but the chloroform already in the system cannot be rapidly eliminated, and the effects persist for a considerable period. The margin between the required anesthetic dose and the toxic dose is too narrow for safety.	The anesthetic can at once be stopped on the appearance of danger signals, and when mask is removed the chloroform in the system is rapidly eliminated, the patient awakening immediately as from a good nitrous oxide-oxygen anesthesia. The margin between the required anesthetic dose and the toxic dose, when given in this way, is extremely wide.
5. Simplicity and General Adaptability.	
All that could be desired.	Same.
6. Aftereffects on Blood, Tissues, and Viscera.	
Reduces hemoglobin. Produces often what is now generally recognized as late chloroform poisoning with fatty degeneration of liver, kidneys, and muscle tissue, which is usually fatal.	*Late* chloroform poisoning, fatty degeneration of organs, reduced hemoglobin, etc., do *not* occur when given as outlined above.
7. Complications.	
Vomiting in about one third of the cases. Lung complications and nephritis in a small percentage.	Lung complications, nephritis, vomiting, rare if ever.
8. Effects on Immunity.	
Reduces resistance against pus organisms, pneumococcus, etc.	Resistance unimpaired.
Conclusions.	
Because of its efficiency, comfort, and simplicity, it has probably been employed more generally the world over than any other anesthetic, possibly more than all other anesthetics combined. And yet the time has come when chloroform, in spite of its many advantages, should be absolutely and finally discarded because of the huge mortality attending its use, both on the operating table and the late chloroform deaths, and because we have for all classes of surgical cases efficient and much safer agents. It is possible that in military surgery chloroform may still find a legitimate place.	Chloroform, even with this apparatus, is rarely used throughout, being usually combined with ether as required. Chloroform should also be used warmed and with oxygen as a preliminary to ether vapor anesthesia. It should never be used in routine practice by the drop method as a terminal anesthetic. With some patients (obese alcoholics), and for short operations, it is one of the safest anesthetics. It should also be used with patients who have suffered severely from previous ether administrations.

ETHER BY INHALATION.

Open drop method (Bevan).	*Ether by vapor method, with definite quantities of air and oxygen—open or closed method (Gwathmey).*
1. Safety.	
The safest anesthetic agent known for prolonged anesthesia. Deaths from one in 5,000 to one in 10,000.	Much safer than the open drop.
2. Comfort.	
Not an agreeable anesthetic to take, especially by the closed methods; much more agreeable in expert hands by the open drop methods.	Most agreeable by either open or closed method—essence of orange-ether sequence.
3. Efficiency.	
Very efficient; complete anesthesia and relaxation can be obtained.	More efficient and more complete anesthesia and relaxation than the "open drop."
4. Control.	
The anesthetic can be stopped on danger signals, and the agent fairly rapidly eliminated, if necessary, under artificial respiration. The margin of safety between the anesthetic dose and the toxic dose is wide.	Same.
5. Simplicity.	
Simplicity and general adaptability by the open drop method is all that could be desired.	Simpler and better adapted to general use than the drop ether.

6. Aftereffects on Blood, Tissues, and Viscera.

Reduces hemoglobin, slightly increases coagulation of the blood, and produces few if any cases of injury to the liver, kidneys, and muscle tissues such as occur from chloroform.	Same, except reduction of hemoglobin a question.

7. Complications.

Vomiting in from thirty to forty per cent. of cases. Lung complications and nephritis in a small percentage of cases.	Vomiting in only ten to fifteen per cent. of cases. Surgical complications and nephritis same.

8. Effects on Immunity.

Reduces slightly resistance against pus organisms and pneumococci, etc.	*No loss of resistance* against pus organisms.

Conclusions.

Ether by the open drop method is the safest general anesthetic known for producing prolonged anesthesia. It should be today the standard anesthetic in the surgical clinic. The discomfort of ether anesthesia when properly given by the open drop method by an expert can usually be practically eliminated. In the few cases in which the repugnance to ether is great, the sequence of gas-ether can be employed. The closed method of giving ether is not so satisfactory or so safe as the open drop method. Complicated apparatus to control the percentage of ether and to warm ether possess no advantages over the simple drop method and should be discarded. The giving of ether by the drop method is an art which must be acquired under the instruction of an expert.	Ether by the open drop method is a crude, unscientific method, and should *never* be used in this way except as a *sequence* or as a *preliminary* to some other anesthetic or method. The open drop method is a negative proposition, depending for its safety upon the fact that the gauze on the mask freezes to such an extent that an overdose is prevented. Open drop and the gas-ether sequence are both pioneer methods that have long outworn their usefulness. Some patients are safer and better with the open method, others with the closed method. No human hand can approximate the even ether vapor given from a compressed air machine or oxygen tank.

(*To be concluded.*)

THE SOURCES OF ERRORS IN DIAGNOSIS.

An Analytic Retrospect Based Upon a Quarter Century's Experience,

By Edward C. Hill, M. D.,

Denver.

My work as a medical man has been chiefly concerned with diagnosis in association with other physicians and surgeons, and I have committed and observed numerous mistakes in diagnosis, nearly all of which might have been avoided by taking time and giving more attention to the details of each case. In the enforced hurry of college clinics and hospital wards "guess and guess again" is, in the nature of things, more commonly practised than with our private patients. For convenience of presentation, I shall take up the principal causes of diagnostic errors under a dozen different headings.

Mistaking symptoms for diseases. In the prepathological period the rule was to treat symptoms rather than diseases. Those were the days of winter cough, spring fever, and summer diarrhea; of black water, pink eye, and green sickness, not to mention "blue balls" and "yaller janders." Symptomatic treatment should be always regarded as merely a temporary palliative measure. In my little book, *Pain and Its Indications,* I have differentiated 175 separate and distinct causes of headache, scarcely any two of which should be treated just alike. So for insomnia we may give trional, veronal, luminal, sulphonal, and damnitall, world without end, but a cure of the condition is not to be expected along this line. Cough can arise all the way from wax in the ear to an incompetent heart, as well as from any affection of the respiratory tract.

The stomach is a central signal station for the autonomic nervous system, and dyspepsia, when not psychic in origin, or dependent upon ulcer, cancer, or obstructive adhesions, is nearly always a reflex from a diseased appendix or gallbladder. No two conditions are more liable to be confounded clinically than hyperchlorhydria and the hyperacidity due to fermentation resulting from deficiency of hydrochloric acid; and only a chemical analysis of the gastric contents following a test meal can decide the diagnosis and proper treatment. Albuminuria accompanies a hundred different conditions (hemic, toxic, nervous, circulatory, adventitious, postural, etc.), beside organic affections of the kidneys, in the diagnosis of which, indeed, the blood pressure and the eye grounds are often of equal importance with the urinary analysis. I remember distinctly the case of a young man who, twenty-five years ago, was rejected for life insurance in an old line company because of a trace of albumin due to gonorrhea, from which he was then suffering. The good old medical examiner has long since crossed over the range, while the rejected applicant is hale, happy, and prosperous.

Mistaking effects for causes. Nowhere else than in medical diagnosis is it easier to put the cart before the horse. The different forms of anemia, for instance, are practically always secondary to some infection—pyorrhœa alveolaris may cause pernicious anemia—loss of blood, (hemorrhoids, menorrhagia), intestinal stasis, chlorosis, or conditions of malnutrition; and while iron and arsenic are of great service in the treatment of anemia, the cure must be sought further back than in the blood. Dropsy, by the laity, is commonly considered a disease, but is in reality, in the great majority of instances, a sign of disease of the heart, kidneys, or liver. Pleurisy is practically always a complication of pneumonia (which it often obscures), tuberculosis (usually latent), or some other general infection.

We shall not soon forget that beautiful nebular hypothesis which Alexander Haig constructed some twenty years ago, with uric acid as the central sun. Unfortunately for this attractive theory it has been demonstrated, by conclusive clinical and laboratory tests, that (except perhaps in gout) excess of uric acid is always a secondary condition, dependent upon a rapid or excessive breaking down of nucleins (most marked in leucemia) and purin bodies in the food or the tissues (fevers and inflammations). Time and again have I seen the daily quantity of uric acid in the urine diminish to normal with improvement of oxidation through measures directed to the heart and the blood. A case of this nature was seen with Dr. Melville Black, the daily output of uric acid being more than doubled and the patient unable to see to read, made a perfect recovery under a program of elimination and circulatory tonic treatment.

Overlooking the focus of infection. The great majority of diseases which physicians and surgeons are called upon to treat, are of infectious origin, and only by finding and removing sources of bacterial poisoning can we hope to aid nature in achieving a permanent cure. We are coming more and more to realize the etiological importance of infectious foci, as, for instance, the gums, teeth, and tonsils in arthritis (even of the feet), and Dana has lately reported cases showing very painful protracted periosteal lesions due to metastatic infections. As maintained by Dr. William C. K. Berlin, of this city, nephritis is probably nearly always a result of bacteriemia or of chronic irritation by the toxins of attenuated or destroyed bacteria—the so called latent infections of Adami. Opie and Adami have taught us how latent infections, particularly colon toxemia from the bowels and the streptococcal poison of pyorrhœa alveolaris, give rise to cirrhosis of the liver (favored by alcohol or chloroform) and to pernicious anemia (hypochlorhydria predisposing by lessening antisepsis).

Many obscure, painful, and debilitating conditions are the result of continual poisoning of the blood and nerves from pockets of pus in the glands (tonsils, prostate) or in bony cavities (antrum disease especially). In the acute suppurative otitis media of infants, a febrile temperature may be the sole manifestation, and in over half of these cases there is no indication of pain on the part of the little patient. An interesting subject of study in the category of infection was seen two years ago in consultation with Dr. F. G. McElveen. The patient, a plumber, had been confined to his room for several weeks because of a painful partial paralysis of the lower limbs, diagnosed by a neurologist a few days before, as due to myelitis, with fatal prognosis. On entering this patient's room we at once noticed an offensive odor, which we traced to his tonsils, an exceptionally foul and ragged pair. We concluded that the patient was suffering from multiple neuritis due to septic infection from the tonsillar region. Tonsillectomy was performed, and the man was well and working at his trade in less than three months.

Disregarding diet and habits. Whether or not we agree with the Teutonic proverb, *Man ist was er isst*, the evil effects of improper diet and intemperate habits are universally acknowledged. Witness the gastritis, neuritis, and hepatic cirrhosis of chronic alcoholism, and the hyperchlorhydria, irritable heart, and vasomotor depression of habitual nicotinism. The etiological influence of proteins is as evident in nephritis and arteriosclerosis, as is that of carbohydrates in diabetes mellitus. Skin diseases are particularly related to errors in diet, as Bulkley has well shown, and I recall the case of a man who had suffered several winters with an aggravated type of eczema of the hands, cured at once and permanently by giving up coffee on the advice of Dr. J. N. Hall. Urinary troubles may be made either better or worse by the amount of water ingested. Illustrative of this fact, I may cite the case of a tramway motorman who came to me with the self made diagnosis of stone in the bladder, because forsooth he had to hurry to empty his viscus at the end of each run. Upon examining his urine, I found it actually to contain about four times the usual amount of sodium chloride, and this was due to salt addiction, which led to the drinking of a profuse quantity of water. Upon correcting this bad habit, he promptly recovered.

A very striking example of the relation of food to stomach disorders was that of a young man who was sent to Dr. Joseph Cuneo from the western part of the State, with the tentative diagnosis of gastric cancer based upon pain, vomiting, loss of at least twenty-five pounds in weight, and a lack of free hydrochloric acid with the presence of much lactic acid in the siphoned gastric juice. While questioning and examining the patient, we heard a rustling sound, which we ascertained came from a paper bag of candy in the young man's pocket. He was, in short, a candy "fiend," eating confectionery continually. He was at once deprived of sweets in general, his abdominal symptoms subsided, and within two months he had more than regained his former weight and strength.

During the year 1907 there were in the registration area of the United States fifty-eight deaths attributed to "ptomaine poisoning." In the same year in India 24,000 people were killed by poisonous serpents. At present, in this country, according to government statistics, about twenty-five persons lose their lives each week because of gasoline burns or explosions. "Ptomaine poisoning," like "rheumatism," is nearly always something else. In fact, the term itself is mainly a misnomer, for which "bacterial food poisoning" should be substituted. The causative bacteria belong to but a few groups, including as most important Bacillus proteus (putrefied meat or fish, potato salad), Bacillus paratyphosus and Bacillus enteritidis (diseased animals), Bacillus coli, and Bacillus botulinus, which causes the very fatal but extremely rare nervous type of anaerobic food poisoning (sausages, hams).

Most cases of so called ptomaine poisoning are either acute indigestion from excess of food or an incompatible combination of foods, or else some more or less obscure surgical condition, such as perforating duodenal ulcer or mesenteric thrombosis. To illustrate, a hotel employee, soon after eating a late supper of oysters at a well known Denver fish and oyster house, was taken very ill with abdominal pain, vomiting, purging, and collapse, and died within a few hours. The physician who attended him was ready to sign the certificate of death as being due to "ptomaine poisoning." A toxicological analysis of the vomit, made by myself, proved negative. At Coroner Jaeger's direction the body was submitted to autopsy, skillfully done by Dr. Helen Craig, This autopsy revealed serious syphilitic changes in the heart and large bloodvessels, and particularly multiple tuberculous ulcers of the small intestine. One of these ulcers had perforated the bowel and excited all the symptoms wrongly diagnosed as "ptomaine poisoning." If a necropsy had not been performed, and the newspapers had given the matter the usual sensational publicity, we can easily deduce what a rank injustice would have been perpetrated upon the unfortunate owners of the restaurant where the subject of sudden death had eaten his last meal.

Neglecting the mechanical factor. It is said that there are still not a few doctors who think they can practise medicine with a thermometer, a stethoscope, a fountain pen, and a prescription pad. "If such there be, go mark him well" as a man who is neglecting great opportunities. The reason why an osteopath or a chiropractor occasionally succeeds in the treatment of a case where a regular practitioner has failed, is because the manipulator concentrates all his attention upon the mechanical relations which the more scientific physician overlooks or ignores. Hippocrates, says Allbutt, "had no more scruple in using his hands in the service of his brains than had Phidias or Archimedes." In this time and country Goldthwaite and his Boston confrères deserve great credit for presenting the mechanical aspects of the disorders of the human body in a rational and practical manner.

Consider the feet, how often they are treated for gout or rheumatism, with colchicum or salicylates, when the chief or only trouble is a static defect (weak foot, flat foot, short tendon, etc.) or else an arthritis originating in the gums, tonsils, or male urethra. True rheumatism of the feet is indeed almost unknown, except as a part of an acute febrile polyarticular infection. Gout, on the other hand, is probably of much more frequent occurrence in the United States than has generally been supposed. It is distinguished diagnostically by the usually nocturnal onset at the dorsum of the foot or base of the great toe, by the shining angry appearance with little or no fever and no suppuration, by highly uratic urine, and by its refractoriness to the salts of salicylic acid.

Again, if we keep a record of backaches, we shall find that much the most common cause is sacroiliac subluxation, or something akin to it, whereas kidney disease is a comparatively rare factor in pain in the dorsal region. I bring to mind the case of an old lady who had been treated with antirrheumatics more than a score of years, and who was at once relieved by strips of plaster about the pelvis, and a little later by the use of a well fitting leather belt.

In the study of gastrointestinal disorders, interference with the function of motility is most important, strictures, bands, and adhesions causing obstructive delay can now be inspected very satisfactorily by means of the fluoroscope and röntgenograms in conjunction with bismuth or barium meals and enemas. What is of the greatest practical utility, is that the x ray is often of unique service in determining whether or not a given abdominal condition requires surgical intervention. To Goldthwaite again the profession is indebted for a thoroughly scientific presentation of the relation of abdominal ptoses to abnormal postures and attitudes.

In every part of the body the mechanical factor may stand forth in clear perspective to the trained observer. For example, the commonest cause of night cough in children is irritation of the throat by mucus running down from the nose, and the logical treatment of such a cough (aside from surgical measures) is to keep the child's head high and soothe its nose and throat by the instillation of some bland oil.

Slighting the reflexes. Eating ice cream sometimes excites pain in the eye, owing to a reflex irritation from one of the maxillary branches of the trifacial nerve to the ophthalmic branch of the same nerve. So a decayed tooth may cause pain in the eye or ear; wax in the ear, pain at the tip of the shoulder; and hip joint disease, pain in the knee. I have at present under vaccine treatment a case of chronic antrum disease, in which, during exacerbations, the patient complains of pain and tenderness, not only in the affected malar region, but also in the lateral occipital region and over the spine of the scapula. Most of us have met with patients in whom irritation of the external auditory canal (as by wax in the ear or by local examination or treatment) has excited a dry cough. The explanation is that the auricular branch (Arnold's nerve) of the vagus lies in a groove adjoining the external auditory canal.

The pain and other symptoms of angina pectoris are ascribed by Mackenzie to a localized irritable spinal focus involving the lower cervical and upper dorsal nerves and their distribution on the side of the chest and neck, in the axilla, and down the inner side of the left arm to the little finger. Even the viselike sensation of severe angina he attributes to a visceromotor reflex affecting the muscles of the left side of the chest. I have known several cases of angina pectoris in which the pain was chiefly or wholly in the left arm, and a few of these patients had been treated erroneously for rheumatism. I recall also a case of pneumonia of the right lower lobe, with marked diaphragmatic pleurisy, involving the phrenic nerve, which was responsible apparently for pain in the right side of the neck as the chief subjective symptom.

We are all familiar with the referred pain in the back near the right shoulder blade in connection with gallstone disease, but Mackenzie calls attention to a much rarer reference, namely, to "the top of the right shoulder, striking down the outside of the arm." He has known such patients to be treated for years for "neuritis," in whom the passage of a gallstone has been followed immediately by relief. Gastric derangements, particularly flatulence and gastrectasis, may cause a similar referred pain at the tip of the left shoulder. In a woman treated recently for gastric ulcer of the posterior wall (verified by x ray plates), local hyperalgesia at the left side of the eleventh and twelfth dorsal vertebræ was much in evidence.

I have been among that considerable company who have mistaken a basal pneumonia of the right side (affecting the twelfth dorsal and first and second lumbar nerves, and thus giving rise to pain and rigidity in the right iliac fossa) for acute appendicitis. My patient was, happily, not operated on. Careful examination of the chest should prevent mistaking disease here for inflammation of the appendix, and a microscopic examination of the urine ought to aid in discriminating between stone in the renal pelvis or ureter and those rare cases of appendicitis with frequent urination.

Of all origins of referred and reflex sensory symptoms, probably the prostate gland is the most prolific source of diagnostic error. It causes not only local soreness in the rectum and perineal region, but often a broad band of backache across the lower sacrum, a numb pain in both thighs, sometimes extending even to the heels, and a dull pain in the abdomen reaching to the umbilicus or higher. It seems to me that the greater number of attacks of so called sciatica arise either from sacroiliac strain or else from an enlarged and tender prostate—a condition determined or excluded in a moment by the introduction into the rectum of the rubber covered finger. There is a sort of pseudoparaparesis, accompanied by feelings of gloom and melancholy, readily relieved by thorough milking of the seminal vesicles and prostate with the middle finger. As a general rule in an obscure affection in a middle aged or elderly man, we should think of the prostate gland as a possible offender, and duly examine the parts per rectum and with a catheter (for residual urine).

Ignoring the psychic factor. Consciously or unconsciously, in the treatment of sick people we are constantly employing suggestion; but in diagnosing their complaints we are prone to overlook our patients' hidden griefs and worries—the pangs of unrequited love, the cares and trials of later life, and the great disillusionments which come to us all. Moreover, there is nothing too absurd, too senselessly superstitious for the human mind to give credence and act upon, from the blessed water used for bathing a sore knee to the gibberish gammon of the mercenary vampires of Christian science. The sexual instinct may be rampant or submerged, the traits reminiscent of lower animals (dog and hog in man, cat and peacock in woman) may obtrude obnoxiously, but I cannot think so meanly of the species to which I happen to belong as to believe in the Freudian scheme of cathartic psychanalysis.

A morbid desire for sympathy is the most prominent characteristic of the hysterical girl or woman. It is this longing to be petted and caressed which makes her an inveterate liar, telling of terrible pains (an inordinate capacity for morphine) with a smiling, mobile, and vacuous countenance, and simulating all the ills to which our flesh is heir. Other signs and symptoms which have seemed to me important in the diagnosis of hysteria are the curious twitching of the eyelids, ptosis, contraction of the visual fields; anesthesia of uvula and pharynx; aphonia coming on suddenly under excitement, and relieved by suggestion with or without material applications (such as freezing with ethyl chloride); tonic spasms with much ado accompanying, and promptly relieved by a hypodermic injection of apomorphine; astasia abasia or sudden hemiplegia (the face escaping), in connection with a dragging or shuffling gait; flatulence, transient polyuria, and globus hystericus; mammary, ovarian, and spinal hyperalgesia; analgesia of the glove and stocking type; and semistupor, with eyeballs fixed—quivering resistance of tremulous eyelids to opening—easily roused by firm pressure upon the supraorbital nerve in its notch above the eye. Most mysterious of all the symptoms of hysteria is the hyperpyrexia occasionally noted. Dr. L. T. Durbin, some time ago, reported before the Denver Medical Club a case of this kind in which the patient's temperature stood at 110° F. with no other manifestation of disease.

Diagnosis by proxy. "Letting George do it" all is a bad policy, even in medical or surgical diagnosis. No matter how wise and able are our confrères, we should always take their opinions *sub judice;* that is, with a grain or two of salt. On the other hand, the keen eyed specialist will frequently discover invaluable evidence not accessible to the average general practitioner. For example, in several instances I have known the oculist to make a definite diagnosis of chronic Bright's disease before the appearance of albumin and casts in the urine. What is most needed in the diagnostician is that fine judicial balance which weighs all the evidence in the case, from whatsoever source obtained, and calmly and without haste, seeing the whole matter in clear perspective, arrives at a conclusion in which every part of the symptom complex, past, present, or future, fits in its place like a brick in a house.

Diagnosis by predilection. How true it is that we see the things we look for, and fail to see those for which we do not search. Hence the neurologist may diagnose a case of pernicious anemia as myelitis, an aurist may treat the ear when the teeth are at fault, and a surgeon may operate at the site of a referred pain. Despite this natural and pardonable tendency to magnify one's own specialty, my observation has been that the great majority of specialists and surgeons are fully as honorable in the matter of operation or nonoperation as is the general practitioner in making or not making unnecessary calls. All of us need to be on the alert to avoid conclusions based upon our preferences rather than upon the premises. For myself, I recall diagnosing a case of varioloid in the early stage as a pneumococcic infection, having found a large number of pneumococci in a swabbing from the throat. On the other hand, I have had the good fortune in a number of cases of bronchitic asthma to determine the bacterial cause and, by means of autogenous vaccines, bring about considerable relief or even a clinical cure. One of these patients, referred by Dr. Joseph H. Allen, had found it necessary to inject adrenaline once or twice each night for six months, because of asthmatic attacks, from which she has now been practically free for nearly two years.

The pathognomonic delusion. No more frequent error is made, perhaps, than to base a diagnosis upon a single sign or symptom. For example, if a patient shows loss of knee jerks he is liable at once to be set down as a syphilitic suffering from locomotor ataxia. Yet there are at least thirty other conditions in which knee jerks are absent, and of these hysteria and multiple neuritis are probably most important.

Far be it from me to detract from the prestige of the laboratory worker, but in truth and in fact there is no part of applied medical science in which interpretation of the findings is of greater moment. To illustrate historically: My copy of William Beaumont's *Experiments and Observations on the Gastric Juice and the Physiology of Digestion*, edition 1834, gives correctly hydrochloric or muriatic acid as the normal acid of the gastric juice, the author's conclusion in this respect being fortified by tests made by Professor Dunglison and Professor Emmett, of the University of Virginia, and Professor Silliman, of Yale College. Dr. J. C. Dalton's *Treatise on Physiology and Hygiene,* edition 1876, which I studied the following year, gives lactic acid ("the same acid which is produced from sugar in the souring of milk") as the normal acid of gastric juice, in the proportion of 4.78 parts per 1,000. Next comes Ewald, edition 1892, who emphasizes the importance of the absence of hydrochloric acid and the presence of lactic acid as signs of gastric cancer; and a few years later, he recommends a breakfast of oatmeal (instead of bread and water) as being free from preformed lactic acid. The Boas-Oppler bacilli, when first discovered, were thought to be quite certain evidence of gastric cancer; but now we know that they simply depend upon an organic acid environment, that the absence of free mineral acid is a more constant token of pernicious anemia than it is of gastric cancer, and that the physiognomy of this disease is made up of a number of features, all of which must be brought together in order to recognize the disease. In connection herewith, I wish to emphasize the practical utility of a study of the cytology of the stomach washings, as recently practised by Caussade. It seems that cancer cells from the stomach, when properly obtained and stained in the wet state, are not at all difficult to determine.

When a housewife invents a new kind of pie, she becomes in a measure a mother to that pie, and forever after she will cherish it as the most delicious pie that ever was or will be. In much the same way the scientific investigator, having discovered a new test, can see nothing but good in it. Abderhalden's hypothesis of the protective ferments makes interesting reading, but the actual tests based upon his theories have but little practical value (the test for pregnancy, it is said, reacting positively with one third of all the men upon whom it has been tried), and, in short, Herr Professor Abderhalden is about the only laboratory man who still clings to these tests with unfaltering devotion.

Another imported test which is much overrated is that of Wassermann for syphilis. A fair statement of the present status of this test, based largely upon a report of 325 specimens of blood collected from 292 persons and sent to seven competent serologists (Uhle and MacKinney, *Journal A. M. A.,* lxv, 863, 1915), is given in an editorial article in the *Medical Record* for September 25, 1915, from which I take the liberty of quoting a few sentences: "From the normal and nonsyphilitic cases the positive results varied from 2.6 to 18.1 per cent. There were conflicting reports, but, what is worse, 'conflicting reports from the same serologist on specimens from the same individual withdrawn at the same time under identical conditions.' All of the laboratories agreed in twenty-one per cent. of the specimens, they disagreed materially in nineteen per cent., and varied in from one to four of the ten results (some serologists used more than one antigen) in sixty per cent. In other words, if a specimen of blood from the same individual be submitted to ten tests by different serologists, there is one chance in five that the tests will agree." What then can be said of the value of the Wassermann reaction as a diagnostic procedure? A single negative result certainly does not exclude syphilis, and even a series of them may be overruled in the presence of sufficient clinical evidence. We may, therefore, conclude that a negative result has little or no value except as it may confirm the clinical diagnosis. A positive test is a frequent symptom of syphilis; and therein lies its chief danger, for the most serious mistake that can be made is to pronounce a man syphilitic and thereby condemn him to a lengthy treatment and lifelong suspicion without adequate reason therefor. But the Wassermann is not pathognomonic of syphilis, since it occurs in other conditions (malaria, lead poisoning, pulmonary tuberculosis, diabetic lipemia, and acidosis), and it cannot be too strongly emphasized that a diagnosis of syphilis must not be made upon the Wassermann reaction alone." This reaction, it seems, depends in a measure upon the cholesterin content of the blood, which accounts for the fact, perhaps, that the ingestion of alcohol renders an otherwise positive Wassermann negative. For the same reason, probably, fatty foods tend to yield a pseudopositive reaction, and at the Mayo clinic (where, however, I understand, the Noguchi modification is employed), it is customary to starve patients until midafternoon before withdrawing blood for the test for lues.

Names without sense. The correct method of naming a disease is by combining etiology and regional pathology, as when we say streptococcal tonsillitis or tuberculous peritonitis. Many misnomers are still to be found in medical literature, and some of these are encountered nearly every day. Malaria has nothing to do with bad air, nor gout with a dropping, nor diabetes with a siphon, nor gonorrhea with a flow of semen, as the names would indicate. As for "rheumatism," the term is so much abused that we feel almost ashamed to make a diagnosis under this name. Dermatological nomenclature is particularly rich in names that sound well, but mean almost nothing; e. g., psoriasis (from the Greek word for itch, with which psoriasis was formerly confounded), eczema (a boiling out, or heat eruption), lupus (Latin for wolf), acne (the acme of life), pityriasis (bran), and erythema papulosum (a pimply redness).

The name neurasthenia (literally, nerve weakness) means little more than the corresponding archaic forms, general debility and nervous prostration, but it continues to roll its pentasyllabic length with unctuous euphony from the tongues of most medical men. The term simply implies, what the patient knows already, that his nerves are tired, and is really an obstacle in the way of more exact knowledge. The category in which a great many "neurasthenic" patients fit is the condition of vasomotor depression, or blood ptosis, admirably described by Crampton in the New York Medical Journal for November 8, 1913. Every day I make use of the table printed in his paper, and have found the patient's subjective state to correspond almost invariably with the changes in the vasomotor tone. These low vasotone cases complain chiefly of weakness, faintness, and dizziness on rising or walking, coldness and paresthesia of the extremities (the "x" disease of Mackenzie), and an all round deficiency in that vigor and vim which made Sunny Jim so famous in his day. Of course, we must make sure there is no underlying anemia, syphilis, latent tuberculosis, diabetes, or other serious organic disease. Uncomplicated cases of lowered vasotone respond quickly and satisfactorily to large doses of strychnine, the free use of caffeinized drinks, and the cool spinal morning shower bath. For the frequently accompanying cardiac dilatation of the greater altitudes, tincture of strophanthus is usually efficacious.

Sheer ignorance. There is so much to learn and to forget in the practice of medicine, that it is no wonder the human mind fails at times to grasp the significance of individual signs and symptoms, or even mistakes the normal state for something abnormal. For example, in infants the liver, when the child is upright, reaches one half inch below the ribs, and the heart extends to the left nipple or beyond—and so the erroneous diagnosis of enlarged heart or congested liver is sometimes made. Young mothers, and occasionally young doctors, have been known to mistake the Epstein pearls, the whitish areas over the hamular processes of the palate bone, for a form of stomatitis. The minute miliary transparent bodies visible upon the soft palate of an infant's mouth are, according to Koplik, quite normal.

Mistakes of this kind remind one of the Christian science lady who had a cat, and she (the cat) had a litter of kittens, and "the poor little kittens were all born blind, but I prayed and I read *Science and Health*, and after ten days every little kitten got its eyesight just as good as anybody's—Glory be to Mother Mary Baker Glover Patterson Eddy!"

A field in medicine which has been barely explored as yet by such pioneers as Kocher, Sajous, and Cushing, is that of the ductless glands and animal extract therapy. Slight degrees of excess or insufficiency are especially liable to escape detection in the present state of general ignorance of this province, although such changes may easily account for otherwise obscure symptoms. I believe that when a thorough knowledge of the functions and interactions of these glands becomes an essential part of medical science, the physician will be able to play the harmonies of health upon the keys of life as never before. I further believe that quite possibly the control of the cell anarchy called cancer lies in the study of these glands, an hypothesis to be verified or nullified only by experimentation on the diseased human subject.

In conclusion, what words are more true and expressive than those of the master when he wrote, "Art is long, life is short, experience fallacious, and judgment difficult"?

METROPOLITAN BUILDING.

Treatment of Aortitis syphilitica.—J. W. Held (*Southern California Practitioner*, September, 1916) recommends salvarsan intravenously in doses of 0.1 gram every fourth day for three or four doses. The patient is to stay in bed. Following this sixteen doses of mercury salicylate of one quarter grain each are given intramuscularly twice weekly. Potassium iodide 0.5 gram three times a day is of great service. The kidneys must be carefully watched, as uremia frequently terminates the disease.

AN ACCESSORY OVARY.

By ALLEN J. SMITH, M. D.,
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The occurrence of supernumerary ovaries is of course a well established fact, although there is reason to suspect with Sutton (1) and others that many of the reported cases are without sufficient verification, any small protruding or pedunculated solid bodies in the vicinity of the ovaries being apparently accepted without full histological examination as being of ovarian character. There exist in literature, however, numerous indubitable cases; to the list of which, without detailed comment, the writers desire to add the following.[1]

On May 1, 1916, Doctor Wood removed the uterus and right appendages (leaving behind for the usual definite physiological reasons the left appendages) from Mrs. L., white, widow, aged fifty-two years. About a year previously he amputated the left breast because of a carcinoma of five years' duration, and since then had had the patient under general observation. No recurrence or metastasis of the cancer had appeared in the interim; but owing to indefinite pelvic symptoms a vaginal examination had been made which led to the recognition of an apparently diffuse uterine enlargement believed to be due to fibromatous involvement, hysterectomy being undertaken for this reason. The woman had

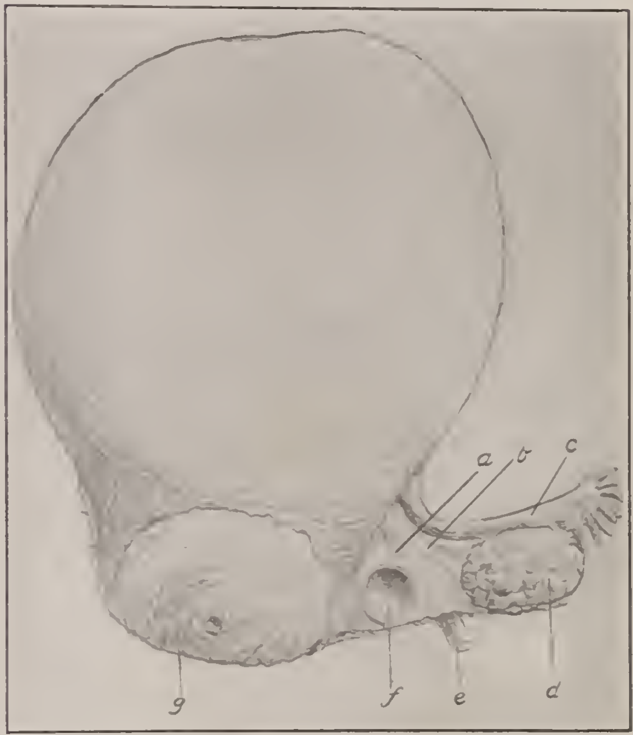

FIG.—*a*, Accessory branch of ovarian ligament; *b*, ovarian ligament; *c*, tube; *d*, ovary; *e*, round ligament; *f*, open lutein cyst of accessory ovary; *g*, cervical stump.

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[1] For discussion and bibliography bearing upon this anomaly reference may be made to such a publication as Mauclaire and Eisenberg-Paperin, Les ovaires surnuméraires, *Arch. gén. de chir.*, Paris, v. 7, 1911, pp. 755-789.

never ceased menstruating. After the operation recovery followed without unfavorable complications. The specimens as noted in the laboratory records (No. 5181) presented the following gross features: The uterus was enlarged and of subglobular shape, with its external surface smooth and glistening, save on the posterior aspect, where there was slight fibrous roughening (but no definite adhesive bands). The full external measurements of the organ were: Length, fourteen cm.; width, 12.5 cm.; anteroposterior diameter, ten cm. On section the enlargement was found to depend upon a single large nodule, growing in the posterior wall of the organ, expanding it, and causing it to bulge especially in the dorsal direction. This growth, well defined and encapsulated, was softer and pinker than the common uterine fibroids; and proved on histological examination to be a practically pure leiomyoma. The right tube was eight cm. in length; in its fullest diameter one cm.; somewhat coiled, with the coils fixed by old fibrous bands, but without evidence of adhesion to the surrounding parts. Its fimbriæ were well formed and free; the ostium was open. The right ovary was small, shrunken, firm, with nodulated surface, and on section presented the gross appearance of a sclerotic ovary; which features were confirmed by microscopic examination. A small parovarian cyst existed in the usual position. In the right parametrium, nearer the uterus than the ovary and at a slightly lower level than that of the ovary, there projected dorsally from the broad ligament a ruptured cyst, the contents of which had been lost. It protruded dorsally over the two cm. beyond the surface of the broad ligament upon a circumscribed base; but was apparently covered by the peritoneal lining of the broad ligament. It measured 2.5 by 1.7 by 1.5 cm.; had a smooth lining on which at places a soft fibrinlike material was evident. Its walls were thin, for the most part about one mm. in thickness, the tissue of the wall was soft and fleshy, finely dotted with yellowish marking. No strands of similar tissue extended from this to the ovary proper; nor were there fibrous bands of special formation between them. The ovarian ligament, however, in its course to the ovary proper gave off a grossly visible branch to the base of the cyst. Histologically, the wall of the cyst presented the appearance of a slightly sclerosed ovarian stroma, with small corpora fibrosa evident here and there, but without definite follicles apparent in any of the sections examined. The lining of the cyst was made up of organizing lutein tissue, with a reticulated fibrinous and hemorrhagic inner surface. Such features indicate this structure to be a lutein cyst in aberrant ovarian tissue, apparently imbedded in the parametrium and without recognized connection with the ovary proper.

These aberrant ovarian masses are usually classified (2) in three groups: *a*, accessory ovaries (ovarium succenturiatum, of Beigel), *b*, bipartite and pluripartite ovaries, in which traces of ovarian tissue or of fibrous strands connect the anomalous with the proper ovarian structure. and, *c*, true supplementary ovaries or entirely separate organs, which may have their own ovarian ligaments and even their own supplementary tubes. The specimen here recorded is to be classed in the first of these groups.

Aside from the mere anatomical interest in such occurrences, the importance of the abnormality lies in the probability of anomalous ovaries causing persistence of menstruation after supposedly complete oophorectomy, and in the fact that they are not infrequently found to be the seat of dermoids and other types of cyst and tumor formation.

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THE THERAPEUTICS OF CERIUM.*

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Cerium was discovered by Berzelius and Hisinger and by Klaproth, independently, in 1803, and was named after the planet Ceres, discovered in 1801. It is associated in its natural state with lanthanum, discovered by Mosander in 1839, and with didymium, discovered by the same chemist, in 1841. Later it was found by Welsbach that didymium consisted of neodymium and praseodymium, and their oxides were studied by von Scheele. Cerium has always attracted much attention because it is the only "metal of the earths" used in medicine under its name. Chemically, cerium resembles aluminum in its behavior, while it acts medicinally like bismuth and silver. Cerium oxalate was produced by Mayer, in 1860, and is insoluble in the simple solvents; the carbonate and bromide are insoluble, while the nitrate is freely soluble in water. The oxalate, official in the Pharmacopœia of 1870, was likely to contain, as impurities, earthy phosphates, carbonates, aluminum salts, heavy metals, metallic oxides, foreign oxalates, arsenic, and zinc. The chemical formula is $Ce_2(C_2O_4)_2+10H_2O$. The proportion of true cerium oxalate in commercial specimens varies from 44.43 to 46.59 per cent. The other rare earths are didymium, calculated as oxalate, 26.08 to 39.01 per cent., which naturally includes both neodymium and praseodymium, and lanthanum. Boelen, however, reports that the examination of a large quantity of medicinal cerium oxalate gave the following results: Cerium oxide, 21.35; lanthanum oxide, 24.16; neodymium, 11.96, and praseodymium, 24.20 per cent., respectively. Inasmuch as cerium oxalate is a byproduct in the separation of thorium from monasite sand, and inasmuch as the separation of pure cerium from this complex mixture is a difficult and expensive process, we must content ourselves with this mixture of rare earths, which contains about forty per cent. of pure cerium. Power and Shelden, in 1877, stated the matter fairly:

> In view of the complex character of commercial cerium oxalate and the tendency of modern medicine to employ pure substances of a definite composition, the question naturally suggests itself, whether the pure salt would not be more suitable for medicinal use? It is important to consider in this connection that the original observations which led to the introduction of cerium oxalate as a therapeutic agent were based upon the use of the commercial salt, and even at the present time pure cerium oxalate pos-

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sesses a market value which is about fifty times that of the pharmacopœial preparation. It is possible that all of these salts possess similar therapeutic properties.

Coblentz states that we cannot control the composition of commercial cerium oxalate by tests either qualitative or quantitative, and we dare not set a limit on the pure cerium oxalate present, for no one seems to know to which of its several constituents it owes its medicinal properties.

Laboratory investigation as to the action of cerium and its associated elements is not very illuminating. Cushny found that when cerium oxalate was injected into the circulation it produced gastrointestinal irritation, vomiting, diarrhea, hyperemia, and congestion of the mucous membranes, and congestion and inflammation of the kidneys. Branton and Cash, investigating the action of didymium upon the nerves and muscles of frogs, reported that it did not increase the reflex action of the cord nor diminish it until the last; it appears to paralyze the higher centres. It diminishes the coordinating power, rendering the movements ataxic, although neither nerve nor muscle is paralyzed. Didymium diminishes muscle contractility, but the duration is unaffected or slightly diminished. It is poisonous in the proportion of 0.0042 of the body weight. On a frog weighing eighteen grams, an injection of 0.075 gram of didymium chloride caused symptoms as follows: The animal became difficult to arouse to movement, while reflex response still remained good; it was plastic and lay in an unnatural position. Later, reflex action became more feeble and slow; circulation was at first good, but gradually ceased. After death the heart was at a standstill in moderate diastole, but went again on stimulation. On local application, one in 100 solution does not materially alter the length of curve, simply reducing altitude somewhat without materially altering its form. Contraction in resting muscle is increased. Mills found that after twenty grains of commercial cerium oxalate had been administered in twenty-four hours, no cerium was found in the urine, nor was didymium detected even by spectrum analysis.

That cerium oxalate does not produce untoward effects, even when administered in large amounts, is evident from the instance reported by Roberts Bartholow, when four grains were given every two hours for vomiting until 600 grains were administered. He remarks that even larger doses are often necessary.

The pharmacopœial cerium oxalate has not been thoroughly investigated from the physiological, nor have satisfactory tests been devised from the pharmaceutical standpoint, yet it has been considered a valuable remedy, not infrequently prescribed by expert therapeutists, who believe that it is useful in a limited array of maladies.

Cerium became known to the medical profession in 1854, principally through Simpson, who recommended it for irritative dyspepsia, especially of sympathetic origin or dependent upon pregnancy as "the simplest and surest remedy," in pill form, in one or two grain doses. Mills confirmed this in 1876, with nausea as an added indication, and for the vomiting in phthisis and typhoid fever. Campardon recommends the remedy for nervous vomiting and Blondeau for the vomiting of pregnancy; the latter adds that sleep is benefited. Good results have been asserted in cough and vomiting from irritation of the terminal filaments of the pneumogastric in the stomach mucous membrane. Deranged innervation of the stomach, as in seasickness and reflex vomiting in uterine disorders and displacements, are cited, and, finally, in 1879, Busey found cerium oxalate valuable for the nausea and headache which follow the administration of opium.

Of disturbances in the alimentary tract, chronic vomiting, gastric acidity, gastrodynia, pyrosis, gastric ulcer and cancer, and chronic diarrhea are found in the literature as indications for its use, and Clark recommended it, in 1880, for cholera infantum in four tenths of a grain doses every hour for children under one year of age.

Finding that vomiting associated with cough was relieved, Clark, in 1878, prescribed cerium oxalate for the morning cough of chronic pulmonary diseases, and stated that the accompanying dyspnea on exertion was also alleviated, five grain doses being exhibited before rising, which sometimes relieved for twenty-four hours. The only untoward symptom was dryness of the mouth. It was also stated to be of benefit for the cough in chronic bronchitis, and had been recommended for whooping cough.

From so called nervous vomiting it was but a short step to the advocacy of the remedy in nervous diseases. Good results were obtained by Image, in 1878, with ten grain doses every four hours in hysteria from anxiety, grief, or overwork. Simpson believed that the remedy was a nerve tonic of value in chorea, two to ten grains several times daily, while Bechterew advised its use in epilepsy, and even in the crises of locomotor ataxia.

With our present knowledge of the absence of absorption of the mixture of rare earths known in the Pharmacopœia as cerium oxalate, we can safely eliminate from our nosological list all diseases in which the effects of the remedy are remote. With the passing of the reflex and a more correct interpretation of symptoms and signs as indicating pathological conditions, we can still further limit the indications for its use. Basing our therapeutics upon clinical experience, the use of cerium oxalate will be limited to conditions from which we expect to get results from local application. Certain nauseas and vomitings will remain, and even here we shall entertain a watchful skepticism that it may not be altogether the one grain dose of the Pharmacopœia, or the minute dose of some alleged antiemetic which is followed by a disappearance of the symptom, but possibly the withholding of other more active drugs, or even of food, which is responsible for the result.

Finally, we can safely assert that cerium oxalate resembles bismuth subnitrate in its therapeutic action, with the advantages that it does not give rise to an unpleasant odor to the breath, owing to the presence of tellurium, and that it is not usually contaminated with arsenic as is the latter.

The therapeutic uses of cerium oxalate are similar to those of bismuth, which are for local effect, and success requires that the doses should be of a magnitude commensurate with the results which we desire to obtain, namely, ten grains every four hours. Further than this, this dose should be frequently exceeded, as we now know can be done with safety; thirty grains have been administered with good results.

Bearing these facts in mind, the results of twelve years' experience in the use of this remedy, have been confirmed by skilled therapeutists in internal medicine, and have shown conclusively that cerium oxalate, when used in proper doses, and with due discretion, will produce typical and satisfactory results; its therapeutic value cannot be disputed.

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TREATMENT OF BLADDER TUMORS.*

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The selection of the proper treatment for tumors of the bladder depends upon the determination of many factors, most important of which is the ascertaining of the nature of the tumor. Other factors, such as position, extent, and number of tumors, presence of metastases and complications will all play roles in determining the best method of attack. From a therapeutic standpoint, we have divided our tumors into papilloma, benign and malignant, papillary carcinoma, and in a separate class we place the adenocarcinoma, squamous and scirrhous carcinoma, because, as will be later shown, the handling of papillary carcinoma requires a technic very much more developed than is necessary for the handling of the other carcinomata.

From a therapeutic standpoint we have placed benign and malignant papillomata in the same group, although from a histopathological viewpoint malignant papillomata are just as much cancer as the papillary carcinomata, yet they must be differentiated because of their different response to therapeutic measures. In malignant papilloma there is present principally changes in the shape, staining properties, and nuclei of the epithelial cells without any marked evidence of cancerous infiltration. Experience, however, has shown that these changes are indicative of cancer, and that patients die of cancerous metastases when these changes in the papillæ are the only evidence of malignancy which exist. In a series of twenty-five papillomata examined histologically sixty-eight per cent. showed the changes characteristic of malignant papillomata. When, however, the malignant papilloma has advanced to the point where infiltration of the bladder wall occurs, we apply to it the term papillary carcinoma. This differentiation is arbitrary and is used simply as a working basis.

For a number of years we have systematically excised pieces of bladder tumors and studied them with care histologically, in an endeavor to see if there was not some histological picture which would clearly direct us in the selection of the most suitable form of treatment. It has been our experience that in the vast majority of cases we are not able from the histological picture alone to decide with accuracy whether the tumor will respond to fulguration or whether more radical procedures should be adopted. Repeatedly we have excised pieces of papillary carcinoma and found the histological picture no different from that seen in the average malignant papilloma, while the clinical examination indicated most extensive infiltration, which was subsequently corroborated by the course of the disease. As a differentiation between malignant papilloma and papillary carcinoma, we have found cystoscopy, combined with other clinical methods, a greater aid than the histological picture alone. Finding on cystoscopic examination the presence of necrotic papillæ on an otherwise benign looking papilloma, the presence of edema around the margin of the tumor or nodules in the mucous membrane in the neighborhood of the tumor, the presence of an intractable cystitis, and, when tumors are situated on the posterior bladder wall, feeling on rectal examination the slightest induration therein, are points in the differential diagnosis which have served us best. It must be admitted that none of these conditions may be present and the tumor may still have invaded the bladder wall. When in doubt concerning the nature of the tumor, our practice has been to adopt fulguration as a therapeutic test. After a few applications of the fulguration current, it can usually be determined whether the tumor is suitable for this form of treatment. When the surface of the tumor is vigorously fulgurated and the slough does not separate, or when it becomes covered with calcareous deposit, this is evidence of advanced malignant changes in the deeper portions of the tumor.

FULGURATION.

Fulguration has been employed in fifty-three cases; in twelve cases the tumors were inoperable carcinomata, and fulguration was employed as a palliative measure or to test out the efficiency of the treatment in that type of case. In none of these cases was any marked impression made upon the tumor, while the treatment was rather painful in the scirrhus type. Among forty-one cases with papillomata, in thirty-four per cent. of which the tumors were multiple, in three treatment ceased before the tumors had disappeared. In two cases, although the tumors were small and apparently papillomata, the response to fulguration soon indicated that they were really papillary carcinoma. In one of these a successful reaction was subsequently obtained; while in the other case, that of a very elderly man, a senile dysentery developed, and auricular fibrillation, of which he soon afterward died. In the remaining thirty-six cases the tumors in every instance entirely disappeared. There seems to be a marked difference in the promptness of response to fulguration between the benign and the malignant papillomata. The typical benign papillomata vanished with astonishing rapidity, large tumors disappearing with comparatively few treatments. On the other hand, malignant papillomata disappeared slowly, and frequently required many times the amount of treatment which would be necessary for the benign papillomata of the same size. In one instance it required almost nine months completely to remove a malignant papilloma which covered the whole left lateral wall and was composed probably of not one tumor but of multiple papillomata fused on the surface, giving the appearance of one broad, extensive tumor. In this case we were led to continue this form of treatment because of the definite and progressive decrease in the size of the tumor and the rapid separation of the burned areas after each treatment. Of twenty-five papillomata examined histologically, seventeen showed the changes characteristic of malignant papilloma, but all were removed by fulguration, the benign and malignant differing from each other only in that the response was slower in the malignant types. The incontestable proof that at least some of these tumors were malignant or cancerous is that two of them were subsequently fatal through cancerous metastases, although the bladder was free from tumor.

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*Read before the New York Academy of Medicine, April 27, 1916.

RECURRENCES.

Of the thirty-six patients in whom fulguration was successful in removing the original tumor or tumors, recurrences are known to have occurred in seven. In all of these, with one exception, recurrence was present in less than a year. In one patient, recurrences are observed every few months, although it has been over three years since the original tumor was destroyed. This tendency to recurrence seems as active today as it was during the first year. The recurring tumors, with one exception, have all responded to fulguration like the original tumor. The one exception is of extreme interest (Roeder). This patient had a papillary tumor, several cm. in diameter, just back of the ureteral orifice, which disappeared fairly rapidly under a combination of radium and fulguration. For several months after the disappearance of the tumor the mucous membrane of the tumor bearing area seemed entirely healthy. Shortly afterward, however, cystoscopic examination showed a peculiar reddening and some slight bulging of the mucous membrane without ulceration or definite tumor formation. This was at first thought to be a localized inflammatory area. The process, however, seemed to spread, and a piece removed with the cystoscopic rongeur showed the patient to have an infiltrating carcinoma of the bladder wall, with the mucous membrane on the surface practically intact. This is undoubtedly a case in which cancer cells from a malignant papilloma have metastasized into the deep bladder wall and there continued to grow after the tumor mass had been entirely removed. A malignant tumor of this type has been studied histologically by Buerger. Patients with multiple tumors seem more apt to have recurrences than those in whom only one tumor is present. While it is too early to draw definite conclusions regarding the percentage of cases that will remain permanently cured, the results to date seem to warrant belief that a not inconsiderable proportion will be free, because the tendency for recurrence grows progressively less after the first year.

EXCISION.

Until a few years ago, excision of bladder tumors with the knife, clamp, and cautery, or the actual cautery, was the method most frequently adopted. In our series of tumors there have been thirty-four in which excision was carried out by one of the foregoing methods. Of these thirty-four only four were known to be well and free from recurrences during a period of four years or over. It is difficult to explain why such dismal failure should have resulted from this form of treatment. In some of the earlier cases, before the true nature of the bladder tumors was clearly recognized, sufficient care to avoid implantation was probably not exercised. In later years, however, a more careful technic was employed in the handling of these cases, and measures were adopted to prevent implantation on the remainder of the bladder wall. It seems difficult to understand why a pedunculated papilloma should not be radically and thoroughly removed, by excision, or by the clamp and cautery, or by the actual cautery, and the failure to accomplish cures in many of these cases must be attributed to the difficulties in securing a technic sufficiently perfect to prevent trauma to the bladder wall and implantation of tumor cells. The smaller percentage of recurrences in the cases treated with fulguration, compared with the cases in which excision has been employed, seems to point strongly toward the supposition that the difficulties of obtaining a perfect technic for the removal of these tumors is an important cause of past failures.

Excision is a surgical procedure which today is seldom indicated; it should be used only in cases which ordinarily would be suitable for fulguration, but on account of some complication that treatment has become impossible or very difficult. The systematic opening of the bladder, with subsequent prolonged fulguration of tumors, is a procedure which cannot be recommended, and for the average case offers no advantage, but rather disadvantage over the intravesical procedure.

RESECTION.

The failure of excision to cure more than a very small percentage of bladder tumors, benign or malignant, led surgeons to adopt more radical measures, so that during recent years resection for all tumors, namely the complete removal of the tumor bearing area, together with all the coats of the bladder wall, has been the procedure advocated.

Experience has shown that when the growth has infiltrated the bladder wall, resection with as wide a margin of healthy mucous membrane as seems necessary, is the only method which offers hope of success. Resection is indicated when the tumor is of such a size that it can be completely removed, even though it necessitates the transplantation of one or the other ureter. It is generally conceded that resection should not be undertaken when the tumor has infiltrated close to the vesical orifice, and particularly when it has invaded the prostate. It is also questionable whether resection should be performed when the tumor is so extensive that transplantation of both ureters will be necessary. When the tumors are multiple, resection again is contraindicated unless the tumors occupy an area which will allow of their removal in one piece. Tumors occupying the anterior bladder wall are most favorable for resection. The transperitoneal method, except in occasional cases, is not to be recommended, as a sufficiently perfect exposure can be secured without subjecting the patient to this unnecessary risk.

TECHNIC.

The position and size of the tumor should be determined as accurately as possible before operation, by means of cystoscopy. The bladder should be emptied of urine and filled with air, so that when the bladder is subsequently opened an infected fluid may not soil the incised tissues. Immediately on opening the bladder, which should be done in such a way as to avoid trauma to the tumor, the tumor should be thoroughly cauterized *in situ* before further manipulations are carried out. In order to avoid sponging, a glass tube connected with a suction pump should be placed in the base of the bladder, but not allowed to come in contact with the tumor. If sponging becomes necessary, sponges wet with alcohol should be used, and the sponge which comes in contact with the tumor bearing area should not be used on other portions of the bladder wall. The main emphasis should be laid on the thorough destruction of the tumor by the cautery before resection is attempted. This having been done, the bladder wall can be incised with the cautery or knife with less danger of implanting tumor cells. Resection has been the operation carried out in twenty-four of our patients, and nine of these were well two years or longer after the operation. Of these nine, five belonged to the malignant papilloma type and four were small circumscribed papillary carcinomata in which it was possible to remove a considerable margin of normal bladder wall. In none of the carcinomata extensively invading the bladder wall has a cure been obtained.

RADIUM.

During the past eighteen months, we have treated about fifteen tumors with radium alone or with radium in combination with fulguration. Our experience has not been sufficient to draw definite conclusions regarding the ultimate value of this method. It has been employed most frequently on malignant papillomata in combination with fulguration, and the effect of the radium has been most striking. In three cases in which fulguration had been employed over long periods of time, and which had resisted very stubbornly all efforts to entirely destroy them, radium seemed entirely to change their nature. In all three cases after receiving 500 to 600 mg. hours of radium applied directly against the tumor, the latter disappeared with astonishing rapidity on resuming fulguration. When possible, the radium is applied directly against the tumor by means of the Young radium cystoscope, using a tube with an opening on one side, so that the beta rays can be applied directly to the tumor while the rest of the bladder wall is screened. The combination of radium and fulguration in this type of case seems to promise much. So far, we have not succeeded in definitely eradicating the papillary or other infiltrating types of carcinoma.

CYSTECTOMY.

Cystectomy has been employed in only a few isolated instances in our series. The operation, while technically not difficult, leaves the patient in such a distressing and uncomfortable condition that we hesitate to adopt this most radical procedure. Furthermore, the percentage of cures following cystectomy has not been sufficiently large to make us very enthusiastic. Usually in cases which are so far advanced that this method of attack forms the only hope of removing the local condition, metastases are generally present. Metastases occur even when the tumor is small and apparently well localized in the bladder, and Claido reports four observations in which iliac and lumbar glands were extensively invaded, although the tumor had not seized upon the wall of the bladder. Such has also been our own observation. While there are no convincing statistics regarding the frequency of glandular metastasis when the tumor is well localized in the bladder, it is generally admitted, when the tumor is extensive and infiltrates deeply the bladder wall, that metastases are practically always present. That the tumor may in rare instances be very extensive and even deeply infiltrating without metastasis, has come under our personal observation.

Cystectomy in the past has not seemed a procedure which we felt justified in carrying out.

PALLIATIVE TREATMENT.

A distressingly large percentage of bladder tumor cases present themselves in the urological clinic for the first time with the disease so far advanced that nothing more than palliative measures can be employed. Of our series of 180 cases of bladder tumors, in sixty-nine the tumors were so extensive and so hopelessly inoperable that nothing more than palliative measures were adopted.

CONCLUSIONS.

The experience in our clinic in recent years indicates clearly that benign and malignant papillomata should be treated by fulguration; excision or resection should not be practised except where intravesical treatment is impossible or very difficult. Radium has been a great aid in the treatment, particularly of the malignant papillomata, and our best results have been obtained when the radium was placed directly against the tumor. When the tumor is a papillary carcinoma, resection should be practised by a technic which will reduce to a minimum the dangers of implantation or recurrence. Radium as yet has not given us results in this type of tumor sufficiently encouraging to warrant our employment of it in preference to resection in cases which are considered operable. Following resection, cystoscopy should be performed at an early date, and at frequent intervals, especially for the first year, and if recurrences are noted, they can occasionally be successfully treated by a combination of fulguration and radium. Unfortunately, as already stated, a large percentage of cases are first seen with the disease so extensive that nothing more than palliative measures can be adopted.

Spontaneous Diabetes in a Dog.—Krumbhaar (*Journal of Experimental Medicine*, October, 1916) reports a case in which the characteristic lesions of the pancreas were present.

TUMORS OF THE BLADDER.*

Their Pathology and Particular Reference to the Diagnosis of Papilloma and Carcinoma.

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Although much has been written about the difficulty of differentiating with certainty between carcinoma and papilloma of the bladder, very few, if any systematic and comprehensive pathological investigations have been made from both histological and clinical viewpoints, with correlation of the findings. It is generally believed that such differentiation is often impossible and that neither the cystoscope nor the pathologist can give definite opinions. From a study of 113 tumors of the bladder that have come under our observation at the pathological laboratory of Mount Sinai Hospital during the past ten years, and from a study of other vesical tumors, more than twenty-five in number, where the material, however, was not sufficient to be included in the series, we have come to the conclusion *that the pathological diagnosis of carcinoma is possible in most cases.*

The recognition of carcinoma of the bladder on a pathological basis must depend on the following: 1. Morphological characteristics varying from the benign type *do occur* when a tumor either possesses or has acquired the clinical traits of malignancy; 2, material can be obtained in which certain morphological criteria indicative of malignancy can be demonstrated; and, 3, the examiner possesses the power to recognize these criteria when they do occur.

In the course of this demonstration it will be shown definitely that morphological changes do occur in most instances; in fact, in all the cases of carcinoma of the papillary variety with but one exception was this the case.

As regards the obtainment of material, methods for carrying this out have been suggested in previous papers,[1] the use of the operating cystoscope having been recommended, together with the punch forceps, or the snare, in cases of papilloma.

It was only after a thorough pathological investigation of papillomata and carcinomata, that the conviction was forced upon us that certain peculiar abnormalities in the conformation of the cells regularly mean the presence of either primary carcinoma or carcinomatous change in papilloma. These abnormalities are cells manifesting irregularities in size and shape; nuclei rich in chromatin, staining deeply and of bizarre shape; cells with atypical mitoses; giant cells and multinucleated cells. All these, when occurring in papillomata of the bladder, indicate the presence or beginning of carcinomatous change. It will be granted that certain variations in the type cell belong to the benign growths, and that the proper estimation of such changes depends to a great extent upon personal interpretation. It is also true that in such matters as these no hard and fast rules can be laid down, and we can only in a general way indicate from personal observation what types of variations from the normal can be regarded as indicating malignancy. In the case of other organs, such as the thyroid, the liver, etc., atypical cells *per se* cannot be regarded as such evidences. In the bladder, however, our experience has led us to conclude that whenever such cells are present a thorough search will often disclose other evidences of malignancy. Another and most reliable evidence of carcinomatous change will be found in a disturbed relationship of the cells to each other in a loss of the typical palisade arrangement of the cells, in the presence of long fusiform or compressed types of cells, in the existence of evidences of infiltration of the stroma and penetration of the basal membrane, in the presence of cells in the capillaries, and, finally, in the occurrence of epithelial cells in the submucosa or muscular coats of the vesical wall.

These criteria have enabled us to recognize the presence of a malignant tumor in seventeen cases where the material would have led to an incorrect or doubtful diagnosis, if our present standards were rejected. If we accept these criteria we shall also be able to diagnosticate malignancy from a relatively small amount of material, and the report "insufficient for diagnosis," such as is often made by the pathologist, will be less frequently given.

The morphological criteria are present in parts of the tumor that are accessible to our diagnostic methods, occurring in papillomata that have undergone early malignant change, and certainly also in the primary carcinomata.

Perhaps the most instructive variety of papillary carcinoma is that in which we have reason to believe a papilloma is undergoing malignant change. The question whether this occurs or not, has been a mooted one for many years. Pathologists have expressed diametrically opposite views, although the present weight of opinion seems to favor the assumption that carcinomatous change does occur in papilloma.

Our own material has yielded us ample clinical and pathological corroboration of our view that a metamorphosis of papilloma into carcinoma does occur. Furthermore, we are of the belief that such a change takes place very frequently and could be demonstrated in at least thirteen out of our fifty-two cases of carcinoma; namely, twenty-five per cent. Some of the most instructive of our specimens are those obtained before the year 1910.[2] At that time almost all of the tumors of the bladder were at once subjected to suprapubic cystotomy and total excision, so that in these a thorough examination of the mode of origin of the carcinomatous change could be carefully investigated. From our specimens we were able to conclude, first, that carcinomatous change in a papilloma is possible and does occur frequently; second, that the change occurs in accessible portions of the tumor, that is, not in the "depth," as has been generally assumed to be the case, but anywhere in the surface or in the deeper parts of the villi; third, that in the early stages the villi alone may be involved; fourth, that villous changes may be accompanied by infiltration, by invasion of the deeper parts, or by metastases in the capillaries; fifth, that all stages in the transformation of a papilloma into carcinoma can be followed in the various specimens up to the point of complete transformation or even to the stage where an infiltrating carcinoma involves all the coats of the bladder wall.

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*Abstract of a paper read before the Section in Genitourinary Surgery, Academy of Medicine, May, 1916.

[1] Buerger: *Tr. Am. Urol. Ass.*, April, 1913. A Clinical Study of the Application of Improved Intravesical Operative Methods in Diagnosis and Therapy. *Med. Rec.*, June 21, 1913. Zur Klinik der Operations-Cystoskopie, *Zeitschr. f. urol. Chir.*, i, 5, 1913. Concerning Certain Problems in Urethrovesical Diagnosis and Treatment (with description of a new instrument), *Am. Journ. Surg.*, Feb., 1915.

[2] Since 1910 many cases have been treated with the high frequency method, so that minute pieces derived from bladder washings of specimens excised through the cystoscope represented the only material sent to the laboratory in many instances.

We have been able to group the various changed papillomata into six groups, depending upon whether first, epithelial changes alone were present; second, where changes in the cells together with infiltration of the stroma coexisted; third, where extensive cellular changes with invasion of the capillaries of the stroma could be found; fourth, where there were surface changes in cells, cellular changes in the stroma, and nests of cells in the pedicle; fifth, where extensive surface epithelial changes, slight foci of invasion into the pedicle could be found; and, sixth, where there were surface changes with distinct carcinomatous change in the periphery of the growth, the pedicle and the stroma being intact.

The various types of papilloma and carcinoma may be grouped as follows:

1. Papilloma.
2. Infiltrating papilloma.
3. Papillomata with early changes into carcinoma.
4. Primary papillary carcinoma:
    a. Papillary polypoid type—Carcinoma, Type I.
    b. Secondarily infiltrating carcinoma—Carcinoma, Type II.
5. Primary squamous celled carcinoma:
    a. Infiltrating derived from papilloma.
    b. Squamous type derived from papillary tumors.
    c. Those derived from the prostate.
    d. Metastases from source outside of the bladder.

1. *Papilloma.* The characteristics of papilloma have been sufficiently enumerated. It is necessary to obtain a large part of the growth for histological examination. This can almost always be accomplished if the snare is used. In order to be sure that the peripheral portions of the growth have not become carcinomatous, we must excise the mucous membrane of the periphery with the punch forceps. In the case of the sessile type of growth, the snare is usually not applicable, and we must resort to many bites of the cystoscopic punch forceps or the Young rongeur.

2. *Infiltrating papilloma.* Here we are dealing with the most difficult problem in the diagnosis of papillary tumors of the bladder. The presence of larger areas of muscle between the islands of epithelium points to the existence of infiltration. The diagnosis of malignancy can be definitely made upon this point.

3. *Papillary tumors with beginning carcinomatous change.* In this group there are six different types according to our fifteen specimens. Reviewing these, a striking fact is noted: that the first and the most extensive carcinomatous change occurs near the surface, and not in the *depth*, as has been previously supposed, the tufts always showing evidences of malignancy. The villi are markedly affected in all. If in Type II we disregard the changes in the villi, we should have to find the places where the stroma is infiltrated, and even this has occurred distal to the pedicle. If in Type III we should not recognize the extensive carcinomatous changes in the villi, we should have difficulty in looking for capillaries or small islands in the depth. If we disregard the cell changes in Type IV we should also have to seek in the depth for corroborative evidences. In Type V the same is true, except that the invasion is not so far from the surface, and in Type VI, if we disregard the surface changes we should have to find that area of the periphery which has become typically altered.

In short, the diagnosis of papillary growths with early carcinomatous change depends not so much upon the acquisition of a large amount of material as upon our ability to detect and give the proper dignity to the early morphological alterations characteristic of carcinoma, for these changes do occur, as has been pointed out, in the tufts of all six varieties. In only two out of the fourteen growths were there evidences of infiltration or tumor growths in the bladder musculature or deep down in the pedicle. On the other hand, more common was the association of the atypical cells in the villi, together with the infiltration of the stroma of the villi distal to the pedicle. This was presented in six cases; that is, cases in which the infiltration of the stroma could have been demonstrated in specimens obtained by punch forceps or snare, because changes were found on the tumor side of the pedicle. In three cases, only changes in the superficial portions of the tumor were found; that is, in portions of the tumor distal to the pedicle.

We see that in practically all of these early papillary growths, the diagnosis can be made if the criteria are accepted, and if a reasonable amount of material is obtained for miscroscopic examination.

4. *Primary carcinoma.* In these we should find no difficulty in making a diagnosis, since any portion of the growth is absolutely characteristic. They present practically no difficulties to the experienced microscopist.

5. *Secondary carcinoma.* First, those arising from papillomata and infiltrating the wall of the bladder are easily recognizable on sufficient material; second, the squamous type, which has been changed from a papillary carcinoma, can be diagnosticated from a small number of cells; third, the secondary carcinomata from the prostate have small cells as a rule, or may be tubular carcinoma or adenocarcinoma, and the metastases may be of various types, depending upon their source. None of these should give the pathologist any difficulty in diagnosis.

There remains for consideration the squamous type of carcinoma, which was represented in five cases. Cystoscopically these present a typical picture. These tumors are comparable to epitheliomata of the lip, and the structure under the microscope is similar.

CONCLUSIONS.

From a study of 113 tumors of the bladder, among which there were fifty-five papillomata, forty-five papillary carcinomata, five squamous carcinomata, two metastatic carcinomata, and six sarcomata, we concluded that a differential diagnosis between papillomata and carcinomata can be made in almost all cases on a pathological basis.

Certain morphological criteria were accepted as indicating the existence or the acquisition of malignant traits in any given tumor. These criteria were found to be present in parts of the tumor that were accessible, so far as they could be reached by cystoscopic instruments, and so far as adequate portions could be removed for histological examination. The changes indicative of malignancy occur, not, as heretofore assumed, in the "depth" where they may escape our diagnostic methods, but, first, in the epithelium, not far from the surface, either with or without areas of infiltration.

A test of the morphological criteria proved conclusively that they were trustworthy and, if adopted, led to correct diagnosis. Many of the other loosely accepted notions regarding the malignancy of papilloma *per se* were found to be fallacious. Only in one tumor out of 113 was a papilloma found to infiltrate and still retain "normal" cellular characteristics.

In short, a trustworthy pathological diagnosis and the possibility of differentiating between carcinoma and papilloma depend upon our opportunities of obtaining material and upon our ability to recognize the criteria laid down as indicative of malignancy; that the latter are present our series of tumors has definitely shown.

40 West Forty-first Street.

INTESTINAL STASIS.*

Its Causes, Prevention, and Treatment.

By Eliza M. Mosher, M. D.,
New York.

When food passes through the alimentary canal, or any section of it, so slowly that toxic substances are formed in excess of elimination, the condition is termed intestinal stasis. When such delay occurs habitually, being due to some permanent mechanical obstruction to free movement within the canal, the condition is termed *chronic intestinal stasis.*

Although obstructions which cause delay may be present in any part of the digestive tract, those not due to inflammatory adhesions are found oftenest where the peritoneal attachments are naturally somewhat short, as at the duodenojejunal junction, and the ileocecal, the hepatic and splenic flexures of the colon, and at and below the sigmoid.

It has long been known that bacteria are commonly present in large numbers in the colon, but that they may also develop in the small intestine when stasis is present, has not been as generally understood. Alkalinity, the liquid condition, and delayed movement, all favor bacterial development, while the high absorptive power of the mucous membrane of the small intestine makes the products of bacterial action a far more serious menace there than in the colon. The toxic substances thus produced in the intestinal canal when transported to the tissues of the general body by the blood and lymph, lower their vitality and render them less able to resist the invasion of disease producing germs. Possibly the ductless glands whose secretions "regulate and bring into harmonious action the various functions of the tissues," are the first to suffer under the influence of intestinal toxins. The effect of these toxins on the skin is well marked, and certainly they poison the nervous system, in some instances even to the extent, it is believed, of producing epilepsy and insanity.

What are some of the causes active in the production of chronic intestinal stasis? While unquestionably the upright posture of the body assumed by man is the primary cause, many conditions preventable and otherwise, are contributory factors in its production. Some infants are born with malformations of the intestinal tract that make stasis of its contents inevitable. Not long since, the writer saw a young woman in whom the cecum and ascending colon were on the left side; the descending colon and sigmoid on the right. In this patient the pelvic colon turned sharply upon itself, ascended to the navel line, bent abruptly downward, and proceeded on its way to the anus. A history of chronic intestinal stasis, extending back into infancy, was elicited, with constipation always present, in later life defecation without active drugging had not been possible. At the New York State Epileptic colony, Sonyea, N. Y., I found two little girls, both dements, in whom no natural arrangement of colon could be demonstrated.

Extensive mobility of the cecum which, when present, always causes more or less stasis in the small intestine, is undoubtedly congenital in many cases. A boy aged eleven years, under the writer's care, who gave a history of epileptic seizures from the age of three years, was found to have a cecum that could be displaced to a position beyond the median line of the abdomen; with this there was general enteroptosis and dilatation of the stomach and of the small intestine from pylorus to the ileocecal orifice. When the abdomen was opened by Dr. William Seaman Bainbridge, of New York city, an ileal kink was found which almost completely closed off the small intestine. The cause of this kink was a band attached to the brim of the pelvis that crossed the ileum near its junction with the cecum. A "short circuit" was successfully performed and the boy made a good recovery. During the eight months since the operation he has seemingly been well. In this case there is reason to believe that the mobility of the cecum was congenital.

Among the one hundred patients examined by the writer at the Norristown, Pa., Hospital for the Insane, four of the most pronounced suicidal patients had extensive mobility of the cecum, with dilatation of the small intestine and marked stasis. The question arises: Was this condition congenital and was it the primary cause of the insanity?

Some cases of chronic intestinal stasis in adults have been thought to be due to the persistence and thickening of certain folds of the peritoneum formed in fetal life, that commonly disappear after birth. May it not be that these result from tension upon the ascending colon, due to the inverted position of the body *in utero?* These folds were first described by Sir Arbuthnot Lane, of London; later by Jennesco and Juvare, Jackson and Treve, by whose names they are severally known.

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*Read before a meeting of the seventh district branch of the New York State Medical Society, held at Geneva, N. Y., September 23, 1915.

The conditions in infancy and childhood which favor displacement downward of portions of the digestive canal are numerous. Overfeeding, the use of artificial foods which, when incompletely digested, overdistend the canal; the custom of raising the child into the sitting posture before the abdominal wall is firm enough to hold the viscera in place, trotting in this position (especially during crying), and jolting over curbs in a baby carriage, walking before the muscles of the back and abdomen have been developed by creeping—everything, in fact, in the management of an infant that repeatedly crowds the contents of the abdomen forward and downward against a weak and as yet undeveloped body wall, tends to produce enteroptosis and intestinal stasis.

Both in children and in adults those habits of posture which cause the trunk to bend upon itself at or above the navel line are even more injurious to the digestive tract than to the spine or lungs. Clothing that constricts the body at the waist line and presses the abdomen inward and downward is especially harmful. The garments in common use that do this are tight bands and stiff belts, improperly shaped and badly adjusted corsets, stocking supporters, and skirts that drag upon the abdomen. Violent exercise immediately after meals, when the stomach is heavy with food, or with the colon weighted by masses of fecal material, may cause displacement of some portion of the digestive canal.

Sir Arbuthnot Lane tells us, however, that enteroptosis does not *always* cause serious stasis, and that neither constipation nor diarrhea necessarily indicates its presence. As has already been stated, to produce the intestinal stasis that injures the general body, there must be a temporary doubling of some portion of the digestive canal that partially closes it at that point; or there must be a localized shortening of mesenteric tissue which permanently kinks the intestine and thus makes its channel so tortuous as more or less continuously to impede the onward flow of its contents. Time is thus given for toxins to be formed and absorbed from the canal in amount too great to be removed by the natural processes of elimination.

Systemic poisoning by intestinal toxins manifests itself in a great variety of ways; loss of clearness of skin, offensive breath, a continuous accumulation of gas in the digestive tract, constipation or diarrhea, *fatigue out of proportion to effort expended,* nervous sensations of an indefinite character, insomnia, especially during the later hours of the night—all the signs and symptoms, in fact, heretofore classed as indigestion, constipation, malnutrition, etc.

With its common causes well understood, measures for the prevention of intestinal stasis become self evident. Since the upright posture of the body, lack of tone of the abdominal wall, and incorrect body postures are three of its great causes, should we not as rational beings bend our energies toward their removal? If long hours in the upright posture under the action of gravitation cause sagging of the abdominal viscera, what is more simple than to take a few respiratory and other exercises on retiring, calculated to replace them, thus removing the handicap the day has placed upon their important nocturnal work? Children delight in a short play period at bed time. Let them learn to stand on the head and give them a ball to kick upward suspended above the abdomen as they lie on the floor.

Nature has decreed that both animals and men shall spend much time in the recumbent position, but the exigencies of life are tempting us to ignore this law and to permit our children to do the same. We need to practise and to teach the importance to the abdomen as well as to the body in general of long hours of rest. The digestive canal is a mechanism which in its work is peculiarly dependent upon the *time element.* Normally its processes are conducted rhythmically, and irregularity in the time of taking food upsets its rhythm. By the x ray bismuth test the intestinal time schedule has been accurately noted, and we should all do well to make our meal schedule correspond with it.

The x ray has also demonstrated that normal poise of body, standing and sitting, aids in maintaining the digestive canal in place and that habitual deviations from normal poise tend to displace it. With this fact established, is it not incumbent upon us, as physicians, to direct our efforts toward correcting the conditions in our common environment that make good posture difficult or impossible? To this end, shoes must be made to fit individual feet, especially those of children, from babyhood up. Seats must be reshaped so that they may help the body to balance comfortably in a correct position. Unfortunately most of the seats in use at present are so shaped that they either straighten or exaggerate the normal curves of the spinal column and thus prevent good posture. Gymnasium directors would do well to add to their scheme of work forms of exercise especially designed to meet the needs of the abdomen.

Auscultatory percussion. Since the position and degree of dilatation of the various sections of the alimentary canal have been found so important, it is fortunate that a reasonably accurate diagnosis can be quickly made by means of auscultatory percussion. To the ear trained to abdominal sounds it is often easier, with the patient recumbent, to outline the position of the various sections of the digestive canal and the degree of dilatation of the whole or any part of it than to detect by auscultation early tuberculous disease, pleurisy, or pneumonia. Moreover, we can check up our findings in the abdomen by giving the patient the exercises appended to this paper, and by again examining the parts with the stethoscope it is easy to note the changes in position that may have been produced. When stasis is present, these exercises, slowly repeated, will so straighten flexures and kinks temporarily as to permit an onrush of intestinal contents, the sound of which, through a stethoscope placed over the several gateways, can be likened only to the flow of water from a faucet under high pressure. The length of time this sound can be heard at a given point, the abdominal and respiratory exercises being repeated at short intervals, conveys an idea of the degree of kink present and of its situation.

When distention is *repeatedly* found to be greatest in the colon and most marked in its descending section, it is fair to conclude that the normal kink in the pelvic colon has become exaggerated. This may be due to chronic constipation, heavy fecal masses having repeatedly dragged it down, or it may have been caused by the action of high enemata, in which the water injected accumulated and was held in this kink as water is retained in the U shaped trap of a waste water pipe. Nothing in the experience of the writer has been found so surely and permanently to injure the structure and shape of the colon as repeated high flushings without the use of a return tube.

Physicians who have not included an examination of the abdomen by auscultatory percussion in their routine of diagnostic work, have no idea of the number of patients in whom, as a sinister presence, enteroptosis may be found. Every day that it is permitted to persist, with or without symptoms, brings that day nearer when some part of the mesentery will have become shortened and thickened by "crystallization of the lines of force" (thus classically stated by Sir Arbuthnot Lane), and chronic intestinal stasis will set free its fateful brood of toxins.

Finding simple ptosis of the whole or any section of the digestive tract, what can be done to correct it? Fortunately the measures outlined for its prevention are also the means to apply to its cure. Ordinary gymnastic exercises and many of those directed haphazardly by "letter" or those sometimes given by excellent teachers of general hygiene are liable to do serious injury to enteroptotic patients. The x ray committee of the American Posture League has lately demonstrated the fact that repeated deep respirations taken in a standing or sitting posture, *without contracting the muscles of the lower abdomen,* often crowd the transverse colon downward beyond its power to return. For relief of enteroptosis, therefore, all exercises to be helpful must press the abdominal organs upward. Those that crowd them downward must be avoided. The simplest replacement exercise is the imitation of Nature's method of elevating the viscera and pushing onward the intestinal contents, viz., a long and restful yawn. This yawn movement begins with a forcible contraction of the lower abdominal muscles, a long slowly drawn breath follows with a stretching upward of the trunk and neck, then a slow expiration which, to be really restful, must empty the chest as completely as possible.

This involuntary movement can easily be made voluntary and repeated many times. The best results are obtained in the recumbent position with bent knees, but it is effective in any posture. A succession of these movements will not only elevate the digestive organs, but will carry a normally placed uterus up to its highest position. This yawn movement also pumps venous blood into the great vessels near the heart, hastens aeration and quickens the movement of blood through the capillaries of the general body, as is demonstrated by flushing of the skin.

A well fitted and properly adjusted "front lace" corset frequently maintains the needed pressure upward between pubis and umbilicus in the sitting posture, while the ordinary corset leaves this most important region unsupported. When the abdominal muscle wall is abnormally thin and weak, the viscera can be retained only by the use of a belt[1] which *elevates* the abdomen—not simply presses it backward, from pubis to umbilicus.

TREATMENT.

Intestinal stasis patients need to eat and sleep by the clock as nearly as possible; use meat sparingly and drink water plentifully between meals. Little, if any medicine is needed. Sometimes a digestive, a mild laxative, or a general tonic has to be given for a time. Russian oil or one of its substitutes should be taken without stint, for, since it is neither a medicine nor a food, it can be used without restriction. When bands or kinks are found, and fortunately these are present in not more than ten per cent. of enteroptotic patients, the case becomes one for surgical consideration. Here the x ray does its great work, giving more minute and accurate information regarding the conditions to be dealt with than can otherwise be gained.

Unhappily, as a profession we are still in the twilight stage of operative treatment for the relief of chronic intestinal stasis. Lane, Bainbridge, Bloodgood, and others are lighting the path, but their work, though brilliant, only makes clear the difficulties to be encountered, and a need for the skill that comes only through familiarity with the complex conditions so commonly found, and a knowledge of the best methods for dealing surgically with each.

EXERCISES TO AID DIGESTION, PREVENT CONSTIPATION, AND STRENGTHEN THE ABDOMINAL WALL.

I.

Lie on the back (bladder empty and knees bent). Gently stroke the abdomen downward six times along the inside of the left hip, from ribs to pelvis.

II.

Stroke three times across the abdomen on the navel line from the top of the right hip to the top of the left, then downward as in Exercise 1.

III.

Draw the lower abdomen forcibly inward by muscle contraction (not by breath), and imitate the movement involuntarily made in taking a long restful yawn—breathe in slowly all the air possible, stretching the trunk and neck upward, then as slowly breathe out all the air taken in. Repeat six or eight times. This exercise can also be taken in the sitting or standing posture and should be repeated often when enteroptosis is present.

IV.

Forcibly draw in the lower abdominal wall (not by breath but by muscle contraction). then raise it and hold long enough to count ten. Do this three times. Rest and repeat.

Note.—If the abdomen is distended by gas, insert a small tube (the rectal point of a syringe) into the rectum before beginning the exercises; if retained, it will let out the gas as fast as it is carried down. Never apply pressure below and to the inside of the right hip (region of the appendix).

These exercises should be taken by every one on retiring, to overcome the sagging of abdominal organs due to the standing and sitting posture. They may be repeated half an hour or more before meals, if indigestion and gas are present.

Galen Hall, Brooklyn.

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[1] A Brooklyn firm manufactures to order a belt, designed by the writer, which serves this purpose well.

RECTAL ANESTHESIA.

A Demonstration of Gwathmey's Method,

By William M. Johnson, M. D.,
New York,
House Surgeon, New York Skin and Cancer Hospital.

Rectal or colonic anesthesia was of no practical importance until Gwathmey, after extended experiments by himself and collaborators, perfected the oil ether colonic anesthesia. He first presented a paper before the Seventeenth International Congress, at London, August 6, 1913, calling attention to the superiority of this method and reciting the animal experiments of himself and coworkers.

The first successful clinical demonstration of oil-ether anesthesia was held at the People's Hospital, New York, September 27, 1913, upon a patient of Doctor Rothenberg. Since this time the technic has been slightly modified and perfected, and those who have given the matter any thought, or the method a trial, are quite enthusiastic, so that now it is used by a large number of surgeons in all parts of the country. As an instance, to demonstrate the confidence of the man in his own method, I will just say that Doctor Gwathmey recently had to undergo some surgical operation and had one of his confrères give anesthesia by this method. Both the anesthesia and the operation were successful. In a recent conversation, he reports about 2,000 cases with no fatalities.

In the hospital with which I am connected, I have supervised over fifty cases of oil-ether anesthesia, with absolutely no untoward effects. Most of these cases were on the service of Doctor Bainbridge. In comparing these cases with the other methods, namely, the vapor and drop methods, lung irritation, postoperative nausea, and vomiting seemed less. Fright and mental shock were certainly much less. The method is liked by the patients. I have repeatedly had them say, on return from the operating room and to consciousness, "When will I be operated on?" More than once, in extremely nervous patients, who particularly dreaded the anesthesia, I have had the oil-ether mixture administered without their knowledge, they thinking they were getting only a bowel irrigation. They would go off into surgical narcosis, be taken to the operating room and returned, with no knowledge of what had occurred. This eliminates the ordeal of the patient's sometimes facing the surgeon and assistants, with the gruesome appearance of the operating room, and the much dreaded ether mask; thereby abolishing fright and mental shock. The method thus carried out would seem to obviate the necessity of nerve blocking, or Crile's anociassociation, in general anesthesia.

The patients are prepared as for vapor anesthesia, with the exception that the rectum must be absolutely free and clean, in other words, in the best possible condition to absorb the mixture. It is our custom to order a cathartic dose of castor oil at two p. m. on the day before the operation. At night the patient has (after the oil has acted) colon irrigation until the water returns clear. In the morning one or two colon irrigations are given, until the water returns clear. Two hours before the operation, five to fifteen grains of chlorotone is given per os; thirty minutes before the regular anesthesia is given the following is administered:

Paraldehyde, ...ʒii to iii;
Olive oil, ...℥ii;
Ether, ...℥iii to iv.

This is given by a competent nurse, and allowed to flow very slowly, about one ounce escaping each minute, having the patient in the Sims position. It is important to have the patient in a dark room, and free from noise such as loud talking, etc. If in a ward, the bed should be screened. At this time, the patient also receives one sixth to one quarter grain of morphine, together with 1/150 grain of atropine subcutaneously, remembering that hyoscine, grain 1/200, in addition to the morphine, acts better with alcoholics. These agents are synergistic and should always be chosen according to their indication. The patient must not be disturbed in any way until surgically unconscious (regardless of the surgeon's hurry), which will require from fifteen to thirty minutes. After about four minutes, the odor of ether will be noted on the patient's breath. The ether does not separate from the oil, until warmed and vaporized by body temperature, when it is taken up by the intestinal mucosa, through the hemorrhoidal veins, transmitted to the liver, thence to the heart, and finally to the lungs. The absorption by this method is slow and uniform; the patient absorbing about two ounces an hour, less than any other save the intravenous, which is about one and one half ounce an hour. The vapor and drop method are variously estimated at from three to six ounces an hour. The dose is determined by the age, weight, and habits of the patient, about one ounce of ether being required for each twenty-five to thirty pounds body weight. When paraldehyde is used, this may be lessened, but we never give over six ounces of a seventy-five per cent. oil-ether mixture to adults, regardless of weight. Children require only from fifty to sixty per cent. of ether, and when below nine years of age, no preliminary treatment.

This method differs somewhat from the respiratory, inasmuch as the ocular reflexes should never be abolished, neither should stertorous breathing be allowed to continue. *These are danger signals!* If they occur the indication is to withdraw from one to two ounces, or all of the mixture, massage the bowel from left to right immediately over the transverse colon, and irrigate with cold water. If the patient seems to be coming out, keep mouth and nose covered, when they will rebreathe and quickly go back into a smooth, easy surgical narcosis. If the patient is getting too much, the nose and face may be left uncovered. The tongue and jaw should be carefully watched in this, as in any other general anesthesia. At completion of operation, the colon should be irrigated, the transverse colon being massaged from left to right. This may be accomplished through rectal tubes, which have been left in place but clamped off, while dressings are being applied and before the patient is removed from the operating table.

The advantages of this method are the safety and ease of administration, without complicated apparatus, the only things required being a rectal tube, with funnel, and a Gwathmey irrigating tube. It is specially indicated in all operations on the head.

neck, throat, or chest, the obese alcoholic, and aged patients on account of lessening bronchial irritation. Contraindications are any disease of the intestines, operations on the pelvis, and in general laparotomies, on account of gaseous distention. However, with competent assistants to hold back the intestines, this may be accomplished, and not a few celiotomies are being performed under this method of narcosis. When the method is better understood, it will be the method of choice in suitable cases.

301 East Nineteenth Street.

ANESTHESIA.*

Suggestions Bearing upon Its Standardization for Teaching Purposes,

By P. J. Flagg, M. D.,
New York.

Any man who administers anesthetics is at some time or other called upon to impart his knowledge to others who are being initiated into this special branch of the practice of medicine. In order to get close to the student, we must reduce anesthesia to its simplest terms. We must explain the subject in simple words before we allow ourselves to become technical. It is perfectly easy to lose our audience by employing unfamiliar terms, or terms which mean little to the average man. For example, take the term, "vapor tension." What does that mean to the man whose last intimate acquaintance with physics was five or more years ago? The incidental employment of such a term may pass, but if we proceed to make use of it to illustrate or compare, our audience is left behind. According to the general meaning of the term, teaching is not an effort to ventilate our opinions, but to impart them to others, and this can be done only by being sure that the terms which we employ are perfectly familiar to all.

Men who are specially interested in a particular subject are prone to ignore or slur over the wearisome and simple fundamentals which brought them to their present point of view. As a consequence, the student who has missed the fundamentals cannot grasp or appreciate that which is being placed before him. In teaching the art of anesthesia, we are prone to depend upon the information which the student is supposed to have gained in his materia medica and therapeutics. In describing the signs of anesthesia, we speak of them as occurring during certain stages. We speak of the excitement of the first stage, of the dilated pupil of the third stage. The term, preanesthetic stage, is often heard. It is said that such and such an operation can be done in the preanesthetic stage, during which the patient *is* yet *is not* anesthetized. We have been brought up upon the term, surgical anesthesia. This is thought to be a very definite stage, in spite of the fact that anesthesia sufficient for the opening of a boil is a very different thing from that which is needed for a laparotomy. If we can establish a classification of the stages of anesthesia which can be used as a basis for all anesthetic agents administered by all methods, we may speak to the uninitiated and to one another in a manner to be understood.

The classification of the stages of anesthesia which follows might be called a clinical classification, or a classification combining the findings of the physiological laboratory and the operating room. This classification is not only easily grasped, but is equally easy to retain and demonstrate.

GENERAL, LOCAL, AND SPINAL OR MIXED ANESTHESIA.

These form the three primary divisions, and are based upon the extent to which the nervous system is anesthetized. In general anesthesia both the central and the peripheral nervous system is anesthetized; in local anesthesia only the peripheral nervous system is involved. In mixed or spinal anesthesia, part of the central nervous system (the spinal cord) and the peripheral nervous system are under the influence of the anesthetic.

We recognize two degrees of general anesthesia, complete and incomplete. These degrees are characterized by the presence or the absence of complete muscular relaxation. In a complete general anesthesia, the relaxation is universal; in an incomplete general anesthesia, relaxation is partial or absent.

A complete general anesthesia consists of three stages: 1. Induction; 2, maintenance; 3, recovery. These three stages may readily be represented by a curve (Fig. 1). They are present and demonstrable with all anesthetic agents and with all methods which yield complete muscular relaxation.

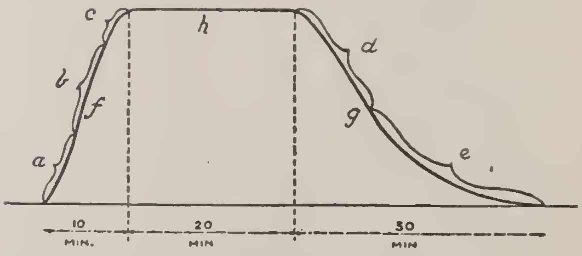

Fig. 1.—Curve of complete anesthesia; *a*, excitement; *b*, rigidity; *c*, relaxation; *d*, return of reflexes; *e*, return of consciousness; *f*, induction; *g*, recovery. (Courtesy, J. B. Lippincott Co., *Art of Anesthesia*.)

The stage of induction begins with a loss of consciousness and ends with the onset of complete relaxation.

The stage of maintenance begins with the completion of relaxation and continues until the administration of the anesthetic is permanently reduced with a view of bringing the patient back to consciousness.

The stage of recovery begins when the administration of the anesthetic is permanently reduced with the view of bringing the patient back to consciousness, and ends with the return of consciousness. Induction anesthetizes the patient; maintenance keeps him anesthetized; recovery returns him to consciousness.

The stage of induction consists of three periods: 1. Excitement; 2, rigidity; 3, relaxation.

The stage of maintenance is not subdivided, but two varieties may be observed: *a*, Constant maintenance; *b*, variable maintenance.

Constant maintenance is obtainable only where a special device is employed which will deliver to the patient a large volume of ether vapor of a definite percentage under pressure; such an apparatus as the Connell anesthetometer, for example.

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*Read before the New York Society of Anesthetists, May 26, 1916.

All other methods of anesthetization yield a *variable maintenance.*

The stage of recovery is naturally divided into two periods: 1. The return of the reflexes; 2, the return of consciousness.

The end of the first period comes about in the operating room, while the patient is under the immediate supervision of the anesthetist. The end of the second period usually takes place after the patient has reached his bed, and has passed into the nurse's care.

Two types of recovery are easily recognized: 1. Recovery by crisis; 2, recovery by lysis.

The first type is best characterized by the recovery which we see in a gas oxygen anesthesia; the second is the usual recovery seen in a prolonged ether anesthesia.

This very simple classification of the stages of anesthesia may be used as a basis for the discussion of any anesthetic agent administered by any method.

Where a detailed study is desirable, we may attack the subject by considering the evidences, the causes, and the control of the periods of excitement, rigidity, and relaxation; for example, the causes of the period of excitement:

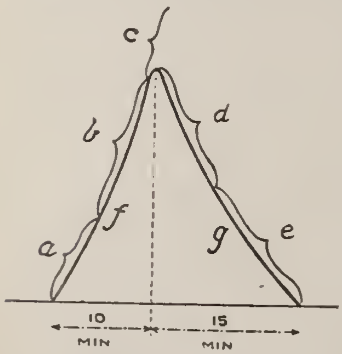

Fig. 2.—Curve of incomplete anesthesia; *a*, excitement; *b*, rigidity; *c*, relaxation; *d*, return of reflexes; *e*, return of consciousness; *f*, induction; *g*, recovery. (Courtesy of J. B. Lippincott Co., *Art of Anesthesia.*)

Physiological effects of ether.

Lack of preparation or faulty preparation.

Alcoholism.

Temperament.

Overconcentration of the anesthetic.

Excessive smoking.

Sexual.

Previous unsatisfactory anesthesia.

Nasal obstruction, almost the rule in children.

Failure to understand what anesthesia means.

Excessive fear.

Remarks which the patient hears before losing consciousness.[1]

The curve which represents complete general anesthesia forms a basis upon which we may become familiar with the idea of vapor tension or anesthesia by the percentage method.

Where such a classification is employed, the signs of anesthesia may be definitely charted. We may speak of the behavior of the pupil under ether during the stage of induction, maintenance, and recovery with the assurance that the time specified will not be misunderstood. We may speak of the complicating effects of morphine upon the same basis. The detailed effects produced by rebreathing with various anesthetics are thus quite easily identified.

It will be seen from the foregoing that muscular relaxation is a test of the worth and efficiency of the general anesthetic. An anesthetic which will not bring about good relaxation, even though it is safe, can never be other than a method of choice in selected cases. We must not forget that the anesthetic is but a means to an end, not an end in itself; that the inexperienced surgeon, the man who does not object to rigidity, will not learn to do good work, that the experienced surgeon cannot do his best work in the face of muscular rigidity.

In upholding the cause of relaxation, we do not intend to overshadow *safety,* immediate or remote. We speak of this quality as *an* essential, not as *the* essential. We do not intend to discountenance gas oxygen or to exalt chloroform. What we wish to do is to emphasize the necessity of relaxation where indicated, and to point out the fact that the routine anesthetic must be capable of bringing about this effect.

In conclusion, then, we offer this clinical classification of the stages of anesthesia in the hope of simplifying the technical subjects which we present for the consideration of one another.

120 Central Park South.

RABIES.

Clinical Report of an Unusual Case,

By Miley B. Wesson, B. S., M. D.,
El Paso, Texas.

During the fall of 1915, there was an epidemic of rabies among the dogs in Juarez, Mexico. On October 22nd, a large, black dog, afflicted apparently with a maniacal form of rabies, bit two Villa soldiers, and when chased by them, escaped via the Stanton Street bridge to El Paso. The following day, Gonzales Marterine, Mexican male, aged three years, of 1008 South Stanton Street, while at play in the street, was attacked and badly bitten on the cheek by a stray, black dog that escaped, going north. A black dog was reported about this time to have bitten a lot of dogs in the neighborhood of North Stanton and Nevada Streets, about a mile north. Among the dogs implicated in the fights was a white poodle. On November 19th, a small, shaggy, white dog showed the maniacal form of rabies, in this neighborhood, and bit a seven year old boy and a six year old girl, both of whom were immediately treated at the El Paso Pasteur Institute. The dog was captured, sent to a veterinary surgeon's hospital for observation, and died of typical rabies. All of the stray dogs in the vicinity were at once killed and the pets tied up; and no other dog in that section acquired rabies.

On the evening of November 7th, the Mexican child, Gonzales Marterine, was carried to Doctor Strong's office, where I saw him. The child appeared irritable, anxious, and had a peculiar hunted look in his eyes; had a sighing respiration, difficulty in breathing; the parents said that he had been well up to two days before, when he was noticed to be feverish and thirsty, then dysphagia developed, and the child would cry at sight of water and push the glass away; sleep was broken, the child often starting up as from a bad dream. This dysphagia, and the fact that when one attempted to blow on the child's neck he would go into convulsions, was responsible for the seeking of medical aid.

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[1] For a detailed consideration of this subject the reader is referred to *The Art of Anesthesia*, Philadelphia, J. B. Lippincott Co.

Examination showed a mentally alert, nervous child, free only a few minutes at a time from muscular twitchings; eyes were bright, tendon reflexes not exaggerated, pulse was quick, regular, and of small volume; the grip of both hands was fairly good, though that of the left was weaker. The child seemed uncertain on his feet when attempting to walk, and limped with the left leg (1). The parents said there had been a profuse flow of saliva, though there was no evidence of it at this time. The bite caused a large abrasion on the left cheek, and this was not irritated, but looked like an old eczematous rash. Quinine, according to the method of Moon(2), was prescribed. A similar case treated this way two years before, proved fatal without convulsions (3). This child succumbed before treatment was instituted, however, as the druggist held up the prescription for verification—on account of the dose. Hospital care was refused, and the father carried the baby away to an unknown address in Juarez—as I learned after several hours' search.

During the night the dysphagia grew rapidly worse, and the following morning about eight o'clock the father started to walk to the office with the baby in his arms. On the way the child had a slight convulsion and died instantly.

This case is reported because of the apparent connection between the various rabid dogs, the short time intervening between the bite and the death of the child, and the mode of death.

REFERENCES.

1. M. B. WESSON: *Journal A. M. A.*, April 5, 1913, pp. 1069, 1070. 2. V. H. MOON: *Journal Infect. Dis.*, xiii, 1, 1913. 3. M. B. WESSON: *Journal A. M. A.*, Jan. 17, 1914, p. 204.

THE CLINICAL THERMOMETER AS A CARRIER OF INFECTION.

By L. MARTOCCI-PISCULLI, M. D.,
New York,
Chief of Clinic, Gynecological Department, Harlem Hospital Dispensary.

Like many other physicians, the writer has for many years been impressed with the inadequate way in which most general practitioners, chiefly the busy ones, make use of the clinical thermometer. This article is not intended as an indictment; indeed, it is more of a confession which, however, the writer believes should be honestly, if not contritely made by every busy physician.

While making several calls in succession, most physicians content themselves with rinsing their thermometers in cold water and wiping them dry; then using them on one patient after another. Very often they will see in one trip, say, a diphtheria, a typhoid, an influenza, and a pneumonia patient. In most cases we do not find a disinfectant ready at hand nor do we usually spend ten or fifteen minutes disinfecting the thermometer.

As the writer had been one of the sinners, it has occurred to him that the physician might carry infection from one patient to another. It is true that most practitioners carry more than one thermometer, one usually being for rectal use, but even so it is quite likely that the germ of one disease is carried on the innocent looking piece of glass and planted on receptive soil.

Of course, it is difficult to say exactly in how many cases disease is actually transmitted by means of the clinical thermometer. In order to determine, first, whether germs are actually carried in this fashion, and, secondly, whether they can be recovered and grown in culture media, the writer has undertaken a series of examinations, the results of which form the burden of this article.

A number of thermometers were taken from various physicians who had washed them in running water after using them on patients. Several dozens were stained and examined. Then several thermometers taken at random were washed and the fluids used to recover the germs. The results were startling. The writer finally went to the board of health research laboratory in New York to investigate under the supervision of competent bacteriologists. In this instance cultures were made both on serum and broth and the germs were grown.

At my suggestion, and through the courtesy of Doctor Dickson, resident physician of the Willard Parker Hospital, Miss E. Valentine carried on the investigation under the immediate direction of Professor William H. Park.

The thermometers were taken from diphtheria patients of the Willard Parker Hospital. Some were washed and dried with sterile gauze, others were only dried in the presence of Doctor Dickson. Only one thermometer came from a private patient suffering with bronchopneumonia. Two series of investigations were carried out, one on March 1, 1916, and the other on March 10, 1916.

First Series, March 1, 1916.

Disease	Method of cleaning thermometer	Serum Cultures	Broth Cultures
1. Diphtheria	Washed in water and cleaned with sterile gauze	Staphylococcus pyogenes aureus Pneumococcus	Staphylococcus pyogenes aureus Pneumococcus
2. Diphtheria	Washed in water and cleaned with sterile gauze	Staphylococcus pyogenes aureus Pneumococcus	Staphylococcus pyogenes aureus Pneumococcus
3. Diphtheria	Cleaned, not washed	Staphylococcus Pneumococcus	Staphylococcus Pneumococcus
4. Diphtheria	Cleaned, not washed	Pneumococcus	Pneumococcus

Second Series, March 10. 916.

Disease	Method of cleaning thermometer	Serum Cultures	Broth Cultures
1. Bronchopneumonia	Washed in water and cleaned with sterile gauze	Diplococci	Diplococci
2. Diphtheria	Washed in water and cleaned with sterile gauze	Diplococci	Diplococci
3. Diphtheria	Washed in water and cleaned with sterile gauze	Diplococci Diphtherialike bacilli	Diplococci
4. Diphtheria	Not washed, but cleaned with sterile gauze	Negative	Staphylococcus A few pneumococci
5. Diphtheria	Not washed, but cleaned with sterile gauze	Staphylococcus Diphtherialike bacilli	Few diphtheria-like bacilli

The tables show the presence of pathogenic microorganisms on thermometers after they have been washed and cleaned with sterile gauze. All the thermometers which were stained and examined microscopically revealed the presence of bacteria, some corresponding to the disease in which the thermometers were used. It is reasonable to suppose, therefore, that if cultures had been made, the same germs would have been found as in the plain microscopical examinations.

The results speak for themselves. They simply emphasize what every physician has often suspected. They are reported here merely to establish, experimentally, the fact that the thermometer is a very dangerous carrier of microorganisms, and the haphazard way of cleaning it and passing it from one patient to another without thorough disinfection is fraught with the greatest possible danger.

There is no doubt that diseases like diphtheria, pneumonia, meningitis, tuberculosis, influenza, acute follicular tonsillitis, and syphilis, can be carried from patient to patient.

Since the virus of acute anterior poliomyelitis is found in the mouth and feces, it is not unlikely that this disease too may be transmitted in this way.

Before finishing, it may not be amiss to quote Professor W. H. Park. The words of so eminent an authority carry sufficient weight on the subject, and I need only express my thanks for his kind assistance and permission to quote him: "The results obtained both from the stained thermometers and the cultures are very interesting and surprising. It was theoretically known that the thermometers, as used by private physicians, without hospital facilities, were germ carriers, but it had not been demonstrated practically by the microscope and cultures. This shows without a doubt that live pathogenic germs remain on the thermometers not properly disinfected, capable of spreading infection. The demonstration is quite remarkable."

CONCLUSION.

1. All thermometers taken from patients carry live pathogenic germs. They are, therefore, disease carriers.
2. Washing them in water and wiping them dry in no way destroys the germs or even reduces the danger of carrying infection. Cold water hardens and so fixes the mucus with the containing bacteria on the thermometers.
3. It is absolutely imperative to disinfect the thermometer after using it on a patient and in every single case, no matter how insignificant the cause of his fever may appear today—tomorrow you may find that you have used your thermometer on a typhoid or pneumonia patient.
4. Physicians must either devise some method of disinfecting the thermometer while carrying it in its case, or spend a few minutes in each patient's house to disinfect it.

235 SECOND AVENUE.

SOME NOTES AND A PROPHECY.

By G. ARBOUR STEPHENS, M. D. (London),
Swansea, Eng.
Honorary Physician, Royal Cambrian Institution for the Deaf.

In the *Lancet, British Medical Journal,* and the *Dublin Journal of Medical Science,* I have already drawn attention to the value of subcutaneous injections of distilled water in subacute or subchronic conditions, such as syphilis, rheumatism, gonorrheal rheumatism, inflamed glands, and appendix cases.

The most remarkable case was that of a man suffering from syphilis and gonorrheal rheumatism, who had not worked for months, whereas after three injections of ten c. c. distilled water he resumed his occupation.

A good case was that of a boy who had injured his elbow, with a resultant ulcer which refused to heal, even after grafting, until he had been injected with distilled water, when it closed up rapidly.

Interesting results have taken place in cases of chronic ear discharge, for in several cases after six weekly injections the quantity has been reduced to nil, and the offensiveness entirely removed.

In subchronic dermatitis in a man aged fifty-six years, where the front of the chest and arms were covered by a moist eczematous condition, the biweekly injections produced a splendid result.

Cases of recurrent pain and swelling of the appendix have responded well; in one young man, aged twenty-one years, the pain recurred every six weeks, but after six injections, he has been quite free for a long period, and *mirabile dictu,* the constipation, which was a source of great worry, has also disappeared, there being no necessity to take medicine of an aperient nature.

I am now carrying out trials in connection with plumbism, and in three cases the results have been satisfactory, but I want further experience.

The rationale of the treatment is, I think, that distilled water, which has a high surface tension, when brought into contact with the leucocytes, causes osmosis outward, whereby the antibodies therein are rapidly mobilized; also the leucocytic diapedesis is stimulated so that the scavenging qualities are improved.

The specific vaccines employed hitherto have also aimed at this improvement of the scavenging department, but unless the vaccine was absolutely correct, the result was poor, hence the weakness of specific therapy. The treatment by means of subcutaneous injections of distilled water is *naturalistic,* whereby Nature is helped to recover herself, the natural formation of antibodies as well as their mobilization being encouraged.

The advantage of this method is, that there is no danger as in specific vaccine treatment when the vaccine is not correct. For this reason I venture to prophesy that the treatment by subcutaneous injections of distilled water ought to be of great value in leprosy.

This is a disease due to some poison whereby bacilli grow in the system, but where the antibodies are not present in sufficient numbers to perform their work satisfactorily.

If we can, by distilled water, help in their mobilization, the result ought to be satisfactory.

I have written to a few medical men in charge of leper settlements in the hope that they would give it a trial.

It may interest readers to know that James Howell, author of *The Familiar Letters* and a friend of Harvey who demonstrated the circulation of the blood, wrote, on April 10, 1622, from Trevere: "We are now in North Holland, where I never saw so many, among so few, sick of leprosy; and the reason is, because they commonly eat abundance of fresh fish"!

61 WALTER ROAD.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD AND EFFICIENCY.

By Martha Tracy, M. D.,
Philadelphia,
Professor of Physiological Chemistry, Woman's Medical College of Pennsylvania.

(*Continued from page 749.*)

As investigation proceeded and the respiration calorimeters for animals and for man were built and perfected, it was in due time shown that *carbohydrates* and *fats* taken as food by a living animal or man, are burned in the body and produce almost the identical amounts of carbon dioxide and water, and liberate the same amount of heat as is produced by that same carbohydrate or fat in the combustion calorimeter.

For proteins the figures were a little different, because in the animal this nitrogen-containing material is not as completely burned as in the bomb calorimeter, and some of the fuel value is lost, in such substances as urea, uric acid, creatinine, etc., which are excreted in the urine, and which are still combustible, though the body cannot burn them further.

It is also found that a little of the carbohydrate and fat and protein eaten is not digested and absorbed from the gastrointestinal tract, and so the material which actually gets into the blood and is carried to the muscles and other tissues where it is oxidized, is a little less than that actually derivable from food put into the mouth. We speak of this small amount as that material "lost in digestion." To express the actual fuel values in the body we subtract these small differences from the figures obtained by the bomb calorimeter and say that "one gram of carbohydrate has a physiological value, a fuel value to the body of four calories; one gram of fat—a value of nine calories"; one gram of protein—a value of four calories.

Carbohydrate	120 cal. to the oz.
Fat	270 cal. to the oz.
Protein	120 cal. to the oz.

With these small differences thus accurately accounted for, the remarkable fact is established that food substances yield energy in the form of heat and mechanical work in the body almost exactly to the extent to which they yield energy in form of heat, transformable into work, when they are burned in any furnace. The human body then, like a locomotive, is an engine which cannot run without a fuel supply.

The human engine, however, differs from the locomotive in some striking particulars. In the locomotive there is one firebox into which the fuel is put, and to this chamber oxygen is supplied in proper draughts of air, so that the combustion or oxidation takes place. The heat produced can be utilized to raise the temperature of water to the boiling point and so generate steam, which by suitable mechanical contrivances is transformed into various forms of mechanical work, or in other engines, into electricity and light.

In the living animal body there is no single firebox where the fuel is burned. The stomach and intestine merely serve to receive the fuel supply and change the compounds so that they can pass in form suitable for use by the tissues through the walls of the intestine into the blood as it circulates through the small vessels of these organs.

But the blood is not the firebox either; it merely distributes the fuel, carries it throughout the body to all the different organs and tissues, and in the microscopically tiny cells that make up these body tissues the fuel is actually used—the oxidations that constitute the life processes take place. So each cell, but especially the cells of the muscle tissue, is a minute firebox, or combustion furnace in which the fires of life occur.

As in any other furnace, to be sure, these fireboxes must be kept clean, so that the draughts of oxygen brought also by the blood from the air breathed into the lungs, can be effective in promoting the oxidations; and the "ashes" or waste products must be continually removed also by the blood stream, so that the grate and flues shall not become choked and interfere with proper continuance of the combustion.

Another striking difference between the locomotive engine and the animal engine is that the latter, the animal body, is constructed of the same sort of material as its fuel—chiefly of the protein or nitrogenous part of its fuel. This is very important. When coal is not supplied to the locomotive engine the fire soon goes out and the engine stops running. When food is not supplied to the animal body, the fires will burn for a time supported by the fuel still remaining in the circulating blood; and when this is gone fuel which may be stored up in the liver is thrown out into the circulation and so distributed to be burned. When this is gone the fat, which is stored in different parts of the body—everywhere under the skin, and as pads and cushions around the organs—will be drawn into the circulation and distributed to the cells to support combustion. In this condition of starvation, as we call it, the animal grows thin; it is burning up its own tissues in a way that the locomotive engine cannot do.

After the fatty tissue is burned the essential cells of the organs begin to be destroyed, and the muscles themselves become smaller and weaker as the material of the cells is dissolved in the effort to keep up the fire and combustion in the heart muscle. The animal engine, then, provided that water is supplied—and it is a very interesting and important fact that for cellular combustions the substances must be dissolved in water in order to burn—can continue its activity without food, long after the locomotive engine has—for lack of fuel—ceased to run.

Furthermore, the animal engine differs from the locomotive engine in that *it can repair itself.* The locomotive cannot mend the piston rod if it breaks, nor replace the bits of steel that are continually wearing off from the moving parts. The normal animal engine is doing this very thing every day and every hour. Always the substance of some of the cells is wearing out, disintegrating, and this broken down material is being swept away in the blood stream to the excretory organs, and always new material brought in the food supply is being built again into the cells, repairing the old, or building new to replace those worn out.

When the animal is young, not only is this repair and replacing of cells going on, but actual multiplication of cells is taking place also, so that the animal is growing in size.

The food supply of the man, then, means more than the mere fuel to furnish energy for heat and work; it must include also building material for repair of cells and for growth of new cells.

It is at this point that the protein foodstuffs become of such fundamental significance. I noted a few moments ago that the body is composed of substances similar to those comprising the food supply, especially the protein part of the food supply. The protein foods are those containing nitrogen, phosphorus, sulphur, and iron. The protein cells are repaired and new ones built with material that has nitrogen, phosphorus, sulphur, and iron in it, and so some protein food must be supplied. Pure carbohydrates and fats do not contain these elements, and cannot possibly take the place of this kind of building material.

To be sure, a little carbohydrate and a little fat are used in building new cells, but by far the greatest part of fat and carbohydrate food serves as fuel only. These, then, are often referred to as fuel foods, while proteins are essentially tissue building foods, only the protein excess serving as fuel.

II.

PROTEINS.

All proteins are not of equal value as tissue building materials. Chemists have learned that the proteins are very complex substances, which by appropriate means may be broken into many fragments or simpler compounds called aminoacids, and these foodstuffs are so broken up in the process of digestion. There are many of these aminoacids and we often refer to them in the words of the Germans as the "building stones" of the protein. Their names, leucin, tyrosin, valine, glycine, lysin, tryptophan, etc., mean little to one who is not a chemist, and to such a one it is simpler to think of a protein in the metaphor suggested by Professor Lusk as a word spelled with many letters. The proteins of which a muscle cell is built are different from the proteins that build liver cells. Different proportions of the building stones are needed to construct them.

Some of the different kinds of protein are: Albumin, found in meat, milk, and egg white; globulin, found also in meat, egg white, and cereals; gelatin, prepared from tendons and bones; vitellin from egg yolk; gliadin from wheat; zein from Indian corn; and there are many others; and there are several kinds of protein in each cell.

Continuing our metaphor—to construct globulin for repairing a muscle cell we must supply the letters g-l-o-b-u-l-i-n. If we take gelatin as our only protein food we cannot do this. We shall have the g, i, n, one of the l's, but no b or w or o. Even if we take twice as much gelatin, which will give us the two l's, it will still leave us lacking b and u and o. So not only must we have *some* protein food, but we must have protein food of the *right kind*, or of *enough different kinds*, to furnish the letters we need to spell our special cell words. If the body does not receive in the food supply enough proper protein to supply its cells day by day, it will gradually lose weight and die.

There are proteins in vegetable foods. I have mentioned gliadin and zein, but they are not as abundant as in animal foods, and, furthermore, the vegetable proteins are less like human proteins, and must be taken in larger amounts to supply the body need than is necessary when the protein supply comes from the tissue of other animals, as in milk, eggs, meat, etc. An experiment showed, for example, that thirty grams of meat protein a day would protect a man from loss of his own cell protein, but that if milk protein replaced the meat thirty-one grams were necessary, or fifty-four grams of bean protein, seventy-six grams of bread protein, or 102 grams of Indian corn protein, to afford the same protection or saving of body tissue.

This difference of value as building material characteristic of certain proteins has been wonderfully demonstrated in the results obtained by Mendel and Osborne,[1] in feeding experiments with white rats. These animals are chosen for such experiments because their span of life is short, the rat reaching maturity or adult life in sixty days, and living in all about three years. Thus it is comparatively simple to watch the effect of diets through the infancy, youth, adult life, and old age of the animal. Also the animals become very tame and easy to handle, and they eat readily the food mixtures offered, palatability appearing to have little or no influence. Food mixtures were therefore prepared containing suitable and sufficient amounts of carbohydrates, fats, and inorganic salts, and to which different pure proteins could be added at will, in order to study the effect upon the maintenance of body weight, and the growth of the animal.

According to the careful studies of Donaldson, a normal young white rat fed on an adequate diet, containing a mixture of different proteins, grows at a rate which in forty days will give a body weight of forty grams, in eighty days a weight of 125 grams, and in 120 days a weight of 190 grams. Here the proteins in the food supply all of the letters necessary to spell the protein words of the rat's cells, and construction of tissue proceeds at a normal rate.

When, however, young rats were fed for forty or fifty days on a diet mixture that contained gliadin prepared from wheat as the only protein substance, *no gain whatever* occurred in the weight of the animal during this period, though *maintenance* of weight was fairly good. A rat weighing about ninety-five grams at the beginning of the experimental period showed the same weight after forty days of this diet. One or more letters of the protein words needed by the rat were lacking, and no new tissue could be built. About the fiftieth day the diet was changed and a mixed food containing other proteins, including a little milk, was given. At once the animal began to grow at eighty days weighing 170 grams, and at 120 days 220 grams. All the nutritive needs were now supplied, and there was no longer any hindrance or failure to construct new tissue protein.

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[1] Osborne and Mendel: Feeding Experiments with Isolated Food Substances, *Bulletin 156*, Carnegie Institute, of Washington.

Analysis of this protein gliadin showed that the chief difference from other adequate food proteins lies in the entire lack of the aminoacid lysin. Apparently without this aminoacid, though the animal body is *maintained* without loss, *no growth* can take place.

In another experiment reported by these authors (*Journ. Biol. Chem.* xviii, i, 1914) the food mixture for certain periods contained *gelatin* as the only protein, and in these periods there was *not even maintenance* of body weight, but a steady and *striking loss*. In alternate periods a milk protein mixture was fed, and always there was prompt recovery of the loss and even a slight gain. Finally, at the end of 367 days a diet of milk and mixed food was given and prompt and continuous growth followed.

The most recent investigations along these lines (Osborne and Mendel, *Ibidem*, xxvi, 1, 1916) have confirmed and strengthened the suggestive results of the earlier work. By most carefully controlled experiments in which rats of the same weight were used and the conditions managed so that identical amounts of the food mixtures were taken by the animals, it has been conclusively shown that "to produce the same gain in body weight fifty per cent. more casein than lactalbumin was required, and of edestin (protein from hemp seed) nearly ninety per cent. more," and, further, "that the addition of cystine (an aminoacid containing sulphur) rendered the casein so much more efficient for growth that, on the average, eighteen per cent. *less* protein produced 12.5 per cent. *more growth.*"

Thus it is conclusively shown that not only *some protein*, but the *kind of protein* taken in the food is of great significance in nutrition.

It is suggestive to note in connection herewith, that the disease known as pellagra, which has mystified investigators for many years, appears, according to the evidence brought forward by recent experiments in the South, to result from disturbance of the nervous system due to lack of adequate protein in the diet.

(*To be continued.*)

The Effect of Diet on the Teeth is often overlooked by the physician in outlining a dietary. Too much soft food, especially starches and carbohydrates, tends to help decay with later impairment of mastication. It is a good rule to insist on the daily use of some hard foods, especially with children, in order to strengthen the jaw muscles and help the teeth develop as well as keep them clean. Fresh fruits and vegetables, hard crackers, and bacon rind are valuable for this purpose. Their preparation is a simple matter and once started their habitual use is easy.

Rules and Diet for Goitre Patients.—Albert J. Ochsner (*Annals of Surgery*, October, 1916) formulates the following rules for goitre patients: 1. You should avoid all excitement or irritation, as attending receptions, shopping, church work, and politics. 2. You should get an abundance of rest, by going to bed early and taking a nap after luncheon. 3. You should have an abundance of fresh air at night; consequently, you should sleep with wide open windows or on a sleeping porch. 4. You should eat and drink nothing that irritates the nervous system, like tea, coffee, or alcohol. Of course you should not use tobacco in any form. 5. You should eat little meat. If you are fond of meat, take a small portion of beef, mutton or breast of chicken or fresh fish once or twice a week or at most three times a week. 6. You should drink a great deal of milk and eat foods that are prepared with milk, such as milk soup, milk toast, etc.; cream and buttermilk are also especially advisable. 7. You should avoid beef soup, beef tea, or any kind of meat broths. 8. You should eat an abundance of cooked fruits and cooked vegetables, or ripe raw fruits, or drink fruit juices prepared from ripe fruits. 9. You may eat eggs, bread, butter, toast, rice, cereals. 10. You should drink an abundance of good water, or if this is not available, you should boil the drinking water for twenty minutes, or drink distilled water.

Gastric Ulcer.—Willard J. Stone (*Journal A. M. A.*, Sept. 30, 1916) brings forth considerable evidence and strong arguments to show that gastric hyperacidity, with or without ulcer, is promoted by an excess of carbohydrate in the dietary, as well as by other contributing factors. Among the contributing factors, which should always be remedied by appropriate measures, are gastroptosis, visceroptosis, oral sepsis, gallbladder disease, chronic appendicitis, etc. Following the relief of any of such provocative conditions the treatment of ulcer or of hyperacidity should be mainly dietetic, and this demands, above all, a sharp restriction in the intake of carbohydrate and the use of frequent small feedings. Such carbohydrate restriction should exclude all foods which contain over ten to fifteen per cent. of carbohydrate. The foods which may be taken by such patients are comprised in the following lists: Eggs, soft boiled, poached, or in omelette; fish, bacon, chicken, oysters or clams in broth, custard with small amount only of sugar, buttermilk, cream, cheese, olive oil, and tea. These are essentially the proteins and fats. The carbohydrate containing foods may be grouped according to their content into: Those with five per cent. of carbohydrate, which are asparagus, watercress, cauliflower, spinach, eggplant, lettuce, dandelion or beet greens, string beans, olives, and the pulp of grapefruit. Those containing ten per cent. of carbohydrate are boiled onions, squash, turnips, carrots and beets, lemon juice, orange juice and pulp, peaches, watermelon, canteloupe, and hickory nuts or filberts. The fifteen per cent. group includes green peas, parsnips, canned lima beans, the pulp of baked apple, pears, pecans, almonds, and English walnuts. In addition to articles from these lists the patient may be allowed one potato, three slices of toast, one portion of cereal or rice, and puree of peas, corn, or spinach. Supplementing the restriction in carbohydrates there should also be restriction of condiments, pickles, vinegar, coffee, and chocolate. Between meals and at bedtime a glass of milk should be taken and after both the milk and the meals the patient should take half to one teaspoonful of the following powder in a third of a glass of water:

℞ Magnesii oxidi ponderosi, }
Bismuthi subcarbonatis, . } ....āā 5.0;
Sodii bicarbonatis, ...20.0.
M. Fiat pulvis.

Where there is also hypersecretion this powder should be given every two hours without respect to meals. If it is desired to prevent the formation of curds in the stomach, we may add 0.2 gram of neutral sodium citrate to each thirty mils of milk. If there is persistence of organic acid formation the stomach may be lavaged once daily with a one in 1,000 solution of salicylic acid. Under these restrictions, with an adjustment of the periods and amounts for individual feedings to suit the particular case, the vast majority of cases of hyperacidity and of gastric ulcer will be cured, and in the past five years the author has had to have gastroenterostomy performed only twice.

British Beef Stew.—The famous Russian General Brusiloff and a distinguished British novelist have agreed on the estimate that the war will continue until some time next summer or autumn, but it is reported in the United States that the British Government has recently contracted for 600 million cans of beef stew. Allowing each man a can a day, the *British Medical Journal* for September 30, 1916, calculates that this would supply an army of three million men for a period of nearly two years; but perhaps the men of the British army are capable, on the average, of consuming two cans of beef stew daily. Dr. John Aulde, of Philadelphia, has published an analysis of this beef stew. He says that it is composed of cooked beef six ounces, rice four ounces, beans one ounce, onions one ounce, carrots one ounce, and that its value in food utilized is protein fifty grams, fat sixty grams, carbohydrate thirty-seven grams, yielding 914 calories. He compares this with the balanced ration well understood by American stockmen. This contains fifty grams protein, fifty grams fat, 200 carbohydrate, and yields 1,490 calories. The carbohydrate in a day's diet should be as it is in this ration—four times the protein and the fat one fifth of the whole. The British army stew is, of course, amplified by bread, jam, etc., and there is no advantage in putting more vegetable into it than will go to make a palatable stew. We must say the formula sounds an appetizing one, and ought to be much more acceptable than bully beef to all excepting those few unfortunate individuals who cannot bear onions. Doctor Aulde draws attention to the importance of an adequate supply of calcium in the diet. The beef stew contains 1.5 grain of calcium oxide and the same amount of magnesium oxide. The average dietary of American homes contains ten and a half to fifteen grains of calcium, and about half the quantity of magnesium; and he asserts that "when these proportions are reversed susceptibility to illness follows." "Deficiency of calcium," he says, "is the pivot in the production of rickets, a deciding factor in creating susceptibility to tuberculous infection in both adults and children, and a demonstrable condition in Bright's disease and diabetes. Recent investigations by the United States Public Health Service prove beyond question that the loss of lime salts is the sole cause of pellagra." This is a rather alarming picture, but even those who feel difficulty in accepting it as true will be pleased to know that our soldiers are not to be exposed to the risks enumerated.

Food in Shanghai.—As the preventable diseases specially prevalent in Shanghai are mostly caused by infected food, food inspection has been considered of paramount importance. The foreign food supply is under complete sanitary supervision, and the same is gradually being done for the Chinese, premises being licensed as soon as the necessary conditions have been met. The periodical analyses of water supply by the Shanghai Waterworks Company show that filtration is carefully done. The question of the prohibition of water closets is one that chiefly concerns the purity of the water supply, and is therefore of fundamental importance to the community.

There has been a progressive improvement in the quality of milk supplied, continue the Colonial Medical Reports of the Shanghai Health Department, in the *Journal of Tropical Medicine and Hygiene* for September 1, 1916. The standard of cleanliness in dairies has been maintained. The windows of the milk rooms are now required to be unopenable and provided with perforated zinc instead of glass, and the door with a spring slam to prevent ingress of flies. Efforts are being made to prevent the smuggling of milk from unlicensed dairies in Pootung. As regards the result of punishment, fining is the least effective, the offense being invariably repeated, while it tends to increase the price of milk to compensate for losses sustained. On the other hand, imprisonment and the cangue have a decidedly deterrent effect.

The licensed butchers, poultry, game, and vegetable shops have been kept in good sanitary condition. The regulation of fruit shops has presented great difficulty. Endeavor has been made to get the dealers to keep their skinned fruits in flyproof cases, but with indifferent success. It is considered best to rely on the public, both foreign and Chinese, to sterilize fruit, as it is impossible to insure that fruit is not exposed to inspection by flies at some stage of its journey from the tree to the consumer.

Residents are requested not to patronize hawkers of fruit and other foodstuffs who come to their houses. The examination of cattle and carcases at the municipal slaughter house affords adequate protection of the meat supply. Good meat is stamped with a circular stamp for beef and a triangular stamp for mutton, pork, and veal, with the words "killed municipal slaughter house" and the date of slaughter. Meat inferior in quality, but free from disease, passed for sale on stalls only, is marked "second quality."

Editorial Notes and Comments

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IS THE PASTEURIZATION OF MILK ADVISABLE?

The pasteurization of milk is a method, regarding the merits of which there is considerable disagreement; it is a much vexed question. On the one hand, it is argued that by pasteurization certain elements of the milk essential to proper nutrition. the vitamines, are destroyed or impaired, and that the value of the milk thus treated as a food for infants is greatly depreciated. Infantile scurvy is said to be caused in many instances by pasteurized milk and if lack of vitamines is largely responsible for infantile scurvy and if pasteurization destroys or impairs the vitamines, the argument is certainly forcible and to some extent convincing. Many authorities have been much impressed by these views, and some even have been converted.

If it is granted, however, that a pasteurized milk is not so nourishing as it should be, that is, is lacking in elements which appear to be necessary to good health, still the method possesses several counterbalancing advantages. When it is not scientifically and carefully done, the method is obviously worse than useless, for it engenders false confidence, and therefore, instead of protecting against disease, it is likely to spread infection. When the method is carried out on sound scientific principles, however, according to the views of a large number of medical men who have investigated the matter clinically and otherwise, it does provide at least fairly adequate protection against infection. Recently, it has been stated that the virus of acute poliomyelitis is conveyed by the agency of food, and especially in the case of infants, by the agency of milk. If the statement is substantiated then there can be little doubt that boiling or pasteurizing milk will go far toward checking an epidemic of infantile paralysis. In fact, it has also been asserted that no infants who had been fed on pasteurized milk from the public milk stations were attacked by poliomyelitis. If this is the case, it provides remarkably strong evidence in support of pasteurization, but further investigations of a most searching character must be undertaken before such a statement can be accepted. Undoubtedly pasteurization of milk is a protective measure of value when properly carried out, and it is probable that some of the prejudice against the method is due to its careless performance. Whether its advantages counterbalance its drawbacks has not been proved, consequently we must still keep an open mind on the subject.

THE CONTAMINATION OF MILK.

On account of the necessity of milk as a food it is probably the one substance that has been investigated thoroughly from all aspects; it is a most excellent medium for the multiplication of bacteria and its chemical composition can be altered by heating.

If there were no changes from exposure to heat, rendering milk safe for food would be comparatively easy. Unfortunately a temperature that destroys bacteria will have a bad effect on the medium itself. In order to have the best results it is necessary that the milk shall from the first be as free as possible from bacteria. If this milk is then pasteurized the consumer will be protected; many precautions, however, must be taken. Cleanliness is the essential feature, not only of the man and his utensils, but of the cow as well; care is thereby entailed and that means additional expense. The more the quality of the product is improved, the greater becomes the cost, and this falls most heavily on the poorer classes, those least able to pay.

To keep down the cost of production has been the desire of the dairyman, but when he is paying high wages and when his own cost of living is going up he must charge more. In order to obtain the milk more economically various mechanical devices are employed; a common one is the milking machine. The manufacturers of these appliances give full directions how to keep them clean; but as they consist mainly of rubber tubing there are many difficulties with which to contend.

Ruediger (*Journal of Infectious Diseases,* October, 1916) has recently made comparisons between the bacterial counts of milk drawn by hand, by unsterilized milking machines, and by machines thoroughly scalded. In one dairy the bacteria count when the milk was drawn by hand into a sterile bottle was 860; with the milking machine as generally used the count was 2,450,000; but when all parts of the machine and can were thoroughly scalded the count dropped to 2,430. As the author states it: "When we consider the fact that this milk is drawn through rubber tubes about three feet long and which have several connecting joints, and that these were cleansed but once a week, we are not greatly surprised by the result. The filthiness of the connecting joints and of the interior of the tubes in hot weather can easily be imagined."

If there is to be control over the quality of the milk, it is evident, as Ruediger points out, that the only way is by bacteriological counts. In no other way can the cleanliness of the milk be determined so accurately.

A NEW ELECTRIC PROBE.

We may not believe with some that electricity will in time solve all our mechanical problems, but the present war is demonstrating its effectiveness in many ways; for example, the repulse of armed forces by electricity with charged wire fences, rapid communication by portable telephones, lighting of the trenches, electrotherapy for paralyzed limbs, etc. Now this powerful agent bids fair to be useful in another way, that is, in the troublesome problem of discovering the whereabouts of a bullet hidden in the tissues. Many telephone probes and magnetic deflectors have been devised, but the chief objection to all of them is the grave one of impracticability.

A new probe which makes use of electricity is worked according to the following plan: A galvanometer is used to which are attached a fine metal probe and a contact wire. The latter is placed in the edge of the wound in contact with the tissues, while the probe is employed in the usual manner. There being no difference in potential between the wire and the probe the galvanometer is undisturbed until the probe comes in contact with a bullet, when a voltaic cell is formed, the foreign body being one pole, the contact wire the other, while the blood serves as the electrolyte. A marked deflection of the galvanometer then occurs.

The apparatus is comparatively cheap, costing about fifty dollars, is portable, and has been found quite trustworthy in the several military hospitals where it has been tested. If these reports of its value are well founded, it will no doubt replace the telephone probe to which most surgeons object on the ground that they cannot distinguish the sound of the probe striking a foreign body from other sounds heard constantly in the receiver.

FOOD VALUES IN BREAD.

Since realizing the part played by food elements in metabolism, in diseases, and in the treatment of certain pathological conditions, a great deal of painstaking scientific investigation has been undertaken. The results thus far achieved have been more than gratifying, and of much constructive value. The food factor in diabetes is, perhaps, the longest known, that of pellagra and beriberi of more recent origin, and the factor in the retention of the general health by proper diet, is now taking first place, not alone from the standpoint of a carbohydrate protein balance, but from the standpoint of the retention of all natural food elements unaffected by outside agencies. The observation that monotonous dietaries, even when large in quantity, such as are consumed among certain of the poor, are not satisfying to the organism, with resulting debility of various kinds and degrees, and that a mixed diet, even if small in quantity, is more ideal, is now altogether beyond dispute.

The organism requires for orderly metabolism that all foods be allowed to contribute their share of a necessary food element known as vitamine. Some foods naturally contain small quantities, and the deficiency must be supplied by mixed dietaries together containing sufficient quantities. Moreover, the vitamine in the food elements must not be destroyed or attenuated by mechanical, chemical, or other processes.

Economic necessities in the manufacture of food products are responsible for the destruction or separation of the nutrient vitamine-containing part from the part actually used as food. This treatment has been particularly administered to bread stuffs. Modern rolling mill processes separate the endosperm or starchy part from the sperm and the bran. The latter contains most of the fat, protein, ash, and vitamine, but is discarded as food. The highly milled product is particularly deficient in vitamines.

Recent experiments carried on by the Public Health Service as explained in the *Reports,* showed that fowls live indefinitely on the old fashioned product, but die within a short time from polyneuritis when fed exclusively on the highly milled products. High milling in its mechanical as well as in its physiological effect is akin to polishing of rice, which causes the polyneuritic condition known as beriberi. Pellagra, on the other hand, is caused by feeding cereal products naturally deficient in vitamines.

The vitamine content of food may be determined from the presence of phosphorus pentoxide obtained by drying and ashing, distributed like, though not contained in the vitamine molecule. To be wholesome, rice must contain not less than 0.4 per cent. of phosphorus, corn products not less than 0.5 per cent., and wheat flour not less than one per cent. Less than these percentages implies a significantly deficient vitamine content.

Moreover, the vitamine content is reduced or destroyed by the introduction of baking soda into the highly milled or even into the old fashioned product, in order to make it lighter. The alkalies are especially destructive of vitamine when exposed to high temperatures. Fowls die on the addition of soda; but a fatal termination is prevented by the addition of vitamine obtained from other foods. Sufficiently soured milk or tartaric acid combined with the baking soda mixture neutralizes the vitamine destructive power of the alkali: Similarly, the introduction of soda into cooking is a pernicious practice. The alkali shortens the time required for cooking, but destroys the vitamine.

The metabolic disturbances caused by vitamine deficiency, therefore, can in large part be overcome by lower milling processes, by ceasing the use of unneutralized baking soda mixtures, and by the consumption of high value vitamine foods, such as fresh eggs, milk, and meat.

THE PREVIOUSLY INSANE RECRUIT.

One of the most puzzling problems with which the recruiting surgeon has to deal is the determination of the mental status of the candidate for enlistment. Many who are high grade imbeciles, who have previously had a psychosis, or who are potential psychopaths, show very little to the observer, even to the medical man if he is unskilled in psychiatry. Consequently in the ordinary enlistment of men in the United States service which goes on in times of peace, many men are accepted who later manifest psychoses and cause the government much trouble and expense before final disposal is made of them. Should war occur we must expect the occurrence of conditions such as have been observed in all the countries now at war, that is, a rush of volunteers, anxiety on the part of the recruiting officers to swell the ranks at the front as quickly as possible, overwork of the military surgeon, and the natural result, the passing of men who are unfit for duty, physically or mentally.

It is the latter class who are most apt to be accepted to the subsequent detriment of the service. Many cases, for example, have come to the attention of the military authorities in Great Britain. Sir George Savage read a paper dealing with these cases before the annual meeting in July of the Medico-psychological Association of Great Britain and Ireland. He had found that many military surgeons, in their natural desire to help their country and holding the enlightened view that one attack of mental disorder should not be held against a man who had made an apparently complete recovery, had accepted men with such a history, only to have them break down, in training or immediately after arriving at the front. A more careful investigation of the family history then usually revealed that there was bad heredity in addition to previous mental disorder.

The attitude of the friends and relatives of the candidate often seemed to be responsible for the enlistment of such men; they were urged to enlist by employers and others who thought they were cowardly because they hesitated, the real reason being fear of their own condition. Finally, unable to bear the stigma of cowardice, they enlist, tell the surgeon they had a mental breakdown years ago, but are all right now, are accepted, and soon collapse under the emotional stress of warfare.

The consensus of the British experts now seems to be that no such recruit should be enlisted; and this is wise. We should not think of advising a man who had had one attack of tuberculosis to accept a job in a dusty workshop; we should not encourage a man who has had a mental breakdown to put himself in a position where he will be subjected to mental strain. The environment of such persons should be as little exacting and as free from emotional tension as possible, yet the exact opposite prevails in an army engaged in sanguinary conflict. These soldiers will cost any government more trouble attending to the many who break down than the few who escape unscathed are worth to it; and our own country should formulate some method of weeding out these men before the exigencies of war make the problem doubly dangerous. It is impossible to foresee how many of our recruits would break down under the strain of modern warfare, but judging from the increase of insane and nervous invalids in this country the number would be large. This is a phase of preparedness that should be heeded.

DISEASE AND WORKMEN'S COMPENSATION.

An employee who suffers from lead poisoning is not entitled to compensation under the Connecticut law, according to *Public Health Reports* for October 6, 1916. The Supreme Court of Errors of Connecticut has decided that the Connecticut workmen's compensation law does not provide for payments to an employee from an occupational disease.

An employee of the American Steel and Wire Company was incapacitated for a short time by lead poisoning contracted in the course of his employment. The court decided that he was not entitled to compensation.

The opinions of Mr. Justice Beach, in delivering the decision of the court, and of Mr. Justice Wheeler, dissenting, are interesting discussions of the question presented to the court. They are published on pages 2797 to 2810 of the same issue of *Public Health Reports.*

Obituary

D. BRADEN KYLE, A. M., M. D.,

of Philadelphia.

Doctor Kyle died at his residence, 1517 Walnut Street, Philadelphia, on October 23d. He was born in Cadiz, Ohio, in 1863, and graduated from Jefferson Medical College in 1891; subsequently he received an honorary Master in Arts from Dickinson College, Pa. After graduating at Jefferson, Doctor Kyle served as assistant demonstrator in pathology, a subject of which he eventually assumed the chair. In 1896 he became professor of laryngology, and was also consulting laryngologist to St. Agnes Hospital, bacteriologist to the Philadelphia Orthopedic Hospital, and in 1910 and 1911 president of the American Laryngological Association. Doctor Kyle was known throughout the country by his *Textbook of Diseases of the Nose and Throat;* he was at one time a frequent contributor to the New York Medical Journal. His widow survives him.

News Items

Change of Address.—Dr. Andrew J. Love, to 521 West 142d Street, New York.

Southern Medical Association.—The annual meeting of this association will be held in Atlanta, Ga., November 11th to 16th, under the presidency of Dr. Robert Wilson, Jr., of Charleston, S. C.

Pediatrists to Meet in Boston.—On Saturday, November 4th, the Philadelphia Pediatric Society and the Section in Pediatrics of the New York Academy of Medicine will be the guests of the New England Pediatric Society in Boston.

The American Society for the Control of Cancer, organized in 1913, in its first report to the Congress of American Physicians and Surgeons, outlines the scope of its work in conducting an educational propaganda for the prevention and cure of cancer. The society is distributing its circulars to medical societies and public health agencies throughout the country. It is also acting as a clearing house for the collection of statistical data from national mortality and operative reports. The central office is situated at 25 West Forty-fifth Street.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Tuesday, October 31st, Medicolegal Society; Wednesday, November 1st, Physicians' Motor Club (directors), College of Physicians; Thursday, November 2d, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, November 3d, Kensington Branch of the County Medical Society.

Canadian Committee on Orthopedics.—The Military Hospitals Commission of Canada has appointed a committee, with the following members, to consider the matter of artificial limbs for soldiers: Dr. Clarence L. Starr, of Toronto, Dr. William E. Gallie, of Toronto, Dr. A. MacKenzie Forbes, of Montreal, Dr. Francis J. Shepherd, of Montreal, and Dr. Frederick E. Thompson, medical superintendent of the commission.

Defective Teeth Among Rural School Children.—A recent investigation made by the United States Public Health Service in connection with studies of rural school children showed that 49.3 per cent. of the children examined had defective teeth, 21.1 per cent. had two or more teeth missing, and only 16.9 per cent. had had dental attention. Over 14 per cent. never used a tooth brush, 58.2 per cent. used one occasionally, and only 27.4 per cent. used one daily.

State Medical Society of Delaware.—The annual meeting of this society was held in Milford, Tuesday, October 10th, under the presidency of Dr. George I. McKelvey, of Dover. Officers for the ensuing year were elected as follows: President, Dr. James Beebe. of Lewes; vice-president, Dr. John Ball, of Elsmere; secretary, Dr. G. W. K. Forest, of Wilmington; treasurer, Dr. Samuel P. Rumford, of Wilmington. Next year's meeting will be held in Middletown.

Mississippi Valley Medical Association.—At the forty-second annual meeting of this association, held in Indianapolis, October 10th, 11th, and 12th, the following officers were elected: President, Dr. Channing W. Barrett, of Chicago; first vice-president, Dr. Francis M. Pottenger, of Monrovia, Cal.; second vice-president, Dr. Frank B. Wynn, of Indianapolis; secretary, Dr. Henry Enos Tuley, of Louisville (reelected); treasurer, Dr. S. C. Stanton, of Chicago (reelected). Next year's meeting will be held in Toledo, Ohio.

Texas Medical News Changes Its Name.—Dr. M. M. Smith, editor and publisher of the *Texas Medical News,* announces that with the October issue this periodical will be merged into a new, national publication which will be known as *Medical Insurance and Health Conservation.* The subscription price of the new periodical will be two dollars a year, and Doctor Smith will continue as managing editor, with headquarters at Dallas, Texas. It is said that this is the first periodical devoted exclusively to medical insurance and health conservation topics.

Medical Association of the Southwest.—Dr. E. S. Lain, of Oklahoma City, Okla., was elected president of this society, at the eleventh annual meeting, held in Fort Smith, Ark., October 2d, 3d, and 4th, and other officers were elected as follows: Dr. Howard L. Snyder, of Winfield, Kansas, first vice-president; Dr. John H. Thompson, of Kansas City, Mo., second vice-president; Dr. Matthew M. Smith, of Dallas, Texas, third vice-president; Dr. Charles S. Holt, of Fort Smith, Ark., fourth vice-president; Dr. Frederick H. Clark, of El Reno, Okla., secretary-treasurer. Next year's meeting will be held in Kansas City.

The National Committee for the Prevention of Blindness will hold its second annual meeting in the New York Academy of Medicine on the afternoon of November 24th, at 4:30 o'clock. President William Fellowes Morgan will preside, and it is expected that some of the honorary officers will be present. The principal address will be delivered by Dr. John McMullen, surgeon, United States Public Health Service, whose eminent services in the work of stamping out trachoma in the Appalachian Mountains have become a matter of nationwide interest. Doctor McMullen will use his lantern slides and describe the campaign which has been conducted under his immediate supervision.

German Death Rate.—Mortality in Germany, after reaching the low record of 14 per mille in 1913, has followed a steadily ascending curve during the war. The figures for 1914 were 16.1 per mille, in 1914 there was an increase to 19.7, and the record for the first seven months of 1916 is 16. These statistics include civilians and soldiers. Infant mortality, however, continues to follow a descending curve. The number of deaths per centum new births, after showing a slight increase from 14.1 in 1912 and 1913, to 15.6 in 1914, dropped to 14.5 in the first year of the war. For the last year the percentage has been 12.9.

Vermont State Medical Society.—The 103d annual meeting of this society was held in St. Johnsbury, Thursday and Friday, October 12th and 13th, under the presidency of Dr. Edward H. Ross, of St. Johnsbury. Officers to serve for the ensuing year were elected as follows: President. Dr. Clarence H. Beecher, of Burlington; vice-president, Dr. Charles W. Howard, of Shoreham; secretary, Dr. William G. Ricker, of St. Johnsbury; treasurer, Dr. Edward H. Martin, of Middlebury; executive committee, Dr. Orlando G. Stickney, of Barre, and Dr. Chester S. Leach, of Hyde Park. Dr. Frederick W. Sears, of Burlington, was elected chairman of the legislative committee. Next year's meeting will be held in Barre.

Increased Appropriation for Health Work in Schools.—The 1917 budget estimate of the Bureau of Child Hygiene of the Health Department of the City of New York calls for $75,240 more than last year for school health work. The additional money is needed for enlarging the staff of medical inspectors and nurses, adding 25 medical inspectors and 52 nurses. At present there are 100 inspectors and 200 school nurses. It is also proposed to add six dental hygienists to the staff for prophylactic work. The 1915 reports on medical inspection show that health conditions among school children are too serious to be neglected. About one third of the pupils enrolled in the public and parochial schools of the city were examined during the year for physical defects, and of these 72.6 per cent. were found to have physical defects which required treatment, as follows: Defective vision, 14.5 per cent.; defective nasal breathing, 9.5 per cent.; hypertrophied tonsils, 11.2 per cent.; defective nutrition, 5.3 per cent.; defective teeth, 63.9 per cent.; and to a lesser extent there were cases of cardiac and pulmonary disease, defective hearing, and orthopedic defects. The great number of children to be examined and the small staff of physicians available made it impossible at times to give each child a complete physical examination, with the result that 42.2 per cent. of the children did not have the vision tested.

Civil Service Positions.—Among the positions for which the Civil Service Commission of the State of New York will hold examinations on December 2d, are the following:

Woman physician (regular or homeopathic), State hospitals and institutions. $1,000 to $1,500 and maintenance. Candidates must be licensed medical practitioners of the State of New York, and must have had at least one year's experience on the medical staff of a hospital or three years' experience in the general practice of medicine.

Physician, State prisons and reformatories. Salary $2,000 without maintenance. Examination open only to men who are licensed medical practitioners in this State, who are not less than twenty-five years of age, and who have had at least three years' practice.

Deputy medical examiner, Bureau of Deportation, State Hospital Commission. $3,500. Applicants must be physicians licensed to practise in New York State, and with not less than five years' experience in the practice of medicine. Minimum age limit thirty years. Applicants will be expected to have a knowledge of the insanity law, and experience in the care and treatment of the committed or alleged insane in the New York State hospitals or elsewhere, or knowledge and experience of the problem of the alien insane, and their deportation.

For further information regarding these examinations address the Civil Service Commission, Albany, N. Y.

New Red Cross Bureau in New York.—To facilitate the dissemination among Red Cross chapters of information about the needs of European war sufferers, the American Red Cross has established a special information bureau in the Metropolitan Tower, New York, under the charge of Mr. Albert W. Staub, superintendent of the Red Cross receiving and shipping station at the Bush Terminal, Brooklyn. Mr. Staub will fill the two offices. His experience during the past two years as head of the receiving and shipping station and the steady correspondence which his office has with the receiving and forwarding representatives of various recognized relief agencies in Europe will enable him to keep the more than 200 Red Cross chapters in this country constantly advised as to the needs of the foreign Red Cross societies and representatives.

The Navy a Field for Medical Work.—The surgeon general of the United States Navy has issued a number of circulars of information for persons desiring to enter the medical corps, and directs attention to the fact that the navy offers a special field for medical work. Legislation has recently been enacted which will provide for approximately 300 additional medical officers in the Medical Corps of the United States Navy. The pay ranges from $2,000 a year, with quarters or an allowance therefor, for assistant surgeons with the rank of lieutenant, junior grade, to $8,000 with allowance upon attaining the grade of medical director with the rank of rear admiral of the upper half. Applicants must be between the ages of twenty-one and thirty-two years, citizens of the United States, and must submit satisfactory evidence of preliminary and medical education. These circulars may be obtained by addressing the Surgeon General, United States Navy, Navy Department, Washington, D. C.

New Officers of County Medical Societies.—At the annual meeting of the Ontario County Medical Society, held at the Oakmount Sanatorium, East Bloomfield, N. Y., on Tuesday, October 10th, the following officers were elected: Dr. Charles W. Selover, of Stanley, president; Dr. Malcolm S. Woodbury, of Clifton Springs, vice-president; Dr. Daniel A. Eiseline, of Shortsville, secretary-treasurer; censors, Dr. O. J. Hallenbeck, of Canandaigua, Dr. J. J. Collie, of Geneva, and Dr. Joseph A. Saunders, of Clifton Springs.

Dr. George F. Rogan, of Medina, was elected president of the Orleans County Medical Society, at the annual meeting held in Medina, Thursday, October 12th, and other officers were elected as follows: Dr. R. E. Brodie, of Albion, vice-president; Dr. F. W. Scott, of Medina, secretary and treasurer; censors, Dr. Edward L. Munson, of Medina, Dr. L. G. Ogden, of Barre, and Dr. C. E. Padelford, of Holley.

Personal.—Dr. Arthur R. Edwards has resigned as dean of the Northwestern University Medical School, Chicago, and Dr. Arthur I. Kendall, professor of bacteriology in the institution, has been made acting dean.

Dr. W. Wayne Babcock, of Philadelphia, gave a talk on his experiences in Alaska, Yukon, and British Columbia, at a meeting of the Physicians' Motor Club, held in Philadelphia on Tuesday evening, October 24th. The address was illustrated with stereopticon views.

Dr. Nathan Finklestein, of Pittsfield, Mass., has been appointed instructor in urology and cystoscopy at the New York Post-Graduate School and Hospital and will begin his new duties on November 1st.

Dr. John T. Bottomly, of Boston, was elected president of the St. Luke's Guild of Catholic Physicians, at the annual meeting held at the Carney Hospital, Wednesday, October 18th. Dr. John R. Slattery was elected vice-president of the guild, and Dr. John J. Sullivan, secretary-treasurer.

Dr. Fernando Calderon, a Filipino, has been appointed director of the Government Hospital at Manila, to succeed Dr. William E. Musgrave, who resigned recently.

Dr. Walter H. Brown, of Boston, has resigned as State epidemiologist, to take up work in Bridgeport, Conn., where he will act as executive officer of the Board of Health. His resignation from the Massachusetts State Department of Health takes effect on November 1st.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

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THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-second Communication.

VALVULAR DISEASE

(*Concluded.*)

An exceedingly important matter to keep in mind concerning administration of digitalis in heart affections is its long continued action. In a series of observations conducted with normal human subjects in my laboratory it was found that a single dose of digitalis (m. xx of the tincture, orally) produced a rise in blood pressure continuing for over two days, these results confirming earlier observations by Marvin and myself. Imagine what might have been the cumulative action had that dose been several times repeated during the day! It is essential that great deliberation be exercised in bringing the heart under the full influence of digitalis. There is rarely adequate reason for hurrying this process, and undue haste will easily precipitate an uncomfortable if not alarming case of poisoning. Furthermore, when once digitalis control is sufficiently secured, scrupulous caution must be exercised that the absolute daily minimum be not exceeded. Better have your patient experience a slight recurrence of earlier symptoms than to have toxic ones superimposed.

Concerning other drugs which have been recommended, a few words may be said. In the latest edition of his textbook on medicine Anders says: "Strychnine given hypodermically in full dose, grain 1/30 to grain 1/15, is the most efficient cardiac stimulant known to medical science," and recommends its use in "sudden failure of heart power." In my laboratory, repeated tests of groups of men with strychnine in one twentieth grain doses, administered both intramuscularly and orally, have failed to show any stimulant action on the heart at all. On the contrary, there was a slight tendency toward a slowing of the heart rate, due in part to an indefinite stimulation of the inhibitory centre and in part to moderately elevated blood pressure: the rise in blood pressure may be ascribed in small part to centric vasomotor stimulation and in larger part to heightened spinal irritability with reflex influence on the muscle system. Several other investigators have arrived at the same findings, so it is difficult to perceive any physiological basis for Anders's statement. In fact, it would rather seem that the physician who places reliance on strychnine in "sudden failure of heart power" is leaning on a broken reed. To be sure, strychnine is decidedly valuable as a spinal stimulant, and as such may well be advantageously employed, but it should be used with full recognition of the real pharmacological seat of its activity.

Caffeine has been recommended as a heart stimulant, and very often it works well in assisting to normalize a functionally deranged mechanism, but it is of little or no benefit in organic disabilities except as a diuretic accessory.

Nitroglycerin is beneficial in cases where an unduly high arterial tension makes too arduous the work thrown upon the left ventricle. Coincidentally nitroglycerin tends to produce a depression of both the cardiac muscle and the cardioinhibitory centre—facts which should be kept in mind when considering the indications for the drug. Where its constant use seems to be demanded, the dose should be slowly increased to compensate for the growing tolerance which the system usually manifests for this drug.

Though the advice is trite, it seems wise to add that in the presence of any systemic disability like syphilis, appropriate treatment should be vigorously but cautiously administered. The clinical pathologist uncovers many a case that is in need of an adequate combination treatment of mercury and potassium iodide. There cannot be too frequent iteration of this reminder.

New Method of Drainage in Traumatic Suppurative Arthritis of the Shoulder and Elbow Joints.—H. Chaput (*Paris médical,* August 12, 1916), in comminuted fracture of the upper end of the humerus complicated with suppurative arthritis, advises removal of the head of the humerus for the purpose of securing better drainage. The head should be conserved only if it is intact, eroded, or merely perforated; and in the latter instance filiform drainage of the perforation must be established. To secure complete drainage of the shoulder, Chaput makes a long anterior incision over the axis of the humeral head, incises the whole of the serous sheath surrounding the long tendon of the biceps, and cuts the capsule completely at its insertion on the humerus and dislocates the head upward, as though to remove the latter. Strands of silkworm gut are then passed in the form of loops through all abscess diverticula. Another is passed anteroposteriorly just below the lower margin of the humeral head, emerging posteriorly a little below the acromion; another, above the external portion of the anatomical neck, with posterior counteropening, and preferably still another, within the surgical neck, emerging posteriorly in the axilla behind the vessels and anteriorly through the main incision. The latter is closed with interrupted sutures, spaces being left for emergence of the filiform drains. In traumatic conditions at the elbow, to obtain prompt drainage, Chaput makes a short incision on either side of the olecranon, enters the joint, and passes a filiform drain beneath the triceps tendon. Another, posterior, incision is then made, at the level of the neck of the radius, the extension of the joint at this point opened, a blunt needle introduced from behind forward within the neck, the anterior muscles are perforated, the skin is lifted up anteriorly and incised, and an anteroposterior filiform drain inserted, to be tied in a loop on the outer aspect of the limb. Complete elbow drainage is indicated when the rapid drainage fails, provided the bony constituents of the joint are not fractured. The long median incision for resection of the elbow is made, the humerus, ulna, and radius are freely denuded, and the humerus is dislocated as though for excision. The various circumhumeral abscesses present are thus exposed. The ulna and radius are denuded to a point below the coronoid process. To drain the joint freely, a double transverse silkworm gut drain is passed anterior to the olecranon and its extremities caused to emerge through small posterolateral openings. The olecranon fossa of the humerus is then pierced and two anteroposterior strands passed through it, both anterior extremities of which are carried backward, one internally, the other without the radial neck, and loosely tied behind with the posterior extremities. Finally a cord of soft rubber is passed transversely in front of the humerus and above the articular eminence, its ends emerging through lateral openings. Another is passed in front of the radius and ulna, below the coronoid, its ends likewise emerging laterally. The wound is left open and exposed to electric light daily. In the event of failure of this treatment, excision or amputation are the procedures of last resort.

Rapid Cure of Fistula in ano without Fecal Incontinence.—Chaput (*Paris médical*, August 26, 1916) sets forth the advantages of filiform drainage in fistula in ano. In blind external fistulas, he first lays open the fistula, explores it with a grooved director to locate its branches and diverticula, and carefully curettes all its recesses. Curved forceps are then introduced to the bottom of the tract and pushed from behind forward through the soft tissues until beneath the skin, carefully avoiding perforation of the rectum. An incision is made over the forceps, the latter pushed out through it, and a piece of silkworm gut caught with it, drawn back, and knotted to form a loop. The same maneuvre is then repeated, but from before backward, and another loop made. Each diverticulum found is similarly treated, but with a single loop only. The skin incisions are then carefully sutured, merely allowing the loops to pass, and a dressing of zinc peroxide and aseptic gauze is applied. No attempt is made to induce constipation, a liquid diet, however, being ordered, and the patient allowed to go to stool whenever he desires. After each act of defecation the area is cleansed with spirit of camphor, methylene blue applied to the loops, and a fresh dressing provided. After fifteen to twenty days the oozing is reduced to practically nothing. The loops are now removed, but rest and dressings are continued until healing is complete, usually ten or fifteen days later. A blind internal fistula is turned by incision into a complete fistula and treated like the latter. The same preliminary treatment is applied as in blind external fistula and, in addition, the exact site of the opening in the rectum ascertained with the finger in the latter. The margins of the rectal orifice are then fixed with four Kocher forceps and the entire circumference of the mucous opening is resected; this may be done through either the rectum or the perineum. A piece of silkworm gut is next passed as a loop through the mucous orifice and the anus, on the one hand, and the skin incision, on the other. Perineal incisions are sewn up with sutures far apart, to permit of fecal evacuations. Diverticula are dealt with as already described. A dry dressing is applied, the patient put upon a milk diet, and constipation for a week produced with extract of opium. The patient is then allowed to defecate, the dressing being renewed after each act. He must not walk. Constipation is induced for weekly periods, with intervals of two or three days, until the close of the treatment. The loops are removed when oozing has nearly ceased; rest in bed and dry dressings are continued up to complete healing. Horseshoe fistulas and fistulas with multiple tracts are first freely incised on the skin side, without entering the rectum; each diverticulum is explored with the grooved director and catheterized with curved forceps which is passed out through a skin incision and used to carry back a loop, to be knotted on the outside.

Climate in the Treatment of Tuberculosis.—G. B. Fish (*Medical Record*, September 30, 1916) believes that climate generates the nerve force needed by the tuberculous patient to conform to the unaccustomed restraint and the rigid mode of living. Change of climate exerts a cheering and salutary effect on the patient's mind, and this mental element should be given serious consideration. There is no one best climate for tuberculosis and many things must be considered in advising a change, such as expense, fitness of the patient to travel, availability of competent medical guidance, food and sanitary arrangements, and mental effect of the proposed new environment.

Pelvic Infections in Women.—Thomas J. Watkins (*Jour. A. M. A.*, October 7, 1916) confirms, in his own experience, the recent advances in our knowledge of infection and immunity which have resulted in most satisfactory methods of treating acute pelvic infections, but with few exceptions the best results have been secured from medical treatment alone. This should comprise fresh air and abundant feeding, which are even more valuable in these conditions than in tuberculosis. Adequate rest, sleep, elimination, and general hygienic measures cannot be too highly valued, and far surpass stimulants, tonics, etc. It is also of decided importance to keep the patient in a cheerful frame of mind, a condition of greater therapeutical value than many remedies advised. Blood transfusion or the subcutaneous injection of whole blood is of great value in selected cases. Curettage in puerperal and nonpuerperal infections is contraindicated, as it is likely to aggravate the condition and lead to a spread of infection. In the majority of acute cases, recovery under such medical treatment is continuous and rapid, there is little danger to be feared and the exudates are completely absorbed. Incision and drainage should be limited to cases with large, superficial, fluctuating abscesses.

Treatment of Syphilis of the Central Nervous System.—Homer F. Swift (*American Journal of the Medical Sciences,* October, 1916) urges the importance of prophylaxis of syphilis of the central nervous system. The best preventive would be prophylaxis of syphilis itself, but this problem is not yet solved, and the next best is the proper treatment of the disease in its early stages. No case of syphilis should be released from treatment until the cerebrospinal fluid has been shown to be normal, in so far as pleocytosis and Wassermann reaction are concerned. Even with the present diagnostic methods and effective therapeutic agents, a fair proportion of the patients are poorly treated, and probably a majority of them are released without lumbar punctures. The failure of many patients to be followed until cured is due to several causes: 1. The patients fail to realize the importance of proper treatment in the prophylaxis of later disease and discontinue treatment; 2, there is still a surprising lack of facilities in dispensaries for the proper treatment of syphilis; 3, many physicians fail to realize the long systematic course that is required to eradicate the disease completely; 4, there are many cases of innocent syphilis and syphilis with slight, if any, early manifestations which go untreated and later develop into nervous lesions. A table is presented to show the percentages with which tabes, paresis, and cerebrospinal syphilis have developed under different conditions of treatment. In practically a quarter of the poorly treated cases paresis developed, contrasted with a little over three per cent. of those who were well treated. In from eleven to twelve per cent. of the poorly treated ones tabes developed, and in only about one fifth as many of those who were well treated. A single course of treatment seemed to increase the liability to the cerebrospinal form of the disease. Hence the modern intensive treatment of early syphilis is particularly indicated to prevent the involvement of the central nervous system. In many cases of the early forms of syphilis of the cerebrospinal axis, mercury, iodides, and salvarsan affect the course of the disease favorably, but they are apt to fail, and the disease tends to relapse. Intraspinal therapy then comes into play, and the problem has been to find some beneficial therapeutic substance which could be introduced repeatedly without injury to the nervous tissue. The four preparations mentioned as having stood the test of time are: 1. Serum obtained from patients shortly after intravenous injections of salvarsan; 2, serum to which small quantities of salvarsan have been added; 3, neosalvarsan in small quantities and weak concentration; 4, mercurialized serum. These are discussed at length, together with the technic of preparing and using autosalvarsanized serum. Treatments seem to be better borne if not repeated oftener than once in two weeks, especially in patients with tabes or spinal syphilis. In those with paresis or cerebral syphilis the intervals may be shorter. At times the interval should be lengthened. A certain amount of irritation always follows the introduction of any foreign substance into the subarachnoid space and the effect of this should disappear before the treatment is repeated. The treatment must not be pushed hard enough to depress the general health. Salvarsan treatment should always be preceded by a short course of mercury to prevent a possible Herxheimer reaction in the region of vital nervous centres. In tabes it is better to start with small intravenous doses of salvarsan, gradually increasing, and giving a treatment a week for six or eight injections. If at the end of this course the Wassermann reaction of the fluid is considerably weaker, a course of mercury may be tried, followed by another course of salvarsan, alternate courses being given with periods of rest until the fluid is brought to normal. When the strength of the reaction is only slightly altered in this way, the substitution of combined intraspinal and intravenous therapy will usually result in an improvement in the condition of the fluid. In a rapidly advancing case of tabes, or of optic atrophy, this combined treatment should be seriously considered at the beginning. Treatment must be individualized in syphilis of the central nervous system, and while a general plan should be followed in the various forms of the disease, each case may demand a certain deviation to meet peculiar conditions. Its objects are three: To cure the disease, to ameliorate the symptoms, and to prolong life. With the possible exception of paresis, all of these objects may be attained in most cases of syphilis of the central nervous system.

Diagnosis and General Treatment of Syphilis.—John A. Fordyce (*American Journal of the Medical Sciences,* October) says that while it is possible, theoretically, to formulate a treatment in the various stages of syphilis, as a matter of practice the best devised plan must preeminently be an elastic one, subject to the modifications called for by the susceptibility of the patient to the drugs and to intercurrent reactions which take place from time to time. In early active syphilis, salvarsan alone has been followed by neurorecurrences and monorecurrences, or early tertiary lesions. In cases of initial lesion, seen before the Wassermann reaction is positive, salvarsan may perhaps be given without such danger, but it is better to give the combined treatment rather than to rely on this drug alone to establish a complete cure. Fordyce gives a course of mercury with the salvarsan, the number and size of the doses of both agents depending on the sex, body weight, and general condition of the patient. The salvarsan is given in courses of five or six injections in doses of 0.3 to 0.5 gram for men, and 0.25 to 0.4 for women at intervals of a week to ten days. The mercurial injections are given every day or alternate day, if a soluble salt is employed, once a week if an insoluble one. The soluble salt he prefers is the bichloride, in courses of twenty to thirty injections. The insoluble ones are gray oil, of which five minims represent one grain, or salicylate of mercury in doses of one to three grains gradually increased; ten to twelve injections constituting a course. Both salvarsan and mercury are followed by a rest period of six weeks, and then the procedure is repeated. Wassermann tests are made periodically, but treatment is not interrupted because of a negative reaction until the adequate amount of medication has been given. Thus it is possible to abort the infection both clinically and serologically. When visceral lesions are present, salvarsan should be used in small doses repeated at intervals determined by each case. In cardiac conditions it is better to precede with mercury, or mercury and potassium iodide. In secondary syphilis with a positive Wassermann it is frequently necessary to give three courses of salvarsan with mercury before the desired effect on the serum reaction is obtained. In tertiary syphilis, the method of treatment depends upon the tissues or organs involved. It is of advantage to combine the courses of salvarsan with intramuscular injections of mercury, and to follow this with the prolonged use of potassium iodide and mercury in the form of mixed treatment. In so called latent syphilis, salvarsan often fails, and more benefit is likely to be obtained from the old fashioned mixed treatment. In secondary syphilis when the early rash is present and the Wassermann positive, it is better, on account of economy of time, to precede the salvarsan with several injections of a soluble mercurial salt. In tertiary syphilis with a persistent positive Wassermann reaction, without involvement of the central nervous system, the beneficial effects of potassium iodide cannot be too strongly emphasized.

Treatment of Diphtheria.—Deléarde (*Bulletin de l'Académie de médecine,* September 5, 1916) strongly advises that the doses of antitoxin given in diphtheria be large ones. In his clinic all children admitted, of whatever age, immediately receive sixty c. c. of the French standardized antitoxin if pharyngeal manifestations exist and eighty c. c. if there is croup. If the bacteriological diagnosis is confirmatory, the dose is made, in the twenty-four hours following admission, eighty c. c. in the presence of diphtheritic angina, and one hundred c. c. in the event of laryngeal involvement. Ten years' experience with this dose has shown it to be free from all danger and successful in its results, while admittedly a twenty c. c. to sixty c. c. dose is sufficient for diphtheria occasioned by the short variety of the bacilli, and in the absence of laboratory facilities an initial small dose can be increased in the event of poor results. Deléarde prefers to inject one or two massive doses, sufficient to insure rapid recovery, than repeated smaller amounts. Sudden deaths in malignant cases from myocarditis, as well as from massive albuminuria, postdiphtheritic paralysis, and prolonged convalescence, are thus avoided. Repeatedly he has seen a copious albuminuria diminish in one day upon injection of eighty c. c. or 100 c. c. of antitoxin. The reduction in the number of doses given—rarely exceeding three in number—lessens the chances of local infection and serum reactions, and spares the feelings of young, timorous patients. False membranes readily liquefy and are rapidly eliminated under the high dose treatment. Where the latter is begun when slight stridor already exists, the necessity for subsequent intubation or tracheotomy is removed. If, owing to late application of treatment, intubation has been required, high dose antitoxin therapy nearly always permits removal of the tube within forty-eight hours, thus avoiding the pulmonary complications which attend protracted presence of the tube.

Nail Extension in Fractures of Lower Extremity.—John C. A. Gerster (*Jour. A. M. A.,* October 14, 1916) concludes from a considerable experience that nail extension with the proper technic is a safe and useful measure. It is of particular value in simple fractures with extensive abrasion of the surrounding soft parts, in recent compound fractures with greatly damaged soft parts, in multiple fractures of one limb, in osteotomy cases, and in certain cases of operative reduction. The method, however, must not be made routine, but should be restricted to selected cases where it constitutes a valuable addition to the older methods.

Magnesium Sulphate Anesthesia in Man.—Charles H. Peck and Samuel J. Meltzer (*Jour. A. M. A.,* October 14, 1916) report the records of three cases in which surgical operations were performed under exclusive magnesium sulphate anesthesia. The drug was injected slowly and nearly continuously into a cubital vein. Six and ten per cent. solutions were employed, but the latter seemed too concentrated and caused temporary failure of respiration for ten minutes, during which time life was maintained by artificial respiration. The injections were made at rates varying from eight to fifteen mils a minute; but at times the latter rate was more than doubled for short periods. In each of the patients full anesthesia was secured and maintained throughout the operation, and in each recovery was prompt and without symptoms. In addition to the anesthesia the drug caused a satisfactory degree of muscular relaxation. These observations not only confirmed the belief that magnesium sulphate was an anesthetic, but also suggested its possible practicable and advantageous employment for this purpose in man. It had no ill effects, and an overdose, if given, could at once be antagonized by the administration of calcium chloride.

Magnesium Hypochlorite in Surgery.—M. Dubard (*Bulletin de l'Académie de médecine,* August 22, 1916) points out that the alkaline hypochlorites used in the form of Javelle's or Labarraque's fluid, are caustic chiefly because of the alkalies, not because of the chlorine. Magnesium hypochlorite is advantageous in that magnesium is practically nonirritating. The salt is nevertheless strongly bactericidal, its concentration can be varied much more readily than that of Dakin's solution, and it never produces any harmful effect on the tissues. It may be prepared either by the interaction of calcium chloride and magnesium sulphate or by direct action of chlorine upon magnesium hydrate, the latter procedure, according to Vaillant, yielding the purer product. Practically, no solution having a chlorometric titre exceeding 2.5° or 3° should be made. The solution, being unstable, should be freshly prepared before use. It causes no pain, and does not injure the hands even in much stronger solutions. Streptococci, staphylococci, colon bacilli, etc., are killed by two to four minutes' exposure to a 1.5° to 2.5° solution, while the spore-forming Bacillus subtilis is killed in eight minutes. In sterilizing the hands results better than those attending the use of tincture of iodine are obtained. A six to eight minute dip in a 2° solution removes all cultures from the skin surfaces. Clinical observations with a 1°

to 2.5° solution in the treatment of wounds showed that the compound yields results far superior to those obtained with Dakin's fluid. Its use in obstetrical practice is also recommended.

Trichinosis.—J. B. McNerthney and William B. McNerthney (*Jour. A. M. A.*, October 7, 1916) cited a severe case of trichinosis of fifteen weeks' duration which was promptly cured by a single intravenous dose of 0.6 gram neosalvarsan. Improvement began in forty-eight hours and recovery was nearly complete after two weeks. This experience is directly opposed to statements recently made concerning the value of neosalvarsan in trichinosis and its unfavorable effects in such cases.

Bipolar Ionization in Inoperable Carcinoma.—G. Benton Massey (*Medical Record*, September 30, 1916) describes the technic as consisting of the insertion of the active needles just beyond the periphery of the growth, while the indifferent negative electrode is inserted in its centre, thus confining the current with its chemical and thermal activities to the growth itself and to its edges. Both positive and negative electrodes are made of zinc, and in this bipolar method heat is merely accessory to the electrochemical destructive process.

Transfusion of Citrated Normal Blood in Acute Poliomyelitis.—G. A. Rueck (*Medical Record*, September 30, 1916) reports three cases treated successfully by the transfusion of blood taken from healthy adults and prepared with two per cent. sodium citrate solution. This treatment is based on the immunity of most healthy adults and children to the disease, the presence of antibodies in the blood of most persons, the rapidity with which transfused blood reaches the brain and spinal cord through the blood stream, the retention of phagocytic cells in whole blood, and the action of adult whole blood as a protective agent in most infectious diseases of children.

Treatment of the Discharging Ear.—Albert Bardes (*Medical Record*, September 30, 1916) writes that beginning otitis media may frequently be aborted by an ice bag, a mild cathartic, fluid food, rest, and hourly irrigation of the ear with a warm boric acid solution. Earache should not be allowed to last longer than twelve hours before incising the drum, and this should always be done under general anesthesia and preferably under chloroform. After incision, ordinarily it is simply necessary to keep the ear dry and clean, and irrigations should be used sparingly or not at all. A saturated solution of boric acid with some alcohol added makes a good lotion. The use of ear drops without an exact diagnosis of the nature of the lesion is unscientific, and hydrogen peroxide is especially contraindicated. Persistent discharge may require stronger applications, such as a twenty per cent. solution of iodine or a ten per cent. solution of chromic acid. The radical mastoid operation of Stacke is of value only in selected cases, and the best statistics show only fifty per cent. in cures. A better operation in most cases is the Schwartze operation, with removal of the mastoid cells and the establishment of free connection between the mastoid antrum and the tympanic chamber.

Impregnation of Cloth with Antiseptics.—Mary Davies (*Lancet*, September 30, 1916) has found after experimenting with a number of antiseptics that underclothing could be impregnated successfully with a five per cent. solution of pyxol, which consists of a saponaceous compound of cresols and soft soap. Such impregnation was inexpensive, nonirritant to the skin, did not damage the undergarments, and was inoffensive in odor. Cloth so saturated and exposed to the sun and rain for a month might be contaminated with the organisms of the soil in large amounts and yet when introduced into the tissues of a living animal the pyxol greatly inhibited the growth of the organisms so that only a small local abscess formed. The adoption of some such plan for soldiers is suggested in order to reduce the dangers of infection from imbedded pieces of clothing and to diminish the severity of infections when they do occur. Such impregnation might prove useful also in preventing infestation with lice.

Cranial Fractures.—Albro L. Parsons (*American Journal of Surgery*, October, 1916) points out that the technic of cranial surgery requires no further amplification, but there are certain features upon which greater emphasis might be placed. The prevention of infection by the most rigid adherence to modern principles of asepsis is one of the primary essentials to a successful outcome. In compound fracture the wound should be thoroughly cleansed before invading the cranial cavity, to minimize the danger of infection from without; if extensive cerebral laceration has occurred, after elevating or removing the damaged osseous structure, the cerebral tissues so devitalized as to be beyond hope of repair should be carefully excised. Adequate provision for drainage is imperative in every instance where the dura is incised, which should be always done if there is evidence of increased subdural pressure. A decompression operation without dural incision rarely accomplishes the desired result.

Intussusception.—Clarence L. Starr (*Canadian Journal of Medicine and Surgery*, October, 1916) advises operative treatment at the earliest possible moment. If seen immediately after the acute onset, an effort should be made to disengage the intussuscepted bowel. This may be done by inverting the child, raising the hips high and almost standing the child on its head, and by injecting water or saline into the rectum. The injection of metallic mercury is not to be recommended, nor should the bowel be distended with gas or air. If the patient is seen during the first twenty-four hours, it is usually possible to reduce the intussusception. An incision long enough to admit the hand should be made in the right rectus above the umbilicus. The mass is brought out without removing the remainder of the intestine and the reduction should be made with extreme care. It should be squeezed back from above. It is rarely necessary to stitch the bowel to the abdominal wall. If reduction fails, a rapid resection of the invaginated mass should be performed. If the patient's condition is very bad, it may be better to remove the mass by a rapid resection between intestinal clamps and then bring both ends out on the wall by means of a Paul tube.

Toxemia of Pregnancy.—Frederick T. Hyde (*Northwest Medicine*, Aug., 1916) recognizes the close relationship existing between the sexual functions and the organs of internal secretion—especially the thyroid. He has tried the administration of this gland in hyperemesis gravidarum and eclampsia. Only three patients, so far, have been treated thus, but the results were strikingly favorable, as is shown by their case records. One was a case of hyperemesis, the others of eclampsia. Thyroid was given in doses of 0.2 to 0.3 gram twice daily.

Radium Treatment in Hypertrichosis.—M. L. Heidingsfeld (*Lancet-Clinic*, September 23, 1916) reports a case of extreme hypertrichosis in which, at each of three points over which an application of radium had been made, the hair was completely and apparently permanently removed. Most of the heavy growth over the neck and chin, almost as marked as in an adult male, had already been eradicated. The radium treatment is painless, rapid, and effective, and the cosmetic result is far better than that secured with the only other trustworthy procedure—the needle and galvanic current.

The Results of Operative Treatment of Exophthalmic Goitre.—Vernon C. David (*Annals of Surgery*, October, 1916) summarizes: In sixty-five patients operated on for exophthalmic goitre from 1905 through 1914, thirty-eight per cent. were cured and forty per cent. were greatly benefited. Of thirty-five patients having exophthalmos before operation only thirteen, or thirty-seven per cent., reported themselves as relieved from it. The duration of symptoms before operation in the patients cured was sixteen months; in those greatly benefited, twenty-three months, and in those not improved, thirty-three months.

Postoperative Treatment of Gallbladder Surgery.—R. L. Rhodes (*Surgery, Gynecology and Obstetrics*, October, 1916) says that during the first few days following operation hexamethylenetetramine is given by proctoclysis because the patients are not allowed fluid by mouth, and to avoid any possibility of upsetting the stomach. After the first week it is given by the mouth. The drug is given five days each week and omitted for two days to prevent untoward symptoms; however, the drug is omitted for a day or two and then administered again should these develop earlier.

Examination of the Larynx.—N. Schoolman (*Journal of Ophthalmology and Oto-Laryngology*, June, 1916) states that chronic hoarseness, especially in men past forty years, should make a laryngoscopic examination an imperative duty to all practitioners. In the majority of cases hoarseness is the only evidence of beginning carcinoma for a long period of time—from one to three years. The symptom of pain appears in the later stages of the disease and is characterized by sloughing and ulceration. It is manifested in the form of otalgia, occurring spontaneously or during the act of swallowing, darting from the larynx to the ear, to the angle of the jaw, and to the back of the neck. Early examination of the larynx in the presence of a persistent cough may detect beginning tuberculosis.

Benzol and X Rays in Splenomedullary Leucemia.—Edmund Myers (*Northwest Medicine*, September, 1916) reports the detailed record of a severe case to show that neither x rays nor benzol alone is sufficient in some instances to control the disease, while the two may be effective when given simultaneously. The benzol was given in doses up to four mils daily, and the x rays were applied in turn to the ends of all of the large long bones and to the spleen.

Lumbar Puncture in the Fetus during Podalic Extraction.—Romolo Costa (*Gazzetta degli ospedali e delle cliniche*, September 3, 1916) asserts that this measure, with removal of cerebrospinal fluid, increases the power of moulding the head of the child and relieves the cerebrospinal pressure. Thus there is less difficulty in extracting the head on the one hand, and fewer asphyxiation symptoms on the other. Therefore lumbar puncture is advisable, in the interest of the fetus, in suitable cases of pelvic contraction and of insufficient cervical dilatation. The procedure is easily and quickly accomplished.

Modern Treatment of Burns.—George de Tornowsky (*Journal of Cutaneous Diseases*, March, 1916) states that in burns of the first degree the part should be gently cleansed with commercial ether and a sterile sponge; following this an ointment of white precipitate, one half dram to equal parts of zinc oxide and cold cream ointment should be applied with a sterile pad and bandage. The dressing should not be removed for eight to ten or even twelve days, unless there is great pain or elevation of temperature. In burns of the second degree, if the patients are in the hospital, the best results are to be obtained by exposing the part to the air, augmented by the use of a bland powder, such as stearate of zinc. In private practice this method cannot be employed and the two methods of choice are the amniotic grafts or white precipitate ointment. The amnion method is open to the objection that it locks up secretion. Where skin grafting is to be resorted to, it must be done early to get the best results.

Value of Various Diagnostic Methods for the Cerebrospinal Fluid.—H. Nakano (*Journal of Cutaneous Diseases*, March, 1916) draws the following conclusions: 1. The Wassermann reaction in the spinal fluid in late syphilis, as well as in cerebrospinal lues, tabes and dementia paralytica, rapidly disappears, but the serum reaction remains for a long period. 2. The substance causing the complement fixation in the spinal fluid probably enters the fluid from the blood, but we are unable as yet to determine whether the antibody of this reaction is produced in the fluid itself. 3. The Nonne reaction frequently appears in the cerebral and spinal diseases. 4. The Weil-Kafka reaction appears in acute and in chronic inflammations of the cerebrospinal and meningeal diseases. 5. The Lange reaction appears in all cerebral and spinal diseases. The nature of the Lange reaction is closely connected with the presence of globulin and nucleoprotein in the fluid. 6. The Nonne, Wassermann, Weil-Kafka, and Lange reactions disappear by degrees under treatment with salvarsan, mercury, and iodine.

Miscellany from Home and Foreign Journals

Diphtheria Bacilli in the Tonsils of Carriers.—Mary Brown (*Journal of Infectious Diseases,* October, 1916) calls attention to the fact that the tonsils may be the source of infection in diphtheria carriers. The tonsils of seven diphtheria carriers were studied, six of whom had had pharyngeal diphtheria, and one of whom was a carrier without symptoms of intoxication. Of these, six tonsils showed Gram positive beaded bacilli in great numbers. The one case which showed no bacilli in sections of the tonsils or adenoids gave positive cultures from the nose for nineteen days after tonsillectomy. Of the fourteen pairs of control tonsils, only two showed any Gram positive bacilli. The results would indicate that an important focus of infection is removed when tonsillectomy is done upon diphtheria carriers.

A Rapid Method for the Diagnosis of Renal Tuberculosis by the Use of the X Rayed Guineapig.—Morton (*Journal of Experimental Medicine,* October, 1916) undertook certain experiments to determine whether or not the time taken for the development of tuberculous lesions in the inoculated pigs might not be shortened. He found that guineapigs could tolerate a large amount of x rays without apparent injury to their health. The chief action appeared to be a marked reduction in the number of lymphoid cells. By exposing the animals to a single massive dose Morton noticed that a diagnosis could be made in the inoculated pigs in from eight to ten days instead of having to wait five to seven weeks. The x ray may be used either shortly before or after the inoculation of the material to be tested.

Antidotes in Mercuric Chloride Poisoning—An Experimental Study.—Bernard Fantus (*Journal of Laboratory and Clinical Medicine,* September, 1916) as a result of his studies recommends the following antidotal treatment for mercuric chloride poisoning. The immediate administration of an antidote, either Carter's, which is a tablet composed of sodium phosphate, 0.36 gram, and sodium acetate, 0.2 gram, or if this be not available, the following: Sodium hypophosphite, one gram; water, ten mils; hydrogen peroxide, five mils. If the amount of poison taken be known, ten times as much of the hypophosphite should be given as poison was taken. As this might require a large and possible harmful amount of hypophosphite, it should immediately be followed by copious lavage, with a very dilute solution of antidote. This may be followed by a safe dose of the antidote, which is to be retained, and which might be repeated every eight hours for several days. This antidotal treatment may be combined with some such treatment as that recommended by Lambert and Patterson, excepting that sodium acetate is preferred to the potassium bitartrate given by stomach, because of its superior antidotal power. Egg albumin is of little value as an antidote to mercuric chloride, unless it is given immediately after the poison is swallowed. Milk and serum albumin are worthless. Hall's solution (potassium iodide and quinine) is also useless.

Bacillus Isolated from Epileptics.—William Barclay Terhune (*Jour. A. M. A.,* October 14, 1916), with the purpose of testing the claims recently made by C. A. L. Reed, and starting with the idea that epilepsy was not of bacillary origin, took blood cultures from a series of twenty-four epileptics and obtained positive cultures in seventy-five per cent. of the cases. The organism isolated was similar to that described by Reed. It was not a constant finding, the same case often giving positive and negative results when examined on different occasions. It was present, when found, during or after a seizure, but was only once found during an interval. It was absent from nonepileptics. It was also found to produce typical epileptoid attacks in cats, both after intravenous inoculation and after feeding them with the cultures. After the death of these animals or during the convulsions the organism could be recovered from their blood In one instance a cat kept in the same cage with those which had been inoculated, exhibited spontaneously similar convulsive manifestations and died, suggesting the possibility of the direct transmission of the germ, probably through feces.

Hammer Hand and Plantar Hand in Ulnar Paralysis.—Hesnard (*Paris médical,* August 26, 1916) calls attention to a deformity of the hand resulting from traumatic paralysis of the ulnar nerve, characterized by an anterior projection of the metacarpophalangeal joints, with a corresponding depression across the dorsum of the hand, and also generally a clawlike position of the fingers, the hand seen in profile, thus presenting an S shaped curve resembling that of a swan's neck. This deformity, which he terms "hammer hand" because of its similarity to hammer toe, is most pronounced at the little finger, diminishing as one proceeds outward, with the thumb escaping entirely. The deformity generally appears only several months after the injury to the ulnar nerve, and is sometimes incomplete or, rarely, absent. In its incipience there exists merely a slight metacarpophalangeal prominence anteriorly, which imparts to the hand an appearance somewhat like that of the sole of the foot with its two heels, anterior and posterior; hence the term "plantar hand" applied to it by the author. The deformity, in its two stages, is of distinct value as a diagnostic sign of ulnar nerve paralysis, as there are cases in which it positively reveals injury to this nerve in the absence of many other signs, such as loss of function of the hypothenar muscles, or sensory disturbances; or in which, because of vicarious functioning of other muscles, paralysis of the adductor of the thumb cannot be made out. The cause of the deformity is a simultaneous hypertonicity of the extensor and flexor muscles governing the fingers, together with the diminished tone of the lumbrical and interosseous muscles. The deformity may exist even in cases in which the nerve is not injured beyond spontaneous repair, and may gradually pass off, though as a rule only incompletely.

Röntgenocardiograms.—A. W. Crane (*Jour. A. M. A.*, October 14, 1916) describes a comparatively simple apparatus for use with the x ray machine which permits the taking of cardiograms directly from both auricles and the left ventricle. The principle consists in making a narrow strip of the cardiac shadow at the margin of each of the heart's chambers record its own shadow upon a moving sensitized film. The tracing thus obtained is one of the actual movements of the heart's chambers and is not in any way altered by mechanical factors. By this method such conditions as auricular fibrillation and conditions in which there is regurgitation into one of the auricles are clearly shown. The method has many advantages over the graphic methods now in use and is at least a valuable adjunct to them. It may be used in combination with the other methods and the records may be simultaneously reproduced upon the same film.

Specificity of Streptococci.—Henrici (*Journal of Infections Diseases*, October, 1916) draws the following conclusions from his experiments in which fifty-three strains of streptococci from various sources were inoculated into 225 rabbits: The hemolytic streptococci are more virulent than the nonhemolytic, but the two classes localize in the same tissues with equal frequency. From evidence obtained by rabbit inoculation experiments, we are justified in recognizing any particular class of streptococci as specific for rheumatic fever, since the various rheumatic lesions, arthritis, myocarditis, endocarditis and myostitis, may be produced by some strains in each of the varieties, and are produced in equal proportion by both hemolytic and nonhemolytic streptococci. Streptococci of various kinds may produce, in rabbits, types of myocarditis which cannot be differentiated from the Aschoff-Geifel nodules generally considered diagnostic of rheumatism. Experimental streptococcal endocarditis develops by implantation rather than by embolism.

Absorption of Potassium Iodide by the Thyroid Gland.—David Marine and J. M. Rogoff (*Journal of Pharmacology and Experimental Therapeutics*, August, 1916) report a series of thirty-three experiments in dogs in which 0.05 gram of potassium iodide was injected into the internal jugular vein and the amount of the iodide in the thyroid compared with that found in a lobe of the thyroid removed before the experiment. The animals were killed at intervals varying from five minutes to thirty hours after the iodide injection. In all experiments there was a great increase of iodide in the thyroid lobe exposed to the drug. The absorption of the drug by the gland was, furthermore, so rapid during the first few minutes as to be practically instantaneous, the slight further increase in the long period experiments being hardly appreciable. The absorption varied directly with the degree of active hyperplasia of the thyroid present, and inversely with the original iodine content of the gland. Pieces of liver and spleen from the same animals showed no retention of iodine. Evidently the thyroid has an extraordinary affinity and other tissnes but little affinity for iodine. Marine and Feiss have shown that artificially perfused thyroids rapidly take up potassium iodide in a similar way.

Bichloride of Mercury Poisoning from Vaginal Absorption.—A. F. Wilkie Millar (*Brit. Med. Jour.*, September 30, 1916) reports the case of a young woman, who inserted one tablet of bichloride, containing 0.57 gram of the salt, into the vagina, and twelve hours later began to complain of pain and swelling of the vulva. Immediate douching was ordered, but in a few hours the typical symptoms of severe bichloride poisoning had developed and these progressed to a fatal termination on the sixth day in spite of all efforts at treatment.

The Milking Machine as a Source of Bacterial Contamination of Milk.—Ruedegir (*Journal of Infectious Diseases*, October, 1916) points out definitely that the milk may be contaminated badly by a milking machine if the teat cups and rubber tubes are not carefully cleansed and scalded before each milking. He found that in warm weather, particularly, the milk obtained by a milking machine may give a much higher count than that drawn by hand. In one dairy the milk drawn by hand contained 860 colonies, by the milking machine as generally used over two million. When the same machine was used after thorough scalding of it and the can, the count was twenty-four hundred.

Bacteriology of the Public Fountain.—Pettibone, Bogart, and Clark (*Journal of Bacteriology*, September, 1916) in their article rather upset our ideas concerning the value of the ordinary bubble drinking fountain. They found that during an epidemic of streptococcus tonsillitis in a dormiitory, streptococci were found in the bubble fountains in the building and in the water issuing from the fountains. In an experimental fountain they found that Bacillus prodigiosus remained in the water from two to 135 minutes, depending partly on the height of the water. In order to avoid the retention of bacteria they advise that the fountain, instead of being vertical, should incline at an angle of about fifteen degrees.

Vascular versus Interstitial Nephritis.—B. G. R. Williams (*Archives of Diagnosis*, July, 1916) points out that vascular nephritis or arteriosclerotic kidney, with its confusing urinary findings, is a far more common condition than frank interstitial nephritis, with its characteristic symptoms and urinary findings and rapid, hopeless course. The latter diagnosis should, in fact, be actually avoided where it is possible to diagnose vascular nephritis. The diagnosis must, moreover, be based not on the blood pressure or a single urine examination, but upon a series of uranalyses, checked by the symptomatology. Although textbooks state that the two conditions cannot be differentiated by the uranalysis, Williams found in a study of 20,000 samples of abnormal urine that it is possible in many cases to discriminate very accurately between the two conditions. In true interstitial disease there is a persistent polyuria, while in vascular nephritis the output is variable, sometimes increased, sometimes normal, and during the "crises," in which a subject in apparently good health suddenly shows grave symptoms, with loaded urine, there is usually oliguria. The specific gravity, usually persistently very low in interstitial nephritis, is usually normal or slightly low between crises in vascular nephritis, and usually low, less often high, during a crisis. Whereas in interstitial disease the reaction of the urine is usually slightly alkaline, in vascular nephritis it is usually excessively acid early in the disease, while later there is persistent and marked alkalinity. Albumin, casts, degenerative granules, and renal cells in interstitial disease are generally present in slight, but almost stationary amount. In vascular nephritis, the microscopic findings are practically negative between crises, while during a crisis large quantities of albumin and casts may be present. In vascular nephritis a prognosis should be avoided, even with the patient panting, nauseated, or comatose, with little or no passage of urine loaded with casts and albumin. The author has seen a man seventy-five years old, with an extended renal history, recover and return to his desk for two more years.

Transient Auricular Fibrillation. — E. B. Krumbhaar (*Archives of Internal Medicine,* August, 1916) reports a detailed study, with the electrocardiograph, of six patients in whom a change from the normal rhythm to auricular fibrillation occurred. He divides cases of auricular fibrillation into three groups: 1. In an acute infection, such as pneumonia or septicemia, or an acute intoxication, as in alcoholism or hyperthyroidism, attacks of fibrillation sometimes occur for several days, probably independently of any myocardial damage. 2. In a group probably always associated with myocardial degeneration, paroxysms lasting from a few minutes to many hours or even days may be induced by one of a great variety of causes, the condition, however, eventually tending to become permanent, though death may occur before this stage has been reached. 3. In a group with prominent signs of valvular or myocardial disease, the original appearance of fibrillation is apt to be permanent, or preceded by only a few transient periods; in such cases pulmonary embolism, acute pericarditis, or pregnancy may be the factor determining the advent of the fibrillation. Rest in bed, the digitalis group of remedies, and the removal of sources of intoxication, assist in terminating attacks of fibrillation, but excessive amounts of digitalis may help to bring it on.

Race, Sex, and Age as Factors in the Incidence and Prognosis of Pellagra.—J. F. Siler, P. E. Garrison, and W. J. MacNeal (*Archives of Internal Medicine,* August, 1916) report conclusions reached in an extensive field study of pellagra in Spartanburg County, S. C. The incidence data, comprising 1,180 cases, are based only on cases in which the initial attack was known to have occurred during the period of study. The incidence per 10,000 individuals was 231 for white females, 103 for white males, eighty-one for colored females, and twenty-five for colored males. The disease was rare under the age of one year, but fairly common in the age period from two to twelve years. The age period of twelve to sixteen years was relatively free from initial attacks. After sixteen, the incidence rose rapidly in women up to the age of twenty, then gradually diminished; the number of men attacked, on the other hand, gradually increased all along, so that the incidence in the two sexes was practically the same at fifty years. There was usually clear evidence of residence very close to an antecedent pellagrin in the cases of infantile pellagra; the milk of pellagrous mothers, however, cannot be regarded as a cause or vehicle of transmission. Curiously, the lower incidence rate among negroes coincided with greater poverty of this race and a diet poorer in quality, quantity, and variety. Incidence was lowest in the sex and age groups of negroes most completely segregated from white pellagrins. The death rate in the year of the initial attack was 15.8 per cent. for the entire series—12 per cent. in the white race and 41.8 per cent. in the negroes. The death rate among white women over twenty years of age was 11.9 per cent.; among white men, 21.2 per cent.; among colored women, 40.2 per cent., and among colored men, fifty per cent. In all groups there was a tendency for the death rate in the initial attack to increase with age. Among children the death rate in initial attacks was low.

Tests for Normal Cardiac Power.—Camille Lian (*Bulletin de l'Académie de médecine,* September 5, 1916) makes the statement that in military practice, great difficulty has at times been experienced in deciding, even after all varieties of examination had been gone through, whether men were or were not fitted for active service. Lian has found, however, two tests of constant value. Both are based on counting the pulse after an exactly measured physical exercise. The first test consists in having the subject, after the pulse rate at rest in the standing position has been carefully ascertained, execute running steps on one spot, with the legs bending to a right angle with the thighs, at the precise rate of two steps a second. At the end of one whole minute the subject stops and remains at rest standing, while the pulse rate is counted for fifteen seconds in every minute—beginning at once when the exercise stops—until it returns to normal or nearly so. The heart is considered adequate for military exertions when the rate returns to normal or nearly so at the beginning of the second or third minute after the termination of the exercise. A rise in the rate to over thirty in fifteen seconds, from the normal resting rate of seventeen to twenty-two, is held to show slight cardiac weakness. Where the rate rises as high as thirty-eight and returns to normal only after four or five minutes, heart weakness is so distinct that the subject must be relieved of the more arduous military duties, while if it rises to forty-two and lasts six or more minutes, the subject should leave the front, as he is fitted only for auxiliary service. The second test occasionally reveals cardiac weakness which the first failed to show. The subject, while standing, raises a five kilogram weight over the head, then brings it down between the legs with the body bent forward and lower extremities flexed. This is continued for one minute at the rate of five or six cycles in every ten seconds. The results are interpreted as in the first test. The details of these tests must, of course, be somewhat modified in the examination of women and children.

Factors in the Production of Cardiac Dyspnea.—Francis W. Peabody (*Jour. A. M. A.*, October 14, 1916) reports that three distinct but more or less related factors emerge from a study of the causation of cardiac dyspnea. The most important and constant seems to be a decrease in the vital capacity of the lungs. In severe cases there may be in addition more or less acidosis and to a less extent an increase in body metabolism.

Comparative Study of Tests for Renal Function.—Herman O. Mosenthal and D. Sclater Lewis (*Jour. A. M. A.*, September 23, 1916) has made a series of comparative observations to determine the relative values of several renal functional tests which led to the construction of a table to indicate the scale of impairment. Regarding the tests themselves, it was found that the earliest indication was given by the test meal-specific gravity test; next in order of positive results was the phenolsulphophthalein test; then Ambard's coefficient; and finally the determination of blood urea. Indication of a maximal disturbance of the kidney function was most often given by the test meal, less by phenolsulphonephthalein and least often by Ambard's coefficient. Owing to the external factors producing death in nephritis, the relative prognostic value of the functional tests was found to be uncertain. However a nonprotein blood nitrogen of over ninety mgm. or a blood urea nitrogen above sixty-five mgm. seemed to be the most trustworthy signs of fatal outcome. An Ambard coefficient of 0.2 or higher was also usually an index of a fatal ending in a few months. There was, however, no infallible prognostic test. In cases with marked anemia a condition was often encountered in which there was a dissociation of renal function and there the results of one or more tests might be positive, while those of others indicated normal function. From this study also, it was evident that each test covered only a limited range of renal activity and that none measured the function as a whole.

Radical Abdominal Operation for Carcinoma of the Cervix uteri.—Comyns Berkeley and Victor Bonney (*Brit. Med. Jour.*, September 30, 1916) reports the performance of a radical operation, consisting in the total removal of the uterus in a bag consisting of the upper half or two thirds of the vagina, the ovaries, tubes, broad ligaments, the parametric and paravaginal tissues down to the levator ani and the glands in the obturator fossæ and along the internal and external iliac vessels. From 1907 to 1911 a total of 100 cases were thus operated in, and the ultimate results of all of the cases, except seven which could not be traced, are here given. The operability rate, based upon all cases presented was about sixty-two per cent., and the immediate mortality from the operation was twenty per cent. If the seven cases lost sight of are deducted there were forty-two per cent. of cures for five years, and if the patients dying of the immediate operation and two which died of intercurrent diseases also be deducted there were nearly fifty-five per cent. of permanent cures. Of all cases originally presenting themselves for operation there were twenty-four per cent. of cures. This was a very high proportion of cures, particularly when it is borne in mind that thirty-five per cent. of the cases had malignant involvement of the glands. In the group of 100 cases there were thirty-two recurrences, twenty of which happened within the first two years after operation. Lastly, of the entire group of cases operated in sixty-one per cent. had some prolongation of life as a direct result of the operation.

Weil's Disease.—Adrian Stokes and John A. Ryle (*Brit. Med. Jour.*, Sept. 23, 1916) state their experience with several typical cases of Weil's disease, as encountered among the troops in Flanders, which confirmed the recent findings of Japanese and German investigators. From two early cases guineapigs were successfully inoculated, and in their tissues the typical spirochetes were found in great abundance. In addition, the same spirochetes were found in blood from one of the human cases after citration and centrifugation.

Etiology of Cholecystitis and Gallstones and Their Production by Intravenous Injection of Bacteria.—Rosenow (*Journal of Infectious Diseases*, October, 1916) gives in detail the results of his experiments in which he was able to produce marked lesions in the gallbladders of his animals by means of streptococci and colon bacilli injected intravenously. The organisms used had been obtained from human gallbladders. Of the animals injected, in seventy-nine per cent. lesions of the gallbladder developed. Definite formation of gallstones was found in six rabbits and three dogs. From his experiments Rosenow holds that in addition to an infection furnishing the nucleus for the precipitation of the bile salts, it is necessary to have a concentrated bile of high cholesterinol content.

Spontaneous Liberation of Epinephrine from the Adrenals.—G. N. Stewart and J. M. Rogoff (*Journal of Pharmacology and Experimental Therapeutics*, September, 1916) designate as a spontaneous liberation of epinephrine from the adrenals, a liberation taking place under experimental conditions in the absence of artificial stimulation of the splanchnic nerves. It is not implied that this liberation is necessarily a physiological process and is not excited merely by the abnormal sensory stimulation, anesthesia, and other factors, connected with experimental work in animals. The question was studied in cats by a new method, viz., the blood pressure changes caused when blood from the adrenals is allowed to pass into the general circulation from a pocket of the vena cava in which the blood has been collected in a known amount for a known time. The amount of epinephrine liberated was found to vary in different experiments within a rather narrow range—from 0.0008 to 0.0028 mgm. a minute for each animal (or, from 0.0003 to 0.001 mgm. a minute to each kgm. of animal). After section of both sympathetic trunks in the thorax near the diaphragm, including the major splanchnic nerves, the spontaneous liberation of epinephrine was completely abolished. No increase in epinephrine liberation was detected when sensory nerves were stimulated. Although cats survive indefinitely the removal of one adrenal and division of the nerve supply of the other, no epinephrine was found in the blood coming from the remaining adrenal in such animals five weeks after the operation.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting Held May 4, 1916.

The President, Dr. WALTER B. JAMES, in the Chair.

Some Disorders Supposed to Have an Emotional Origin.—Dr. WALTER B. CANNON, professor of physiology, Harvard Medical School, reviewed the results of a few of his experiments, some of which had already been published in book form, in relation to the bodily changes that accompanied some of the stronger emotions such as fear and rage in human beings and in the lower animals. These mental upheavals, which they shared with the lower animals, had characteristic expressions which were so well known that they made a common language between man and animal, namely, erection of hair, dilatation of pupils, great acceleration of the heart action, interference with secretory function, stoppage of movements of stomach and intestines, and muscle tension. There was, in these surface manifestations of the emotional state, definite interpretation of what was going on in the mind. These studies brought out some interesting facts in regard to the relation between these emotions and the glands of internal secretion.

The consideration of how the emotional states worked out in pathological conditions involved a consideration of the nerve pathways which were passed over by the impulses which brought about the surface manifestations. The relation of these pathways was made clear by the lantern pictures of the anatomy of the sympathetic nervous system. The adrenals were affected by the disturbed nervous state. Experiments were made to determine if there was oversecretion of adrenine in times of emotional excitement. Rhythmically contracting intestinal muscle which was relaxed by adrenine, one in twenty millions, was used as a test. Blood was taken from an animal when quiet and also when frightened. The blood of a cat, taken immediately after it had been frightened by the barking of a dog, was surcharged with adrenine; this was evidence that the adrenals did secrete in times of emotional excitement. When adrenine was injected into the body, there was an increase of sugar in the blood, and the question arose whether there was not always an increase in times of excitement. There was an excess of sugar in the urine, indicating an increased amount in the blood, when the cat was frightened. Adrenine, when injected, caused inhibition of the muscles of the alimentary canal and also sent blood away from the abdominal cavity, away from the stomach and intestines to other structures, in which the bloodvessels were not made to contract by injections of adrenine, such as the heart, lungs, central nervous system, and the skeletal muscles. These injections also caused an increased number of red blood cells and this was also the case in times of excitement. They also caused a faster clotting of blood. Profound bodily alterations thus accompanied the most elementary emotions, such as rage or aggression. The emotion of fear was associated with the instinct to run, the aggressive feeling with the instinct to attack. These were the emotions aroused in wild life in which there was likely to be a struggle for existence. They were closely related in their psychology. They both feared and wished to kill anything that could kill them, and the same bodily changes occurred in fear and rage. These instincts in a human being were related to all the others; all the others might be quickly changed into the two principal ones of fighting or escaping. A dog took his bone because he wanted to eat; if they attempted to take the bone, although the dog was ordinarily gentle and knew their greater power, he would likely nevertheless attack them. A mother, all tenderness for her child, would use all the force she could muster if anything attacked or hurt that child. Various emotions were easily transformed into the two underlying emotions, surviving for generations from the struggle for existence. These emotions were accompanied by the same bodily changes in animal and in man, including increased blood sugar. Students taking examinations might get so excited that there would be glycosuria. A few years ago, it was observed that half the men of a football squad had glycosuria after a game.

The key to the significance of these changes was to be found in relation to the necessity for struggle. The increase in blood sugar was due to the liberation of its store in the liver. It was a prime source of muscular energy. The alteration in the circulation sent the blood from the abdominal cavity, where activity subsided for the time being, to the heart, lungs, central nervous system, and muscles, the various structures brought into action in times of great excitement or struggle. The cessation of activity in the alimentary canal was part of a larger change, tending to make the entire organism more efficient. The early coagulation of the blood prevented loss of this precious fluid through injury to the vessels. In fact, all the changes could be accounted for on the basis of their being means of bringing about reinforcement of all the activities of which the body might find itself in need in the preservation of the organism as a whole. This activity of the adrenal glands could be called an emergency activity. They could in this way account for the great acts of power and great feats of endurance sometimes reported as accomplished in times of great excitement.

The question had been raised, why it was that the organism disturbed in times of emotional excitement was not disturbed at other times: why the pupils did not dilate or the heart beat rapidly or the secretions and motions of the stomach stop their activity. The failure of these disturbances to occur in ordinary life might be accounted for by there being, between the preganglionic fibres and the outlying neurons of the sympathetic system, a point of junction, the synapse, in which there was considerable resistance to the passage of impulses over or through it, and it was necessary to have a great deal of stimulation in the central nervous system, a great deal of excitement in order to cross the threshold.

This conception could be used to account for the indications, in pathological states, of frequent and continued disturbances in these various structures —the heart, the stomach, etc.—for in these cases there might have been repeated emotional experiences which accomplished a wearing down of this threshold, or a wearing down here and there so that there would be an easy passage outward. The repeated transmission of impulses resulted in the wearing of pathways. There were what might be called breaks in the barrier. Thus they observed that an organ, normally brought into action only in time of great stress might be chronically disturbed, and this would account for nervous dyspepsia, inactivity of the stomach, a certain type of tachycardia, intestinal stasis or incontinence, or a persistent glycosuria of emotional origin.

HENRY RUTGERS MARSHALL, L. H. D., D. S., said that as a psychologist he looked at Doctor Cannon's experiments from a certain point of view, though their significance was general. Though he looked at the matter seriously, he could not resist the temptation to suggest that in future it was possible that directors of the drama would insist on their emotional artists being injected with adrenaline before a performance to insure the strongest presentation of rage, fear, anxiety, etc. His own point of view was influenced by reading Charles Darwin's *Expressions of the Emotions in Man and the Animals,* in which it was conclusively shown that the activities, commonly called the expression of the emotions, were instinctive activities that had been inherited because of their racial value. This point of view was very effectively corroborated by Doctor Cannon's experiments, and it was the view commonly held. Darwin, in the work referred to, accepted the common notion that the emotion caused the reaction, or expression, and in the title, Disorders Supposed to Have an Emotional Origin. Doctor Cannon seemed to agree with this. This deserved study, for it was not clear how instinctive reactions which arose automatically and immediately upon the receipt of a definite stimulus, could be caused by emotional states. William James held, on the contrary, that the instinctive reactions caused the emotions, which were what Lloyd Morgan had aptly called "back strokes," results of the automatic instinctive reactions called expressions. To put the matter in the vivid language which Mr. James used, "they did not flee because they were afraid, but they were afraid because they fled: they did not strike because they were angry, but they were angry because they struck." In other words, he held that the emotions of fear and anger, for instance, were afterresults of the purely automatic instinctive activities involved directly or indirectly with the running away, or with striking the enemy

In his more mature view, the speaker had come to believe that the causal relation was not involved at all between the mental and the physical. All that the evidence pointed to, was the existence of a strict one to one correspondence between the two. This was an important point and Doctor Cannon's experiments seemed to corroborate it. Some of the results of such a view, both physiological and psychological, he had attempted to point out in an article published in the April number of *Mind,* in connection with the study of retentiveness and of Bergson's and Freud's theories of dreams. Under such a view, it could no longer be held that there existed a causal relation between the emotion and its expression; there was no more warrant in saying with Professor James that they were afraid because they fled, than in saying with the common man that they fled because they were afraid. The most that they could say, was that the specific form of the instinctive action was a relatively immediate reaction to a selective definite stimulus and this was based wholly, or in large part at least, upon inheritance. Man displayed a countless variety of such instinctive actions, varying greatly in complexity. The extreme limit in one direction was the simple reflexes, and the so called emotional expressions were examples in the direction of complexity. Corresponding with the more complex instinct-actions, changes were noted in the consciousness which might be called instinct-feelings; these differed as the instinctive-actions differed. They felt such an instinctive feeling when quite automatically they rushed forward, and again when they jumped back suddenly to escape an automobile, and the instinctive feelings in the two cases were as distinctly different as the instinct-actions were distinctly different. Now most of their instinct-actions recurred but seldom in anything like a definite form. Certain of them, however, did recur frequently and were relatively constant in form. In such cases, they came to recognize them and describe them as Charles Darwin and Doctor Cannon had done. In like manner, the corresponding instinct-feeling recurred, for the most part infrequently in anything like a definite form; but some of them did and these were recognized and received names. In the speaker's view, it was the instinct-feelings of this latter type which were called the emotions. Thus it would be seen that this general conception taught that a definite type of behavior necessarily involved a definite attitude of mind and vice versa, and each change of a person's behavior necessarily involved a corresponding change of his mental attitude and vice versa. As nations were merely aggregations of individuals, this meant that definite changes of national attitude of mind necessarily went with changes of national habits of action; a fact, which, in the speaker's view, they were overlooking at the present moment. Under the view which he defended, the emotions, as types of mental states, could not be looked upon as casually related with what they called their expressions, but merely as symptomatic accompaniments of these instinctive activities. It made all the difference in the world which position they took. If the mental states were treated as casually related with physical states, the physician was tempted to step outside the real sphere of his work. While if mental states were treated as symptoms of physical states, the physician employed the mental states merely as aids to the discovery of such physical conditions as he was called upon to deal with.

The speaker was especially interested in the impressive evidence furnished by Doctor Cannon of the marvellously intricate coordination of minor systemic parts necessary to the very existence of the high organisms; evidence that had been accumulating in large measure in the last decade and which led to the abandonment of the study of the physical organism as though it were a quasi atomical collection of separate organs, leading rather to the study of it as a whole system of enormous complexity in which each organic part had its place as a minor system. The biologist was thus coming daily to look upon problems relating to organization as of greater and greater importance, as was indicated for instance in the last book from the pen of the eminent English physiologist, Haldane. Correspondingly, in the realm of consciousness, psychologists had discarded psychological atomism and were treating the mind as an immensely complex system of psychic systems. This fact, that the physiological and mental structure and functioning were to be considered as single wholes, was surely often overlooked, on the physiological side, for instance, by those pedagogues who urged intensive specialization in any particular field to the abandonment of broad culture; they forgot that this specialization tended to involve a loss of such balance of judgment as was required if real advance in thought was to be made. It had led in the scientific world to a great amount of pleading which passed without protest. The physician could be said to have escaped altogether the dangers involved in the forgetfulness of the fact that each part of the body was essentially related to the system as a whole. It was certainly overlooked when a surgeon operated where there was no urgent need, and when there was at the time no little hope of a readjustment of function by natural processes which would leave the system intact and newly balanced.

No one who was impressed with the import of the facts brought to their attention by Doctor Cannon could be guilty of such thinking, and the speaker had dared to make these critical remarks because he felt that they could not possibly apply to those present, except as they might be urged to take note of them in the guidance of their pupils.

Dr. Charles L. Dana was not a physiologist and could only accept Doctor Cannon's data. He accepted also as most reasonable the theory of the mechanism of defense. He subscribed to the laboratory work and the deductions presented by Doctor Cannon, and did so in spite of a critical attitude which he had begun to feel toward laboratories in general. They were doing splendid and constructive work, but they were also enslaving and, in a way, enfeebling the clinician and, in addition, they were sending out occasionally misleading and incomplete announcements. The laboratory often needed a humanizing influence and should be more dominated by the clinical spirit.

The speaker had one practical suggestion to make bearing on Professor Cannon's observations: There were emotional states which came on acutely, but lasted very intensely for weeks and months. These were cases of acute mania, or hypomania, in which the patient was joyously exhilarated, alert, talkative, had violent outbursts of anger, and was intensely active physically and mentally under the pressure of the emotional state, which suddenly left him, or a contrary state of agitating depression occurred. These emotional states might be like those brought on by shock. The question whether they were brought on or kept up by periodical explosions of pluriglandular activity would be worth examining. It was well known that in hyperthyroidism there was often a distinct excess of emotional tone.

Dr. Joseph Collins said that Doctor Cannon's statements were acceptable and had been accepted. Those who were familiar with his book would recognize that a large part of what had been set forth at this symposium was contained therein with adequate substantial proof, not only by himself and his pupils, but by others. There was no room for criticism or argument; it remained, therefore, for any one like himself, in attempting to discuss the matter, to apply the findings to the clinical problems confronting him as a neurologist. Therefore, he asked himself, had there been anything in his clinical experience to warrant him in believing that diseases of the nervous system flowed from disordered emotions; did the primal, painful emotions, such as fear, anger, or jealousy cause nervous or mental disease? The answer was negative; his experience did not entitle him to the conviction that such emotions caused such diseases. Conditions which were adequate to produce an excessive secretion of the adrenal did not enter into the causation of functional nervous or mental diseases, nor was he convinced that emotional factors such as worry, fright, and what was called mental stress, had much to do with causing Graves's disease; the phenomena of that disease were aggravated by such emotional factors, but the disease was not caused by them. The theory which best explained most functional nervous and mental diseases, especially the obsessive and hysterical, was the theory propounded by Freud. Such diseases, or their manifestations, were often caused precipitately to disappear when the original trauma or injury was discovered and eradicated, appeased, or satisfied. Of course it might be that the psychic trauma existing in the subconscious might, through the medium of the painful emotions, cause a plus activity of the internal secretions and thus cause or maintain such physical accompaniments of disease as these neuroses and psychoses had.

Doctor Cannon and others, however, had pointed out that there was a decided antagonism between the emotions expressed in the sympathetic and the cranial and sacral divisions of the autonomic system; emotions expressed through the cranial and sacral autonomic were not those that provoked disease. It was only those which were expressed through the sympathetic which called forth the body's vital reserves, the stored adrenine and the accumulated sugar which might, as it were, become pathogenic. Perhaps it was that the effect of the emotions on the sympathetic on the one hand and on the cranial and sacral autonomic on the other, counterbalanced one another, and this explained why they did not have "emotional" diseases. The rôle played by the emotions in influencing diseases was quite another matter. The effect of anger, worry, or jealousy upon gout, nephrolithiasis, diabetes, and other diseases had long been recognized, and the speaker thought it might be more profitable to try to apply Doctor Cannon's interesting and important findings to such diseases and to the great problem of acidosis, than to the functional nervous diseases.

Dr. Harlow Brooks said that Doctor Cannon had given the explanation for conditions that had long been recognized. Clinicians had long known of the significant effect of the emotions on organic disease; there was not one who did not realize the great influence of the emotions in the etiology of such diseases as hypertension, angina pectoris, bronchial asthma, and the whole range of cardiac disease. The theory of the breaking of the barrier explained what they had been accustomed to speak of as the establishment of a pernicious tissue habit. Clinicians had also long recognized the influence of the emotions in the treatment of disease. The emotions were closely related to the progress of convalescence and to the cure of cardiac and renal diseases particularly, and treatment in various sanatoriums for this type of disease was largely based on this physiological fact. The clinician was no longer afraid to say that an uncontrollable temper, or protracted worry, might bring on a chronic interstitial nephritis. Now that there was an explanation of how emotion might produce disease, the prevention of the development of many diseases and even their cure should be better understood, and proper attention to this important phase should result.

Dr. Walter Timme believed that emotional complexes had as reactions disturbances of the normal state in the three nervous levels, the psychic, the sensorimotor, and the vegetative. As the vegetative level combined both the sympathetic and the extended vagus systems, and as these were interactive, it was hardly possible to consider one without the other. Emotions such as anger stimulated the sympathetic, but such emotions as depression, chagrin, or worry stimulated the vagus and produced physiological changes which were constantly seen; notably, visceroptosis.

One possible objection to Doctor Cannon's conclusions regarding the effect of the increased adrenaline in the adrenal veins of an animal that had been frightened, was that these same veins depleted the adrenal cortex as well as the medulla. The adrenal cortex in human beings comprised almost nine tenths of the gland, while the medulla, which produced the adrenaline, was only one tenth. In animals, the cortex was smaller proportionately than in human beings and in acerebrate humans and idiots the cortex was almost entirely absent. It was noteworthy that with such absence the individual had much less inhibition of his emotional discharges in anger and fright. It might therefore be presumed that the cortex secreted a substance which was possibly antagonistic to adrenaline and whose activity must be taken into account in such experiments as Doctor Cannon had described.

An interesting problem was propounded in considering the mutual relations of adrenaline and the sympathetic system; namely, that they were mutually stimulating; that is, adrenaline irritated the sympathetic system, which in turn stimulated the adrenal gland to a further production of adrenaline. This newly formed adrenaline again affected the sympathetic with the secondary effect upon the adrenals, and so on *ad infinitum*. Yet this was not so in fact, for it seemed that the adrenaline was immune to the sympathetic stimulation produced by adrenaline.

Dr. John Rogers recalled that only a few years ago, the ductless glands and the sympathetic nervous system were regarded as unimportant structures, but now a complete knowledge of their physiology apparently promised the solution of many of the most puzzling problems of the practitioner. Until recently, the autonomic and sympathetic nervous systems were unnamed and almost unknown; now these two groups of nerves were recognized as conveying impulses which were, in effect, opposite. The autonomic fibres in general were motor and secretory; the sympathetic, on the other hand, seemed to inhibit these motor and secretory influences. The product of the adrenal gland, epinephrine, acted upon the terminal filaments of the sympathetic and intensified its influence, or that of inhibition. The product of the pituitary or, more strictly, of the pars intermedia of the pituitary, seemed also to have some similar influence. A few recently published experiments suggested that the products of all the other endocrinous glands had some corresponding activating effect upon the terminal filaments of the autonomic group. As every important organ in the body was supplied by both autonomic and sympathetic nerves, an excess of some endocrinous secretion other than the adrenal or pituitary should increase or activate the motor or secretory impulses of the autonomic group; an excess of epinephrine, by its activation of the sympathetic, should inhibit any excessive amount of secretion which might arise through stimulation of the vagus by one or more other glands. An autonomic balance seemed to be furnished in this mechanism by the supposed vagus supply of the adrenal gland; if this was interrupted, it then became possible to imagine the origin of the disturbances now represented by the manifestations of vagotonic or sympatheticotonic conditions. Doctor Timme had hinted that adrenaline might not be the active principle of the adrenal gland; if this suspicion proved true—that is, if adrenaline was only the stable part of some labile secretion, it might be possible some day to demonstrate the mechanism of the complicated diseases of which the most common was exophthalmic goitre.

Dr. Samuel J. Meltzer wished to assure Doctor Dana that Doctor Cannon's laboratory possessed a humanizing influence and was dominated by the clinical spirit of no less a person than Doctor Cannon himself. It had been most instructive and enjoyable to hear such closely packed facts as were contained in the address, all being the result of his own observations. He offered facts, and when he offered theories they fitted tightly with his facts. Doctor Cannon's experiments pointed to the effect of the adrenals on the emotions of fear and hatred, but there was a further field for experiment in the discovery of the source of the softer emotions, such as the love of mothers for their children.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Newer Physiology in Surgical and General Practice. By A. Rendle Short, M. D., B. S., B. Sc. (Lond.), F. R. C. S. (Eng.), Hunterian Professor, Royal College of Surgeons; Examiner in Physiology for the F. R. C. S.; Hon Assistant Surgeon, Bristol Royal Infirmary; Senior Demonstrator of Physiology, University of Bristol. Third Edition. Revised and Enlarged. New York: William Wood & Co., 1915. Pp. xi-256. (Price, $2.25.)

Intended for the general practitioner, consulting surgeon, and candidate for examinations in advanced physiology, this little work deals with recent advances made in the study of surgical shock; the functions of the genital glands; the vitamines and their relations to beriberi, scurvy, and rickets; the growth, regeneration, and transplantation of bone tissue; the thyroid, parathyroid, pituitary, and pineal glands; the physiology of digestion and absorption; hemophilia; uric acid, calcium oxalate, and cystin in the urine; acidosis and diabetes; chloroform poisoning; the results of nerve injuries; the surgical physiology of the spinal cord, and cerebral localization. In this, the third edition, about one half the text is new, several chapters having been added and large previously included sections omitted to make room for them. Only the conclusions of the best known investigators are presented, though it cannot be said that unconfirmed theories are entirely excluded, no less than four theories as to the cause of surgical shock being set forth and compared. Some experiments performed by the author himself in relation to various physiological and therapeutic problems are set forth. In the last chapter he describes such experiments as the action of anesthetics on the skin, and concludes that such drugs as opium, belladonna, aconite, and phenol possess no true local pain relieving power when applied to the unbroken skin. The book may be warmly recommended as a summary of recently acquired physiological knowledge having clinical bearings.

The Healthy Girl. By Mrs. Joseph Cunning, M. B. (London), Hon. Med. Director to the Open-Air School in the London Botanical Gardens, and A. Campbell, B. A., Lecturer in Biology and Hygiene, Technical Institution, Swindon. London: Henry Frowde (Oxford University Press); Hodder & Stoughton, 1916. Pp. x-191. (Price, $1.75.)

This little volume supplies the need for a comprehensive yet simple discussion of health measures for the young, and is devoted especially to the young girl. The treatment is simple enough for the girl herself to follow. The special value of this book, however, seems to be as a guide for teachers and parents in the teaching of personal and sex hygiene, as well as to help them recognize such physical and nervous conditions as are now quite well understood to impede the mental progress of the pupil. In teaching the young the book tells what to say, but particularly how to say it in order that the full import of the precept shall not be lost, and yet that there shall be no offense to the sensibilities of the young.

There is just enough anatomy and physiology in the health precepts, in language that must be understood by every one. The care of the different parts of the body is taken up in order. Cleanliness, both of mind and of body, exercise, work, rest, etc., are treated at length. The chapter on menstruation, sex hygiene, and the elucidation of the problem of reproduction is particularly good, because it goes into the subject clearly, yet without offending sensibilities; the analogies drawn from plant life, to animal life, and then to human life are so gradually set forth that the child gets the proper ideals in this matter. The commoner infectious diseases receive a little discussion, which is helpful for intelligent orientation on this subject. A list of drugs for the medicine chest is a valuable aid for the boarding school.

Finally there is a comprehensive discussion of school hygiene and its effect on the health and ability of the pupil, with paragraphs illustrating the effect of overwork and poor school surroundings on height and weight, as well as the results of the open air schools.

Diseases of Children. By Edwin E. Graham, A. B., M. D., Professor of Diseases of Children in the Jefferson Medical College; Pediatrist to the Jefferson Medical College Hospital and to the Philadelphia General Hospital, Philadelphia, etc. Illustrated with 89 Engravings and 4 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. xx-902.

This textbook constitutes a real addition to the armamentarium of the physician or of the student. While it is not so profuse in its details as some of the larger works on the subject, it yields them nothing in the matter of completeness. Indeed, the new and added features of this book quite overcome lack of detail, beside filling a much felt want. The most modern views are briefly discussed. An attempt is to present typical cases without burdening the text with unconfirmed theories, many exceptions, or variations. While not profuse in photographic illustrations, the latter are ample for this work, and there are a number of good graphic illustrations, helpful in bringing into focus a large mass of facts not possible with other illustrations.

More space is allotted to symptoms, diagnosis, and treatment than to pathology, etiology, etc. To the busy practitioner the former are after all the important elements. The chapters on infant mortality, heredity, environment, puberty, etc., are new features of the book, especially in the manner of their presentation. There is considerable space devoted to clinical methods of examination of the child, its care, infant feeding, dentition, fresh air, and exercise. The normal development of the child is taken up and complete anthropometric tables and charts are given. The important acute diseases, including infantile paralysis, are treated in detail. The chapter on nervous diseases is complete. The book is a ready reference book for the busy practitioner where no important facts are taken for granted.

Diagnostics and Treatment of Tropical Diseases. By E. R. Stitt, A. B., Ph. G., M. D., Medical Director, U. S. Navy; Graduate, London School of Tropical Medicine; Head of Department of Tropical Medicine, U. S. Naval Medical School, etc. With 86 Illustrations. Philadelphia: P. Blakiston's Son & Co. Pp. xi-421. (Price, $2.00.)

Comparing the prevailing methods of clinical study and instruction in tropical diseases with those practised in diseases of temperate climes, Stitt observed a striking tendency to base the diagnosis of the former group of affections on laboratory data alone, the bedside findings playing merely a subsidiary part and being taken as a control on the laboratory diagnosis. The present work was designed to teach tropical medicine from the clinical rather than the laboratory standpoint, though for the sake of completeness, a paragraph on laboratory methods is given under each disease heading. Discussion of the general symptomatology of each disorder is followed by a section dealing with the symptoms in detail, in which the manifestations referable, respectively, to the circulatory, respiratory, digestive, nervous, and other systems are described in turn. Special attention is also given to epidemiology and prophylaxis. One of the chief distinguishing features of the work, however, is Part II, in which a general analysis of the symptoms of tropical affections is presented, constituting, in a sense, a key to the significance of certain symptoms in the differential diagnosis of the various diseases. A general description of laboratory procedures in the examination of the blood, urine, and feces is also presented in this part. On the whole, the facts are thus presented in a manner so cross referenced that the student of tropical affections has the subject put before him from various angles—a valuable feature in the study of any branch of medicine or science in general. The text will be found eminently clear and concise. The inclusion of such conditions as malaria, black water fever, amebic and bacillary dysentery, liver abscess, pellagra, and hookworm disease render the work of value not only to the special student of tropical diseases, but to all practitioners in certain sections of the United States. Small type sections on the history and geographical distribution of the various diseases taken up are presented.

Beauty a Duty. The Art of Keeping Young. By SUSANNA COCROFT, Author of What to Eat and When; Personal Hygiene; The Reading of Character Through Bodily Expression, etc. Chicago and New York: Rand, McNally & Co., 1915. Pp. 384. (Price, $2.)

The women of America are always interested in the publications of Miss Cocroft. They have been familiar with her essays on What to Eat and When, Personal Hygiene, and the Reading of Character Through Bodily Expression. Now when she presents a book inculcating beauty as a duty or the art of keeping young, it will be read eagerly and by many. While not being technical in style, the book deals interestingly with technical subjects relating to the care of the body. Should all women become Miss Cocroft's ardent disciples, we might properly look to the development of a wonderfully perfect race.

A Manual of Fire Prevention and Fire Protection for Hospitals. By OTTO R. EICHEL, M. D., Director, Division of Sanitary Supervisors, New York State Department of Health. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd., 1916. Pp. v-69. (Price, $1.)

This little volume presents in concise form the essentials to be observed in the construction, and more especially the equipment of hospitals, as necessary for the prevention of fire and protection against it. The material is drawn from the author's wide personal experience and from the recommendations of such bodies as the National Board of Fire Underwriters, the National Fire Protection Association, etc. The statements are authoritative and the recommendations are wise, simple, and can be followed easily. The book is altogether commendable and will be of material service to hospital superintendents and to others engaged in the management or construction of hospitals.

Interclinical Notes

A writer in the *Smart Set* for November names his heroine Fleurette Lamont; she is supposed to be a Frenchwoman. Lamont, however, is not a possible French name; we could have Lemont or Lamontagne, but not Lamont, which, curiously enough, is pure Lowland Scotch.

* * *

Some idea of the delightful temperature of a British dwelling may be gathered from an advertisement in an English magazine for November, which sets forth the advantages of having a billiard table in the home. Among the specifications of the table are "frost proof rubber cushions."

* * *

Not long since we recorded with regret the demise of the American edition of the *Strand Magazine*. The English edition, however, still recalls the green bay tree. One of the best things in the November issue is the story by our distinguished colleague, Sir Conan Doyle, of the great European War. The British Campaign in France, with its spirited illustrations, is a masterpiece of descriptive writing, and we are astonished that no American periodical seems to have had the enterprise to reproduce it.

* * *

Montreal, Canada, seems to be undergoing a poliomyelitis scare quite similar to the one experienced by New York a few weeks ago. Cases seem to be very few in number—as a matter of fact they numbered six on October 21st—but schools, moving picture houses, etc., have been closed, domestic pets have been impounded, and terrifying articles have appeared in the daily papers, so that all is ready for a first class panic.

* * *

A lady with a four year old child was put off a Montreal train from New York a few days ago, because she was not provided with a physician's certificate of some kind concerning the child. Ignorance of the law, as usual, proved to be of no avail in her case, and the inspector on the train acted as he was obliged to. The mysterious part of the affair is why the agent who sold this woman two tickets for a quarantined city made no mention of the certificate that would be required. Had he done so, there would have been no trouble in procuring the document, and the two passengers would not have been put off at a desolate country station, bewildered and frightened by the first news they had received of the presence of a dangerous disease at their destination. From the days of yellow fever until now the presence of epidemics has seemed to have the faculty to annihilate all brain power among officials. The supposed precautions we used to take against yellow fever, backed up as they were by guns, were quite futile, and it is about ten to one that we are doing exactly the wrong thing about poliomyelitis.

* * *

The necessity for immediate assistance to the maimed soldier is a subject of comment in the *Review of Reviews* for October; that journal summarizes an article by Signor Angelo Ragghianti and Signor Salvatore Dalmazzoni in a recent issue of *Rassegna nazionale:* The wonderful improvements that have been made in the construction of artificial limbs, rendering it possible to communicate to them a number of special movements by using the motor power still existing in the stump left after amputation, have opened up spheres of activity for the maimed heretofore considered as permanently closed to them. By patient training on the part of competent instructors, and by the exercise of the necessary will power on the part of the pupils, an artificial arm can be made to do much of the work that the natural arm could do; more slowly, of course, and not quite as skilfully, but still sufficiently well to render the maimed man a useful member of society, one who can still have a share in the productive work of the nation. The professional reeducation should be conducted earnestly and wisely, always following the general principle of keeping the man in touch with his native region and with the vocation he formerly pursued. Hence, all foolish sentimentality should be rigidly banished. Above all the men should not be taught any futile occupation, depending for its success only upon the pity and charity of those who may be induced to buy the things manufactured. It can be made possible for each of these victims to earn something in a proper and legitimate way, and he need not have recourse to one that would make him, in some sense, an object of charity. Another important thing is to avoid teaching an undue number the few more easily acquired arts, such as typewriting, photography, telegraphy, telephony, etc. This would tend to disorganize the necessary distribution of labor in the land, with the consequent lowering of wages and the risk of unemployment.

* * *

"Kathleen Parlow is the peer of all women violinists," according to one rhapsodizing advertisement writer. How astonished that writer and many who agree with him are going to be if they look up the word, peer, in a dictionary. The foregoing use of it is grotesque, and makes the sentence express exactly the opposite of what the writer was trying to say.

Meetings of Local Medical Societies

MONDAY, *October 30th.*—Poughkeepsie Academy of Medicine (annual).

WEDNESDAY, *November 1st.*—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatrical Society of New York; Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine.

THURSDAY, *November 2nd.*—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, *November 3rd.*—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn (annual); Practitioners' Society of New York; Corning Medical Association.

SATURDAY, *November 4th.*—Benjamin Rush Medical Society, New York.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 18, 1916:

Applewhite, C. C., Acting Assistant Epidemiologist. Directed to proceed to Jasper, Ala., for resurvey of sanitary conditions.

Applewhite, J. D., Field Investigator. Directed to proceed to Jasper, Ala., for resurvey of sanitary conditions.

Baughman, D. S., Assistant Surgeon. Relieved from duty at the San Francisco Marine Hospital, and ordered to proceed to San Francisco Quarantine Station, Angel Island, Cal.

Boggess, J. S., Surgeon. Relieved from duty at Seattle, Wash., and ordered to proceed to San Diego, Cal., Quarantine Station and assume temporary charge.

Collins, G. L., Surgeon. Granted one day's leave of absence en route to station at Washington, D. C.

Foster, M. H., Surgeon. Granted twelve days' leave of absence from October 10, 1916.

Harrington, F. E., Assistant Epidemiologist. Directed to proceed to Jasper, Ala., for resurvey of sanitary conditions.

Kalloch, P. C., Senior Surgeon. Granted three days' leave of absence from October 17, 1916.

Kempf, G. A., Passed Assistant Surgeon. Directed to report to Surgeon T. Clark at Mineola, L. I., for survey of children in connection with school hygiene.

Lumsden, L. L., Surgeon. Directed to attend the meeting of the American Public Health Association at Cincinnati, Ohio, October 24-27, 1916.

Parran, Thomas, Field Investigator. Directed to proceed to Jasper, Ala., for resurvey of sanitary conditions.

Reuter, R. A., Field Investigator. Directed to proceed to Jasper, Ala., for resurvey of sanitary conditions.

Robinson, D. E., Surgeon. Relieved from duty at Rockland, Me., and directed to return to station at Ellis Island, N. Y.; ordered to represent the Service at the Third North Atlantic Tuberculosis Conference at Newark, N. J., October 20-21, 1916.

Rucker, W. C., Assistant Surgeon. Directed to attend the meeting of the American Public Health Association at Cincinnati, Ohio, October 24-27, 1916.

Schwartz, L., Passed Assistant Surgeon. Granted one month's leave of absence from October 16, 1916.

Sharp, W. K., Field Investigator. Directed to proceed to Jasper, Ala., for resurvey of sanitary conditions.

Smith, L. H., Assistant Surgeon. Relieved on Coast Guard cutter *Onondaga*, and ordered to report for duty on Coast Guard cutter *Yamacraw*.

Sweeney, A. R., Assistant Surgeon. Granted fourteen days' leave of absence from November 6, 1916.

Trask, J. W., Assistant Surgeon. En route under orders October 7, 1916, and directed to visit Clay County, Mo., to inspect studies of rural sanitation.

Treadway, W. L., Assistant Surgeon. Directed to proceed to Mineola, L. I., when directed by Surgeon T. Clark, for duty in survey of children in connection with school hygiene.

Warren, B. S., Surgeon. Directed to visit certain industrial institutions in connection with studies of health insurance.

Weldon, L. O., Assistant Surgeon. Directed to report to Surgeon T. Clark at Mineola, L. I., for survey of children in connection with school hygiene.

Wildman, H. V., Jr., Assistant Surgeon. Directed to report to Surgeon T. Clark at Mineola, L. I., for survey of children in connection with school hygiene.

Woods, E. O., Assistant Surgeon. Relieved from duty at Seattle, Wash., and ordered to report to Coast Guard cutter *Unalga* for duty.

Young, G. B., Surgeon. Directed to report at Bureau for conference relative to investigations of health organization and administration in Minnesota.

Births, Marriages, and Deaths

Married.

Brown-Aldrich.—In Malden, Mass., on Saturday, October 7th, Dr. Ralph N. Brown and Miss Helen M. Aldrich.

Giguere-Davis.—In Lowell, Mass., on Saturday, September 30th, Dr. Alfred J. Giguere and Miss Madeline E. Davis.

Hawes-Porter.—In Lynn, Mass., on Wednesday, October 4th, Dr. Alfred Taylor Hawes and Miss Anna G. Porter.

Johnson-Hager.—In Clinton, Mass., on Wednesday, October 11th, Dr. Allan C. Johnson and Miss Mary Alice Hager.

King-Hudner.—In Fall River, Mass., on Tuesday, October 10th, Dr. George Clifford King and Miss Mary E. Hudner.

LaFrance-Dion.—In New Bedford, Mass., on Thursday, October 12th, Dr. Arthur D. LaFrance and Miss Marie A. Dion.

LaGasa-Perry.—In Tacoma, Wash., on Thursday, October 12th, Dr. James LaGasa and Miss Lillian Perry.

Mathews-Sullivan.—In Providence, R. I., on Tuesday, October 10th, Dr. Frank H. Mathews and Miss Elizabeth H. Sullivan.

Munger-Pattee.—In Manchester, N. H., on Wednesday, October 4th, Dr. Ray Thomas Munger, of Fanwood, N. J., and Miss Grace Elizabeth Pattee.

O'Rourke-Sparks.—In Dorchester, Mass., on Sunday, October 8th, Dr. Edward J. O'Rourke, of North Cambridge, and Miss Frances R. Sparks.

Died.

Ferguson.—In Baltimore, Md., on Wednesday, October 11th, Dr. Frank C. Ferguson, aged thirty-seven years.

Graves.—In Saco, Me., on Wednesday, October 11th, Dr. Stockbridge P. Graves, aged ninety years.

Hersh.—In McComb, Ohio, on Monday, October 2nd, Dr. Edward G. Hersh, aged fifty-one years.

Kennedy.—In Washington, D. C., on Friday, October 6th, Dr. James S. Kennedy, Major, United States Army, aged fifty-eight years.

Kyle.—In Philadelphia, on Monday, October 23rd, Dr. D. Braden Kyle, aged sixty-three years.

Lees.—In Bridgeport, Pa., on Monday, October 9th, Dr. John S. Lees, aged seventy-six years.

Lesser.—In Brooklyn, N. Y., on Monday, October 23rd, Dr. George Lesser, aged forty-six years.

Lincoln.—In Boston, Mass., on Tuesday, October 17th, Dr. David F. Lincoln, aged seventy-five years.

McKay.—In San Diego, Cal., on Saturday, September 30th, Dr. Winfield W. McKay, of Hailey, Idaho, aged sixty-nine years.

McKenna.—In Long Island City, N. Y., on Tuesday, October 17th, Dr. Henry J. McKenna, aged thirty-five years.

McKibben.—In Amaranth, Pa., on Friday, October 13th, Dr. William L. McKibben, aged seventy-six years.

Mangan.—In Rutland, Vt., on Saturday, October 7th, Dr. Matthew J. Mangan, aged forty-five years.

Mason.—In Suisun City, Cal., on Thursday, October 5th, Dr. D. N. Mason, aged seventy-three years.

Matson.—In Brooklyn, N. Y., on Sunday, October 15th, Dr. Nathaniel Matson, aged seventy-seven years.

Michael.—In Dayton, Ohio, on Sunday, October 8th, Dr. Francis M. Michael, aged sixty-six years.

Morton.—In Philadelphia, Pa., on Thursday, October 12th, Dr. Thomas J. Morton, aged fifty-four years.

Rose.—In Harvey, Ill., on Wednesday, October 11th, Dr. Marie F. Rose.

Stackhouse.—In Moorestown, N. J., on Friday, October 6th, Dr. Asa M. Stackhouse, aged seventy-two years.

Tiffany.—In Mount Custis, Accomac County, Va., on Monday, October 23rd, Dr. Louis McLane Tiffany, of Baltimore, aged seventy-two years.

Weaver.—In Dayton, Ohio, on Saturday, October 14th, Dr. Fred C. Weaver, aged forty-six years.

Weber.—In Louisville, Ky., on Friday, October 6th, Dr. Harry C. Weber, aged forty-six years.

Welsh.—In Shreveport, La., on Saturday, October 7th, Dr. Emmet Alvin Welsh, aged fifty-two years.

White.—In Tarrytown, N. Y., on Thursday, October 12th, Dr. William H. White, aged eighty-four years.

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Original Communications

AND THE PATIENT IS LEFT OUT.*

By Robert T. Morris, M. D., F. A. C. S.

New York.

You know the schoolboy's rule in grammar, "Never use a preposition to end a sentence with." According to a somewhat similar rule the title of my paper has been constructed.

In the midst of our rapidly advancing concentration upon special studies, does a given physician today really care to know what is the matter with a patient, or does he much prefer to find something in which he is specially interested? Let us take, for example, a concrete case of diabetes mellitus. Is the physician to assume the responsibility of treating that patient along lines of his pet dietary régime? Diabetes mellitus is nothing but a symptom, like a cough or a sneeze. Should the physician be content to make a diagnosis of the symptoms, and consider that to represent a diagnostic entity? No! With the symptom of diabetes mellitus making a sign to him, beckoning him on, the physician is to proceed to find out what really does ail the patient. Some of us know that diabetes mellitus is always due to hyperglycemia. Some of us know that hyperglycemia in a given case may be secondary to some peripheral irritation or to some focal infection which is exciting the adrenal glands, and these in turn are whipping up the thyroid gland, the whole chromaffin system, and the liver—a whole series of disturbances of function manifested in one salient symptom which happens to attract the doctor's attention because of its easy evidence.

When taking up the several forms of diabetes mellitus from a therapeutic standpoint, we are to begin with the question of what peripheral irritation or what focal infection may be driving the adrenals overtime. The physician who does not go at a case in that sort of way is a superficial practitioner, interested only in his direct treatment for the symptom, and the patient as a whole is left out.

Who's to blame? Well, perhaps we cannot call it blame! With our rapid advance in laboratory methods and in the correlation of special knowledge, one man scarcely knows what another man is about. What chemist knows much about the work of another chemist in another field of the subject? Where is the geologist today who can write a textbook covering the whole subject of geology? The day is past when that sort of thing was possible. Our laboratory advances have been almost explosive along lines of special study, and by way of the laboratory we may find something in which we are interested and which we set out to find, in almost any man in this room. If I send a patient to the office of a heart specialist, and if the patient returns without heart disease, it is because the doctor was not in. The field of neurology has become so elaborated by physicians and metaphysicians, that we are in luck if we can obtain two agreeing opinions from two different neurologists to whom we send our unhappy patient.

What are the layman's chances for getting into the right hands when choosing a consultant? You all assume a very thoughtful look when *I* ask that question. A layman trying to select a competent medical adviser today is very much like a client in a court of law trying his own case. It is true that many people have the sort of confidence in the doctor that they have in the clergyman, and both professional men at the same moment are perhaps taking the trusting person in one direction straight toward Heaven.

Tomorrow the layman is to depend upon a new kind of consultant, in cases of chronic illness at any rate. This new kind of consultant will not depend upon his own knowledge and wisdom, except to the extent required for getting together a group of facts from a number of authorities, that bear upon the case which he has in mind. That will be skilled labor, requiring the best type of synthetic and judicial faculty. The consultant's work and his opinion will be somewhat expensive, but the good old days are no more, when a man could suffer and die cheaply. A few consultants have already made a grouping of experts and of laboratory facilities in such a way that the cost may be reduced to moderate terms for the clerk whose income is twelve hundred dollars a year and whose expenses are eleven hundred and sixty dollars. The consultant of tomorrow is to be a man who is not overimpressed by the new ideas of enthusiasts, yet he will avoid the skepticism which overlooks the basic truth in almost every new movement—otherwise he will be a prejudiced adviser and the patient will be left out. When the ideas of Lane relating to colonic infections were presented, we soon came

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*President's address at the meeting of the American Therapeutic Society, Detroit, June 9, 1916.

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to know that Lane had struck a line of cleavage into a great truth, but his immediate conclusions were repellent to conservative doctors, some of whom stepped backward and out of date in response. It remains for the consultant of tomorrow to learn that something is behind the colon, and to discover the significance of that something in cases which surgeons of the Lane school would subject to operative procedure as ignorantly as the internist treats a case of diabetes, and leaves the patient out.

The oral surgeon with a neurasthenic patient finds by way of the laboratory that apical infection of a tooth root is in evidence. He determines the presence of Streptococcus viridans. He knows that various rheumatisms may be caused by that streptococcus. He knows that endocarditis may be caused by that streptococcus. He knows what Rosenow has recently told us about appendicitis, cholecystitis, and gastric ulcer being caused by the action of that streptococcus. Knowing all this, the oral surgeon is proud in his belief that he has discovered a basic feature in the ill health of his patient, yet the case may not really belong to him at all. The throat specialist finds infected tonsils in this same patient. He goes to the laboratory and raises a fine colony of Streptococcus hæmolyticus. Almost everybody knows what dreadful things are done by the toxins of that particular streptococcus at times. Removal of the tonsils is advised, yet the case is not studied as a whole, and the patient is left out. If an opthalmologist is consulted, he very likely will find our patient suffering from the effects of eye muscle imbalance, with irritation of basal centres of the brain and consequent disturbance of the automatic and sympathetic nervous systems. The ophthalmologist believes that the case has belonged to him all along, and he is impatient with the men who had overlooked the eye muscle feature, yet it may be that the internal rectus muscles in the case are showing selective affinity for toxins or waste products from a distance. Somebody tells the patient to consult a surgeon, who finds a rattling bolt in the works in the form of a loose kidney. The surgeon perhaps believes that the case belongs to him, and that the moving kidney is a source of peripheral irritation, which explains the neurasthenia, but the patient as a whole is left out. A loose kidney is a very important thing in cases in which it is important, and it is the business of various doctors to get together and determine the exact status of that feature in any given case. The psychanalyst, taking into account the psychic phenomena of our neurasthenic patient, finds that the physical trouble is due to a mental conflict between repressed impulses, but the patient as a whole is left out.

An expert interested in our new problems of acidosis discovers that the patient is not passing certain acids and byproducts over the kidney threshold properly, and he says that these dammed products (not being profane) are the cause of all the trouble. He proceeds to treat that particular symptom, and the patient is left out. The patient goes to a rest cure doctor and becomes very much improved, at an expense of so much an hour of improvement, but upon returning to real life, which is not a rest cure, finds that treatment and daily life are incompatible. The hydrotherapy institute and the dietetic sanatorium both allow our invalid to gain weight, but only while the patient waits. The osteopath and the chiropractic inform our patient that the occipital headache is caused by the atlas being out of joint, and they proceed to bestow punishment which is not deserved, while the sufferer decides to feel better in order not to lose the worth of good money expended. The diagnosis of an atlas out of joint is the only one that is always wrong, yet people are not to be blamed for turning to medical outsiders when members of the regular profession do not help them enough.

Who is to make up a brief for the neurasthenic patient? Who is to act as the lawyer acts when getting together material for final advice to a client? I see men in this audience who are competent to make briefs. Round about the country at large, and round about the world at large, may be found a small but hopefully growing number of men who know how to make up a brief relating to almost any sort of chronic illness. These are to be the consultants of tomorrow. They will take charge of the ideas, findings, beliefs, and enthusiasms of various specialists, pass the parallel rays of light through the lenses of their minds, and focus them upon the case of any one patient. For some years, I have tried to do this sort of thing, particularly in relation to questions of peripheral irritation and focal infection. The reason I took up systematic investigation in the interest of diagnosis was because so many cases sent in for surgical operation were not properly cases for operation at all. Furthermore, a good many patients were seen during the year who had been subjected to ineffective operation. The number of ptosis cases in which the appendix has been removed would make interesting pabulum for yellow journal readers. Patients with thyroid enlargement, with duodenal ulcer, and with symptomatic pelvic conditions, are subjected to operation without question beyond that of finding conditions which appear superficially to be surgical in their nature. How many patients during the year are subjected to operation for facial neuralgia, even to an operation for removal of the Gasserian ganglion, without having a single question asked about focal infection or peripheral irritation? When making elaborate diagnoses with the aid of specialists and of laboratory experts, I found that my income from surgery was cut down very seriously. In other words, the more I knew, the less money was it possible to make.

A word for the other side of the question:

> The best line ever penned by man
> Is "on the other hand."

On the other hand, then, we shall find very many cases not believed to be surgical that are really surgical in some aspect. Many of the neuroses, neurasthenias, and psychoses may be traced back to some precipitating factor, even though it may not be a causative factor, which will respond to surgery in such a way as to allow the patient to become again a well fitting unit in the social complex. The expense of going at a case fundamentally is sometimes large, and worse than that, sometimes fruitless. It is true that the poor patient may have the advantage of hospital and laboratory facilities, and yet he is more than likely to be admitted to some department of a hospital by the entry clerk. In that department of the hospital he is pretty certain to receive treatment by the specialists of the department only. I want five millions of dollars today for the purpose of adding to one of the teaching institutions a systematized machinery for obtaining thorough diagnosis for every patient sent in to the institution. I do not want a dollar of the amount for myself, or any salary for administering the fund, which would be forthcoming from many men for many institutions could they but know what we doctors know about opportunities for rendering service to the public.

When a patient has been sent to some one department of a hospital today, we are apt to hear a good deal of mutual recrimination between experts in special fields. The ophthalmologist asks why the question of eye strain was overlooked in a given case. The oral surgeon wishes to know why no one took a radiograph of tooth roots in a search for apical infection. Each one of several specialists asks why the patient was not sent to his department. There has been no one steering hand, no one disinterested brain to direct that hand in the interest of the patient who needs a guide, philosopher, and friend. What patient today, sent in to a public or to a private hospital, manages to have the question of allergic response to a toxin or to a waste product worked out? Yet that is one of the largest of our new problems, and one of the most essential, if we are to know why one patient suffers more than another from the same kind of illness.

I am indebted to our society for the impetus which has led me to the custom of making up a brief for almost any patient with a chronic illness. As a surgeon it was impossible to keep up to date in surgery alone. Advances in that field have become so rapid that every surgeon is out of date in some part of his work and his thinking. When attending the meetings of this society, I was obliged to listen to papers on all sorts of topics, many of them entirely out of line with my reading even, because of time limitations. As a result of getting so many perspectives upon the whole field of therapeusis, it is now fascinating work to make up a brief of a case, and I would like to begin my whole professional work all over again.

There is another side to the question which I have not mentioned, and that is the moral side. A specialist is prone to concentrate attention so closely upon whatever interests him in a case that the patient as a whole is left out. His position approaches that of the business man. The difference between a profession and a business is this: In a business you are thinking of yourself, and in a profession you are thinking of somebody else.

The specialist is to become more and more necessary, and he is to command higher and higher fees for services rendered, but he is not to be allowed to get very close to any trusting patient, and he is to be relegated to the position of therapeutic resource.

616 Madison Avenue.

IMPOTENCE IN THE MALE.

A Preliminary Report on the Use of the Anterior Lobe Pituitary Body,

By Thomas C. Stellwagen, Jr., M. D.,
Philadelphia,
Assistant Professor Genitourinary Surgery, Jefferson Medical College.

The subject of impotence, in its various forms, is one of vital interest to practitioner and patient. Impotence unfortunately is often surrendered to the quack and the charlatan. It has always seemed that a patient suffering from sexual weakness is to be pitied. It is he that makes quackery profitable. This can be explained in several ways.

1. The management of such cases is usually difficult, and the truth may do harm if told to the patient.

2. In the young man the trouble is usually preceded by masturbation or sexual excesses, and of these the patient is loath to speak; consequently we are hampered by an incorrect history.

3. The treatment is generally slow to show results and the patient becomes discouraged.

The foregoing, and other reasons that might be added, are harassing both to patient and doctor. In consequence the patient is often lured to the irregular practitioner. He consults one of these inhuman Shylocks and signs a legal form of contract that offers him no redress, pays in advance, and in due time is fleeced and left a neurasthenic. Occasionally the patient so handled becomes profoundly depressed, mutilates his genitalia, or destroys his life. Unfortunately, we find in the advertising columns of our daily papers, and among some that clamor for decency and clean journalism, the glaring statements of cure and relief from all forms of sexual weakness.

It has always been a belief with us that some of the unhappiness in life is directly due to some form of impotence or other sexual disturbance. We believe that were it possible to determine the true cause of self destruction in not a few cases of suicide, it could primarily be laid to some vegetative defect.

The use of animal extracts and portions of their carcasses as medicine is not merely a recent practice, to quote from the paper by Dr. Carey P. McCord (1). He states that in 600 B. C., portions of the testes were used in treating obesity. Swine's fat, dog's dung, fat of the serpent, hair of the virgin goat, and human bone were commonly given. Beetles, bugs, and many other insects were supposed to possess powerful therapeutic properties and were often used.

We know today that the internal secretion of the ductless glands plays a most important part in the regulation of the growth of the body. We know further that in disease of certain of these structures mental and physical defects ensue that can be explained only by the presence of such disease. We know still further that rational treatment administered with the idea of supplying the deficient internal secretion often produces marvelous results. The converse has also been proved; that excessive secretion manifests itself as disease, and when controlled by surgery or medicine effects some remarkable cures. The entire subject of organotherapy is still in its infancy, and physiological chemists are devoting time and study that must bear fruit in the future.

The problem of sexual weakness or impotency is of great importance and one that is not well understood. There have been many methods of treatment devised and numerous drugs and combinations tried. Each has had its day and its advocates, but we believe we express the opinion of the profession when we say that most of them have been failures.

We recognize that tonics and tissue builders are often of value in restoring the tone of a depleted nervous system and often do good. We think that the sexual power in some instances is an index of the physical well being of a man. There are numerous instances to the contrary, however, that offer the exception to test the foregoing statement, notably those suffering from tuberculosis, from certain types of malignant disease, and from other isolated instances of sickness. These, however, are rare, except in tuberculosis, where the vegetative functions seem to be overstimulated.

An impotent man is not to be laughed at, or ridiculed and passed over by his physician. He is a sick man and deserves intelligent advice and treatment. The sexually deficient subject is often a drone in our social fabric; he it is that sometimes becomes the pervert, the suicide, or the madman. Ignorance, prudery, and a false sense of propriety often make light of such patients and they are condemned to lives of mental misery aggravated by the consciousness that they are lacking in the power of procreation. This one fact more than any other should have a far reaching influence upon the conduct of such a case.

A urologist's advice is so often sought by these patients that it seemed to us that a report embodying the results obtained in six cases would not be amiss. The preparation that has proved of most value in our hands is one of the anterior lobe of the pituitary body.

Case I. Man, forty-three years of age. Family history negative, except for one tuberculous ancestor. Previous history: Had had the usual diseases of childhood and an attack of typhoid fever at the age of twenty-two years, from which he made an uneventful recovery. No venereal history. The patient had masturbated once or twice weekly up to the age of twenty years, when he ceased the practice. Following the cessation of masturbation he had nocturnal pollutions that never worried him. For these he did nothing, and they stopped after his marriage, which occurred at the age of twenty-six years. He was able to have successful intercourse with his wife, as attested by the birth of three normal children. He had intercourse about twice weekly and had not made it a practice to attempt a repetition of the act during the same night. His erections were normal, his desire was normal, intromission was accomplished without trouble, and the seminal discharge was apparently of normal consistence, odor, color, and amount.

About four years ago, he assumed a business of his own and gave much time and mental energy to its organization and conduct, frequently working until a late hour. About a year after his new business began, he noticed that his desire for intercourse seemed to be waning. Following the lack of desire, when he had an erection it was not a strong one. The head of the penis remained soft. At times desire would be normal and he would feel a sense of well being, but he was now unable to get a perfect erection and the few times that he was able to have intercourse he had a premature emission of a very thin, watery fluid.

The treatment of this case had been undertaken by several different physicians, who had used tonics, general massage, hydrotherapy, electricity, and rest in the woods, but all to no avail. He presented himself a much dejected man, and stated that he did not wish any more children, but that he would like to feel that he was still able to procreate. His state of mental unrest was largely due to the fact that he had utterly failed in recent attempts at intercourse.

We put him upon a three months' treatment, explaining that during that time he must sleep apart from his wife and dismiss the sexual idea from his mind. This he agreed to attempt to do and did. He received a five grain tablet of anterior lobe pituitary body, three times a day, after meals, and came to the office twice weekly for a prostatic massage. The diet was not altered, nor was his daily routine. At the end of one month he noticed no change and became despondent, but we advised him to have patience and explained that we did not look for improvement until the end of about two or three months. During the middle of the third month, desire began to return and with it erections which, as he stated, were better. At this time he had three emissions. At the end of the three months he was permitted to attempt intercourse, which was accomplished successfully.

This patient, after one year, has shown every evidence of a permanent cure and at present is thoroughly competent sexually, while his general health is apparently perfect.

Case II. Man, fifty-four years old, widower, well developed and well nourished subject, had been a widower for past five years. His wife died from tuberculosis after a lingering illness, in consequence of which he had not had intercourse for three years previous to her decease. He was the father of two healthy children and wished to marry a woman thirty-two years of age, but knew he was unable to perform the sexual act. Upon questioning he said that he had attempted intercourse with women of easy virtue, having tried both blonds and brunettes, but to no avail; consequently he felt incompetent. When questioned as to erotic sensations when in company with his fiancée, he stated that they did not exist.

This patient was placed upon a course of treatment similar to that in Case I and at the end of four and one half months was apparently normal for a man of his years. He married and has since been able to conform to his sexual duties. At present he believes his wife to be pregnant. To this patient we explained that sexual excitement without gratification was most pernicious for him and accordingly he was instructed to see his fiancée only once a week and then very formally.

It may be well here to emphasize what we believe to be a fact, namely, that impotence and other forms of sexual weakness, including physical defects such as varicocele, painful testicles, neuralgia of the cord, and in some rarely possible instances, hydrocele, are at times either produced or at least much aggravated by sexual excitement without subsequent orgasm. We know no more pernicious practice than the ardent love making of the young suitor over a long period of time. We believe that many cases of obscure nervous affections, sexual degeneracy, or weakness may be traced to some such cause. In short, we insult nature by such practices, and after a while she gives up and impotence results from exhaustion of the spinal genital centre. What could be a practice more dangerous to the sexual powers than withdrawal before emission? This practice is apparently common among the Hebrew race, especially among the younger men and in our opinion it accounts for much of the sexual weakness among them.

Case III. Man, aged thirty-five years, married five years, had no children. He had the usual diseases of childhood and an infection by the gonococcus at the age of twenty-six years, of which he was apparently cured. Prostatic secretion showed eight leucocytes to a field. Urine report negative. Present trouble: About five years ago, desire became intense and he found it necessary to have sexual intercourse once or twice each night. This lasted for about six months. Desire then suddenly ceased and since that time erections have been but a memory.

At the time of the excessive sexual dêsire, he had considerable burning and stinging along the urethra when he urinated. The receptacle in the morning, he stated, was coated at times by a reddish and then again by a very light yellow sand. At this time he was spending his vacation upon a farm and had eaten a great amount of fruit and tomatoes. He would frequently eat them while in the fields. In our opinion he probably had uric acid and calcium oxalate showers, due to the inordinate consumption of fruit and tomatoes. These showers, through irritation of the genitourinary mucous membrane, excited the spinal centre—hence the eroticism.

This patient had his diet regulated, eliminating excesses of starches, sugars, and fats. A diet should be carefully selected with the idea in mind to give sufficient calories to do the day's work and have a surplus from which to build up a reserve. He was told to live apart from his wife for four months, to take cold sponge baths, and was put upon a two and one half grain tablet of anterior lobe pituitary body three times daily after meals. This man did not have prostatic massage. At present his sexual powers are apparently normal.

Case IV. Man, aged fifty-eight years, well nourished, strong, and apparently healthy; unmarried; had the usual diseases of childhood; pneumonia at thirty-eight years of age, from which he made an uneventful recovery. Had had four attacks of gonorrhea and a chancre ten years ago. Wassermann negative, gonococci negative, prostatic secretion apparently normal. His semen contained nonmotile spermatozooa. Hemoglobin, sixty-five per cent. Present trouble: He had had a mistress for the past nine years, but for two years had been unable to have successful intercourse. Has had emissions while the penis was in a flaccid state. This man's mistress stated that his sexual power at one time was very great and that during that period he drew upon it to excess. This period of unusual sexual excitement followed closely upon his syphilitic infection and might have been induced by some cord irritation.

This case was treated as follows: Citrate of iron by hypodermic injection one grain, every third day, for seven injections raised his hemoglobin from sixty-five to ninety per cent. He was then put upon Basham's mixture and strychnine three times daily. He was kept upon this line of treatment for two months. He was then placed upon the anterior lobe pituitary body grains five, three times a day, after meals, with massage of the prostate and the passing of a Beniqué curved bougie twice weekly. The bougie was permitted to remain for eight minutes. After dilating up to No. 32 French, the bougie was discontinued. The prostatic massage was continued for four months.

At the end of the third month he felt better, looked improved, and began to have the usual morning erections consequent upon a full bladder. This gave him heart, and with a return of confidence he had successful intercourse and since then has been able to have connection about every ten days.

Case V. Man, aged sixty-two years, single; well nourished, except that he had recently lost ten pounds in weight. Blood pressure, 149; hemoglobin, 92. Urine negative. Prostatic secretion, twenty two leucocytes in the field. Heart lacking in muscular tone and snap. We could not determine any lesion, but his physician, for whose opinion we had great respect, said he had a slight mitral regurgitant murmur, transient in character. Patient was well nourished, but not rugged. He had very few diseases as a child and did not recall any severe illness. Had one attack of gonorrhea at twenty-three years of age, from which apparently he made a complete recovery.

This patient consulted us, he said, because his sexual powers were waning. He wished to know whether any course of treatment might conserve the remainder of power that he still possessed. He was put upon prostatic massage and received five grain tablets of anterior lobe pituitary body. After about two and one half months he stated his sexual powers were much improved, and that during one visit to a woman with whom he was accustomed to have connection, he had intercourse twice in the same night. His general health was much improved and a slight dyspnea from which he had suffered passed entirely away. He plays eighteen holes of golf without great effort, which was impossible before the pituitary body was exhibited.

He complained of hyperacidity, which proved to be a temporary hyperchlorhydria. This gave him some discomfort, but passed away almost coincidently with the stopping of the tablets of pituitary body. With him it became necessary to intermit the administration of the tablets for a few days in order to prevent hyperacidity. This patient is still under observation and apparently remains sexually potent.

Case VI. Widower, aged sixty-one years, wife died eight years before. Previous history uneventful; no venereal history. Patient stated that his sexual powers had been practically negative for past three years. He had been able, however, to get a feeble erection, but could not have a successful intercourse. Blood pressure, 150; hemoglobin, eighty-five per cent.; urine negative. Prostatic secretion contained eight leucocytes in the field.

This subject was placed under treatment for four months, at the end of which time he had successful intercourse and has continued to accomplish the act once about every two or three weeks. He states that he feels much improved in general health and has not noticed any untoward symptom except a mild hyperacidity of the gastric juice.

COMMENT.

Our attention was first called to the use of pituitary body in general weakness by an observation upon a patient to whom the preparation was given in a purely empirical way. He was suffering from premature senile decay. The patient, a man aged forty-eight years, had some undefinable and unexplainable circulatory weakness for which anterior lobe pituitary body was given.

He showed decided improvement and during the course of his treatment remarked that he felt a return of sexual desire, also that his powers of erection, which had been negative for some time, seemed to be returning. This latter fact he dwelt upon so frequently that it determined us to apply it in the treatment of such cases. We have tried the preparation in three cases of younger men suffering from sexual neurasthenia, but with no special improvement. This fact we do not attempt to explain, but we feel that in them the nervous element so predominates that it governs the situation, and that unless some means are found to put it in abeyance, all methods of treatment must fail. In short, we have tried to impress upon them that they must be philosophical in order to gain by the treatment.

No untoward symptoms have been produced by the administration of the preparation, except slight hyperacidity of the gastric juice. In other cases now under observation this hyperacidity is present, consequently it may be of use in achylia gastrica. It is our intention at a later date to offer a more complete study upon another series of cases.

The fact that prostatic massage and some other remedies were used in the treatment of the foregoing cases in a measure invalidates the testimony in favor of the anterior lobe pituitary body; nevertheless, we feel that the preparation played a very decided part in the cure of the cases. Previous to its use, the methods that were resorted to generally failed, hence our preliminary conclusion.

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CHRONIC APPENDICITIS AND CHRONIC INTESTINAL TOXEMIA.*

Their Association and Differentiation,

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The subject of appendicitis may be time worn, but it needs still further study and investigation. The diagnosis is seemingly simple and the operation for its relief unusually easy. Relief from underlying conditions is often a difficult problem. The anatomy, pathology, bacteriology, and the reasons for removal of the diseased organ have been very thoroughly worked out, but there is still a wide field to be studied. There are many viewpoints as to the etiology of the condition, so there must still be room for investigation. The etiology of acute appendicitis seems to be simpler to explain than that of chronic appendicitis, although the two conditions may be closely related.

Heredity and family predisposition seem to play an important role in inflammations of this organ. As examples of this, Forcheimer (1) gives a series of observations in which a strong hereditary tendency was present, and J. W. Draper describes seven cases of appendicitis in one family. The explanation of these cases may be, some hereditary, characteristics of the intestinal tract; heredity, however, may play no part, infection from the intestine directly or through the blood stream or lymphatics, being the real cause.

We are a long way from proving hereditary characteristics in the intestinal tract, though we feel that heredity has much to do with handing down types and peculiarities of this part of the body as elsewhere. As examples of heredity, may be cited two patients now under observation. They are mother and daughter. Both have the same degree of virginal enteroptotic habitus (Rövsing, 2), water trap stomachs of equal size and degree, and similar colons. Abdominal radiographs are homologous. As a result of life's extreme activity and bipedism, the mother fell heir to the usual ills that attack people whom the Creator has endowed with such an intestine; she survived successfully a suspension operation on the colon and stomach and today is as active as ever. Their abdominal radiographs today are not homologous, but the daughter has been brought up to efficiency by means of abdominal support and posture, and especially elevation of the foot of the bed.

Another instance, seen personally with Dr. Le Wald, two brothers with an equal degree of dilated mobile cecum, may be cited. There is another instance, in the author's experience, of a brother and sister with congenital duodenal stenosis. We are very young in our gastrointestinal studies and need more thorough investigation into the alimentary tract of families before making positive statements. For example, the habitus enteroptoticus is more prevalent in some families than in others and, like other anatomical characteristics, obeys undoubtedly the Mendelian law.

This leads up to a very important connecting link, the frequency of chronic appendicitis in enteroptotic subjects. We are all more or less guided by our own experiences, and therefore I cite from my own series of cases of chronic intestinal toxemia from a paper read in January, 1916 (3). In a series of 136 cases of this disorder, there were thirty-three or twenty-five per cent. in whom a previous appendicectomy had been performed. In subdividing the cases into enteroptotics and nonenteroptotics, it was found that thirty-one, or nearly eighty per cent. of the appendicectomies were in enteroptotics, and nine, or about twenty per cent. were in nonenteroptotics. This is a significant fact and leads us to infer that the poor enteroptotic has a greater liability to appendicitis than the nonenteroptotic. This applies more literally to chronic than to acute appendicitis.

Bacterial infection as the exciting cause of an inflamed appendix, is an accepted fact. Among the bacteria that have been found as a cause of appendicitis, are the proteus, Bacillus subtilis, Bacillus capsulatus, Bacillus fusiformis, a diphtheroid bacillus, Bacillus tetani, Coccus conglomeratus, actinomycosis, pneumococcus, tubercle bacillus, streptococcus, staphylococcus, and last and probably most important, Bacillus coli communis.

Very many authorities agree that the colon bacillus is the most common factor in appendicitis; among them, John Deaver (4), John C. Da Costa (5), C. C. Choyce (6), Kelly and Noble (7), Richard Warren (8), W. H. Battle (9), and G. Mumford (10). The epidemiology of appendicitis is also discussed, and Warren mentions the influenza bacillus and Rose and Carless (11), the streptococcus in epidemics. Edward C. Rosenow (12) has produced appendicitis by inoculation with the streptococcus isolated from appendicitis, demonstrating apparently the selective action of bacteria.

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*Read before the American Therapeutic Society, Detroit, June 10, 1916.

Let us study Bacillus coli. Deaver says it is more frequent in chronic than in acute appendicitis, and has found it in pure culture in seventy per cent. of acute appendicitis and in ninety per cent. of chronic appendicitis. It has been found accompanied by the staphylococcus and the streptococcus, the latter very rarely in chronic cases. The staphylococcus alone is most infrequently found in acute or chronic cases.

Bacillus coli is known as a harmless and necessary organism in the gastrointestinal tract. Why then should it be considered dangerous? We quote Da Costa, who says: "Colon bacilli which normally inhabit the appendix are harmless when the appendix is healthy, but become active for harm when the diverticulum is bruised, obstructed, irritated by the presence of uric acid, congested because of the chilling of the cutaneous surface of the body, or distended by the ingress of the colonic fluid. It seems probable that the flatulent distention of the colon may be responsible for forcing fecal matter in quantity into the appendix and may lead to plugging of the opening."

What, if any, is the relationship between chronic appendicitis and chronic intestinal toxemia? It is interesting to note the change of thought along this line during the past decade. In 1905, Deaver stated that "he thinks constipation does not play a very important role in the causation of appendicitis." He mentioned at that time gastroenteritis, dysentery, typhoid, and influenza as predisposing causes, and traumatism, lead poisoning and intestinal parasites as exciting causes. Ten years later, we find that the chief responsibility is fastened upon Bacillus coli.

Ten years ago, Deaver said: "In some cases of long continued and marked constipation, it is possible that the increase in virulence of Bacillus coli communis that has been encountered in that condition, may be remotely connected with the development of this condition."

The appendix is only a part of the large intestine. As Warren expresses it, "it is no more than the relic of the cecum of our herbivorous ancestors. Removal of this relic appears to make no difference to the metabolism of patients thus deprived." There are other theories of the function of the appendix, such as lubrication, peristalsis, etc. The dangers of inflammation of this peculiar anatomical and rudimentary organ seem to justify its removal, whether it is normal or abnormal, during a laparotomy.

If the appendix belongs to the large intestine, it is natural to suppose that it will share in any diseased condition of that organ. Warren states that "appendicitis may be part of an inflammation of the large intestine (colitis) sometimes as a cause, at others as a sequel of this, and naturally its removal will have different results in the two conditions." He does not mention the condition of chronic intestinal toxemia in relation to chronic appendicitis.

"A few years ago, my appendix was removed for this trouble, but I am no better." What a common complaint and one that many of us hear almost daily! This is a sin of the profession and one that has been and still is committed by surgeons and physicians alike. A chronically diseased appendix should be removed, but the underlying condition, whether it be cause or effect, should also be corrected. It is the false security that the patient feels after the operation upon the assurance, "you are cured," that leads to the damage. I believe that time will demonstrate the proper treatment of the underlying intestinal toxemia, and the result will place the patient in a much better physical condition or even render the appendicectomy entirely unnecessary.

Da Costa's premonitory symptoms of appendicitis are similar to those of intestinal toxemia, as so understood. He describes them as "constipation or diarrhea, flatulence, nausea, anorexia, dyspepsia, coated tongue, weakness, general gastrointestinal uneasiness, colicky pains about the umbilicus, and perhaps some tenderness and a sense of weight, soreness, or uneasiness in the right iliac fossa." This is obviously a dividing line between the two conditions of appendicitis and intestinal toxemia. The symptoms characteristic of acute appendicitis are so well known, even to the inexperienced student, that they could not possibly be confounded with those of chronic intestinal toxemia. With the classical symptoms present it would be nothing short of gross carelessness not to operate, but with only the first set of indefinite symptoms a complete study of the case, including the x ray, should be instituted.

In our series of 136 cases, reported in January of this year, there were thirty-three patients, or twenty-five per cent. who had had appendicectomy previous to coming to the author. Whether the operation was justified or not, the majority of these patients understood that the operation was to end their trouble, but the results showed only slight or no improvement. The reasons were evident in a number of cases, as illustrated by four histories detailed by the author. The strong, classical symptoms of chronic appendicitis resolved themselves into those of chronic intestinal toxemia and disappeared under treatment.

Da Costa says: "In those rare cases of typhlitis occasionally encountered the symptoms are much milder than in appendicitis; the temperature is not much elevated, the pulse rate is only slightly accelerated, the leucocytosis is not marked, there is seldom rigidity, there may be tenderness, but seldom pain. Pain, when present, is colicky rather than continuous. There may be a doughy mass or a mass feeling like an air cushion in the right iliac fossa. Chronic typhlitis causes muscular atony and intestinal stasis." Our experience is similar to that of Da Costa, with the important exception that cases of chronic typhlitis are not "rare." This is perhaps due to the surgeon's standpoint which is one side of the question only. There should be no "medical side" nor "surgical side," for the subject is neither medical nor surgical, it is both. The leading textbooks on surgery and medicine are too one sided; let us therefore place this before our students in the proper light.

Rose and Carless state that changes in the cecum and sometimes a generalized typhlocolitis often accompanies appendicitis. "It is in these cases where the cecum and colon are inflamed and tender as well as the appendix, that the most careful discrimination is needed in order to prevent needless operations which will not improve the patient's condition."

As the result of the study of my cases of appendicitis and chronic intestinal toxemia, where both conditions were present, the following classification suggested itself: 1. Cases where a previous appendicectomy had been performed without relief of symptoms of toxemia; 2, cases of cecal disease and toxemia resembling chronic appendicitis; 3, cases of chronic intestinal toxemia which developed into appendicitis while under observation. The following are illustrative of previous appendicectomies without relief of the symptoms of chronic toxemia:

Case I. G. A. K., male, aged thirty-three years, traveling salesman. Diarrhea and fermentation for twenty years, constipation developing in the last few years. Appendicectomy in 1910. Diagnosis: Enteroptosis, water trap stomach (13), chronic intestinal toxemia, and skin infections. Treatment: Abdominal support, posture, diet, agar, and Bacillus bulgaricus culture. Eleven doses of autogenous colon vaccines, with slight reactions. Autogenous staphylococcus vaccines for pyogenic skin and glandular infections. Result: Slow, but marked improvement.

Case II. S. K., female, aged thirty-eight years, single. For fourteen years very severe constipation and attacks of unconsciousness with convulsions, progressive, as many as eight or ten daily. No hereditary history of epilepsy. Flatulence and abdominal discomfort. Appendicectomy one and a half year ago, with no relief. Diagnosis: "Epilepsy" of intestinal origin. Dilated and residual cecum and stomach. Severe indicanuria, and putrefaction in stools. Treatment: Diet, colon massage, catharsis, hygiene, and occasional doses of bromides. Fifty injections of autogenous colon vaccines, sensitized at first and then nonsensitized, followed by severe reactions, local and general. Results: Marked improvement, no seizures for one year, then relapses. Advised operation on colon. Gradual improvement again. Kidney and liver functional tests, and chemical examination of the blood showed apparently normal condition of those organs.

Case III. T. D. M., male, aged thirty-one years, boot black. For ten years diarrhea, abdominal cramps, and discomfort. Headache, flatulence, gurgling, and general tenderness over abdomen. Streptococci and colon bacilli in the feces. Diagnosis: Chronic intestinal toxemia, long kinked sigmoid. Probably liver and pancreatic disturbance; diagnosis not completed. Indicanuria. Treatment: Colon lavage, tonics, salol and castor oil, diet and hygiene. Abdominal compresses and mineral oil. Thirteen doses of autogenous streptococcus vaccine, obtained from the feces, with severe reactions and no improvement. Eleven doses of autogenous colon vaccines and five injections of sensitized autogenous colon vaccines gave but slight improvement. The patient then disappeared for a while and returned after an appendicectomy had been performed by another doctor, with no relief to symptoms. The pathological findings were chronic appendicitis and Jackson's veil. Further studies contemplated in the direction of the liver and pancreatic derangement.

Case IV. A. J. L. E., female, aged forty-six years, single, school teacher. "Weak stomach" and headache since childhood. For fifteen years after a severe mental shock, suffered from abdominal distress, hemicrania, gradually increasing mental depression, and melancholia. During the past two years, condition had been unbearable; always constipated. Eight years ago, appendicectomy and removal of fibroids. No improvement. Blood pressure about 240 mm. Diagnosis: Severe chronic intestinal toxemia. Treatment: Operative reconstruction of the the colon. Result: Marked improvement for a year. Returned to work almost immediately, against advice. Relapse at the end of a year, with symptoms of infection of the remainder of the colon. Relief by autogenous colon vaccines, twenty-five injections with marked reactions. She had not lost a day's teaching during the past year. Blood pressure was lowered, on an average below 200, extreme limits, 220 to 150. Complete examination of the blood was made by Doctor Gettler, of Bellevue Hospital, and showed high hemoglobin, low noncoagulable nitrogen (28.4 mg.), low urea nitrogen (10.0 mg.), low uric acid (0.62 mg.), low creatinin (0.08 mg.), normal creatine, low chlorides (368 mg.), and low sugar (57.0 mg.). The serum showed a high freezing point, normal conductivity, refraction and specific gravity, and normal carbon dioxide. The urine, with the exception of low nitrogen content, was normal. The renal function test (phenosulphophthalein) showed fifty per cent. excretion at the end of the second hour. The kidneys therefore appeared to be functioning normally.

Case V. G. A. L., female, aged forty years, married. Constipated all her life, with cascara and enemata habits. Operations: Ten years ago, ovarian cyst removed; nine years ago appendicectomy for chronic appendicitis. No improvement. Symptoms beside constipation had been headaches, dullness, lack of mental poise, flatulence, backache, and occasional vomiting. Diagnosis: Residual stomach and cecum, sluggish colon, dilated sigmoid, and chronic intestinal toxemia. The menopause was partly responsible. Treatment: Diet, colon massage, and autogenous colon vaccines. Result: Steady improvement and cure.

Case VI. E. N., female, aged twenty-six years, single, school teacher. Constipation for years, occasional attacks of diarrhea, vomiting every two weeks, headache, flatulence, abdominal pain, and soreness in the right hypochondrium. Appendix removed several years ago without relief of symptoms. Diagnosis: Severe grade of enteroptosis, water trap stomach (13) with a ptosis of seventeen cm. Treatment: Posture, abdominal support, and diet. Result: Slow improvement.

Case VII. C. E., female, aged thirty-nine years, single. This was a similar case of marked enteroptosis, water trap stomach, with a drop of seventeen cm. All the symptoms of chronic intestinal toxemia present for years. Five years previously, appendix removed for recurring attacks of chronic appendicitis. No relief from symptoms. Had been slowly improving under treatment for chronic intestinal toxemia.

Case VIII. M. B., female, aged thirty-eight years, single, domestic. For seventeen years had had pain in the right iliac region, constipation, and alternating diarrhea. Operation, two months ago, for chronic appendicitis. No improvement and constipation worse. Diagnosis: Marked enteroptosis, water trap stomach, residual cecum, and long sigmoid. Toxemia marked. Treatment: Unsatisfactory on account of imperfect control; the patient disappeared.

The following case histories have been classed under chronic intestinal toxemia resembling chronic appendicitis. They have been closely followed so that, in our judgment, intestinal toxemia and constipation are the predominant factors.

Case IX. A. P., male, aged thirty-one years, confidential agent, single. For the past three years, had had marked constipation, abdominal cramps, pyorrhea, and decayed teeth. The condition would improve after treatment in a European spa; but had been getting progressively worse. When first seen, had a severe attack of obstipation, abdominal cramps, especially in the right iliac region, heaviness, coated tongue, and finally a severe sciatica. Marked tenderness in the right iliac region, crepitation and splashing over the cecum. Diagnosis: Marked enteroptosis, residual stomach and cecum, long atrophic sigmoid, and severe chronic intestinal toxemia. Large doses of the coal-tar products had no appreciable effect on the pains, which responded quickly to the first injection of autogenous colon vaccine. Symptoms improved greatly by diet, abdominal support, posture, and repeated doses of colon vaccine. Results: Eight months later, abdominal symptoms had disappeared and the bowels were moving well.

Case X. E. K. W., female, aged twenty-nine years, married. The history was a typical one of constipation and stomach trouble following confinement to bed after a fractured hip, five years ago. Alternating constipation and diarrhea, with marked colica mucosa. One year ago, rest in bed and forced feeding resulted in increase in weight, but no improvement in symptoms. Patient was enteroptotic, with marked tenderness and crepitation over the cecum, and the whole abdomen was exquisitely tender. Water trap stomach, with large residue at six and one half hours. Appendix outlined, retrocecal to the right, and apparently adherent. Very long sigmoid, cecum and sigmoid very sluggish. Treatment: Abdominal support, posture, diet, stomach and colon lavage, and autogenous colon vaccines improved the conditions very much in ten months. Chronic appendicitis had been carefully considered, as the symptoms pointed very strongly that way. Radiographs of the colon, however, showed marked improvement in that organ, and the necessity for operation seemed to be past.

Case XI. H. R. G., female, aged thirty-nine years, married. Had been constipated all her life and accustomed to rich food. Cascara habit for years. Headaches and flatulence, pain and soreness in the right iliac region. Diagnosis: Moderate enteroptosis, residual cecum and appendix, dilated sigmoid, and chronic intestinal toxemia. Treatment: Diet and hygiene, colon massage, and autogenous colon vaccines. Results: Steady improvement and regularity of bowels after two months. Abdominal tenderness disappeared. Relapse, but rapid improvement on resumption of treatment. Second series of radiographs demonstrated the improvement of the colon and appendix constipation.

Case XII. B. R., female, aged thirty-five years, single. Family history of constipation. Has been constipated since childhood, no normal movement without catharsis. Chief complaints, flatulence and nervousness. Later patient developed joint pains and joint crepitus. Cecum was large, very tender, and crepitating. Radiographs showed large residual cecum, appendix outlined in one plate and retrocecal, three days' stasis in transverse colon. The diagnosis of chronic appendicitis was carefully considered and ruled out only after considering behavior to treatment and confirmatory radiographs. Diagnosis: Dilated, residual cecum, colon constipation, and chronic intestinal toxemia. Treatment: Diet and hygiene, colon massage, and a course of autogenous colon vaccines which helped materially. Results: Slow improvement with frequent relapses. Two years later, symptoms still present, though less marked.

Case XIII. W. L. R., male, aged thirty-five years, married. Patient felt perfectly well up to five years ago, when he had a sudden attack of nausea,weakness, and cold sweat after eating scallops. He then acquired a nervous exhaustion with peculiar obsessions. Since then he had had great fear of entering strange places, of traveling, and of entering into company, and. on this account, was about to give up business. No appetite, "convulsive retchings" at the thought of eating, constipation, and flatulence. Radiographs showed marked enteroptosis, water trap stomach, and a slight residue of bismuth after seventy-one hours in the appendix, although the colon was empty at that hour. Diagnosis: Neurasthenia, with mental depression and obsessions, caused by chronic intestinal toxemia. Enteroptosis, with the possibility of chronic appendicitis. Treatment: Abdominal support, posture, diet, and hygiene. Autogenous colon vaccines regularly for nearly a year. Results: No improvement for the first two months; then slow but marked improvement. At the end of a year, much improvement in mental condition, but still some irregularity of the bowels. Patient greatly in need of a vacation, which he had not had for four years. No positive evidences of appendicitis to date.

The following case history may be of value as demonstrating probably a close relationship between appendicitis and chronic intestinal toxemia.

Case XIV. M. McD., aged twenty-seven years, colored, single, domestic, had had severe constipation for years. At first presented herself for strangulated hemorrhoids. Hemorrhoidectomy in 1911. Following operation, had cramplike pains in abdomen, flatulence, vomiting regularly after eating, vertigo, and rapid loss of weight. Radiographs showed a rapidly emptying stomach, marked coloptosis, deep in the pelvis. The cecum dilated, the appendix outlined, long and bent on itself, and retained bismuth for six days after the cecum had emptied itself. The sigmoid and rectum, markedly dilated, were the principal sites of the constipation. The interesting part of this radiographic study was the apparent backing up (anastalsis) of the bismuth meal into the cecum and ascending colon on the second day. There were no classical symptoms of appendicitis, yet we dared to prognose an attack of appendicitis in the near future from the radiographic findings. Four months after there occurred a typical attack of acute appendicitis, and an acutely inflamed swollen organ was removed. Suspension of the colon was done at the same time. In a review of the results on our later cases with a similar bowel condition, the author believed that a reconstruction of the colon was the proper procedure. Microscopical examination of the appendix showed acute catarrhal appendicitis, with a bend but no obstruction. The wall of the appendix must have shared in the atony of the large bowel, which might explain the retention of the bismuth in the organ.

CONCLUSIONS.

1. The necessity of the careful study of all cases diagnosed as chronic appendicitis and the use of the x ray in every case.

2. The symptoms of chronic appendicitis and cecal disease are often very similar.

3. Cooperation between surgeon and internist in the study and treatment of these cases, before and after operation (no one man's case).

4. The proper treatment for chronic intestinal toxemia may clear up symptoms resembling chronic appendicitis.

5. Autogenous colon vaccines should be tried in every case.

6. The internist should be always on guard for appendicitis in every case of chronic intestinal toxemia, and the surgeon for chronic intestinal toxemia in the case of appendicitis.

7. Our medical student should have instruction along these lines and be taught not to diagnose intestinal conditions on symptoms alone.

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CHRONIC GONORRHEA IN THE MALE.*

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It is not the purpose of this paper to present any new or startling facts concerning so called chronic gonorrhea. It is rather an effort to classify our knowledge, and a plea for more scientific and rational diagnosis and treatment. The classification of all lesions, urethral, periurethral, annexal, gonorrheal, and postgonorrheal, under the single term, chronic gonorrhea, is inexact and unscientific. The application of so generic a term does not take into account the variety or combination of pathological lesions which may exist in a given case of gonorrheal or postgonorrheal disease of the lower genitourinary tract. The term is a misnomer and should be abolished.

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*Read at a meeting of the Alumni Association of St. Mark's Hospital, New York, March 10, 1916.

Given a case of acute gonorrheal urethritis, what happens? For the first twenty-four to thirty-six hours the gonococcus remains on the surface of the urethra. It begins, thereafter, to burrow down into the deeper tissues, i. e., the crypts of Morgagni and the glands of Littré, into the submucosa, and even into the loose periurethral tissue. The surroundings are congenial and all the factors favorable to growth are present. Multiplication is both rapid and prodigious. The effort of the organism to overcome the invading host is evidenced by the usual signs of inflammation, viz., pain, heat, swelling, and pus. The infection travels rapidly from the meatus to the bulbomembranous junction of the urethra, and if the process goes still further, the prostatic urethra, the bladder, the prostate, seminal vesicles, and one or both epididymides are invaded. The patient seeks relief and is put under treatment. After a variable length of time, the discharge ceases, the urine becomes clear, and the patient is dismissed cured.

If the treatment has been successful, he has no further trouble, but if the reverse is the fact, what happens? He notices either a drop of actual pus, mucus, or mucopus at the meatus before the first urination of the day, the so called "morning drop," and very often before every urination during the twenty-four hours. The urine contains shreds and is often cloudy from mucus or pus. Indulgence in intercourse, coupled with the free imbibition of alcohol, is followed by a return of the acute symptoms. Frequently the patient cannot assign any tangible reason for the recurrence. This need cause no great doubt. The treatment has been sufficient only to clear up the superficial inflammation and has not affected the gonococci beneath the surface of the mucous membrane. The removal of the noxious influence of the remedial agents is followed by a rapid multiplication of the gonococci with a reappearance of all the signs of acute inflammation. This succession of events may be, and often is repeated at intervals, and may go on for a long time and accounts, in a great measure, for the current doubt as to the curability of chronic gonorrheal affections in the male.

In the intervals between the recurrent, subacute attacks, the urethra and annexa, if they have been involved, are in a state of chronic inflammation. Often the patient seeks relief from his symptoms, but unfortunately, just as frequently neglects to do so, either through ignorance or carelessness or both. Most physicians are more or less familiar with the so called routine treatment of chronic gonorrhea, namely, the passage of sounds, prostatic massage, irrigations, instillations, etc., and the patient is promptly put through such a course of treatment.

This indefinite, routine treatment is, of necessity, the logical sequel of inexact and indeterminate diagnosis and explains the unsatisfactory results so often obtained. Definite curative measures, however, applied for definite reason and with an exact knowledge of the pathological lesions, will yield uniformly good results.

The classification of the lesions encountered, which I use, is not new. It is based on the pathological findings and is as follows:

1. Chronic anterior urethritis.
2. Chronic posterior urethritis.
3. Chronic prostatitis.
4. Chronic seminal vesiculitis.
5. Chronic relapsing epididymitis.
6. Chronic cystourethritis or trigonitis (gonorrheal).

The above enumerated conditions are further classified as:

a. Gonorrheal or specific (when the gonococcus can be demonstrated. Usually the gonococcus is associated with staphylococci or micrococci).

b. Nongonorrheal or nonspecific (when only the milder saphrophytic organisms can be demonstrated).

c. Postinflammatory or postgonorrheal (when organisms cannot be demonstrated, either morphologically or culturally. In these cases the patient presents lesions which are the direct result of previous inflammatory processes.)

The definite lesions to be found in the first three of these conditions are as follows:

1. Chronic anterior urethritis: *a.* Folliculitis (chronic inflammation of the crypts and glands of Littré). *b.* Infiltrates, mucosal, submucosal, and periglandular (the superficial forms include granulations and erosions of the mucous membrane). *c.* Stricture (a further development of the process of infiltration with the formation of organized connective tissue).

2. Chronic posterior urethritis: *a.* Colliculitis (diseases of the verumontanum): I. Simple congestion and hyperplasia; II, granulomatous excrescences, erroneously called polyps; III, retention cysts, usually arising from the utricle; IV, atrophy, associated with cicatrices.

b. Granulomata (so called polyps) arising from the lateral walls and floor of the urethra;

c. Cysts, usually arising from the occluded Littré glands and occasionally from the sphincter.

d. Dilated prostatic ducts.

3. Chronic prostatitis: *a.* Follicular: I. Specific (gonorrheal); II, Nonspecific (congestive).

b. Parenchymatous: I. Specific (gonorrheal); II, nonspecific (congestive).

It is to be borne in mind that it is most unusual to find a sharply defined and localized lesion. Usually, where a case has persisted for some time, the greater part of the tract is involved, with a preponderance of lesions in one part and the majority of subjective lesions pointing to that locality.

A brief consideration of such a formidable array of pathological lesions, any one or all of which may exist, should convince us of the absolute necessity of a careful and detailed examination in every instance, before active treatment is begun.

GENERAL EXAMINATION OF THE PATIENT.

History. A careful and detailed history of each case will furnish many clues to the alert physician. The first question should deal with the chief complaint. As a class, these patients present, as the most prominent symptom, any one or combination of the following:

Morning drop, which may contain pus cells and bacteria, but usually consists of mucus and epithelial cells. It may have its origin in any part of the tract.

Frequency of urination, due to the chronic congestion of the parts, or, at times, to an inability completely to empty the bladder at each urination.

Tickling at the meatus or in the urethra, which may arise from a lesion in the anterior urethra, but more often from the prostate or posterior urethra.

Pain in the perineum, suprapubic region, or rectum, denoting almost always a lesion of the posterior urethra, particularly the verumontanum and less often the prostate and seminal vesicles.

Abnormalities in the stream of urine, i. e., distortion of the stream, inability to start the stream, or dribbling after completion of the act. Such abnormalities may usually be traced to obstructive causes, notably stricture and prostatic enlargement.

Dysuria, which may be due to the presence of a slight inflammation in some part of the urethra or to the passing of hyperacid urine over eroded surfaces.

The second question should be the duration of symptoms and the number of acute attacks.

The appended figures illustrate graphically the importance of this question. In a series of 100 cases, the following was found:

Number of Acute Attacks.

1	7 per cent.
2	44 per cent.
3	36 per cent.
4	8 per cent.
5	5 per cent.

Duration of Symptoms.

1 year	9 per cent.
2 years	19 per cent.
3 years	9 per cent.
4 years	7 per cent.
5 to 9 years	21 per cent.
10 to 14 years	19 per cent.
15 to 20 years	16 per cent.

To enlarge, eighty-eight per cent. of the cases had from two to four attacks of "acute gonorrhea"; sixty-five per cent. had symptoms covering a period of from one to five years, while eighty-four per cent. presented symptoms over a period of from one to ten years. Of the cases under consideration, twenty per cent. appeared, at the time of examination, with acute symptoms. The average case gave a history of having had a "new gonorrhea" every few months, while in a considerable number there was a history of the reappearance of acute symptoms without exposure.

In the light of our experience we believe that, in the majority of cases with acute symptoms and a history of frequently recurring attacks, we were not dealing with new infections, but simply with exacerbations of subacute or chronic processes in some part of the tract.

LOCAL EXAMINATION OF THE PATIENT

When practicable, the patient should be examined before the first urination of the day. At other times the urine should be retained by the patient, for at least three to four hours before the examination. The first thing to be noted is the urethral discharge. The urethra should be stripped, starting at the perineum and ending at the meatus, and whatever secretion is secured should be transferred to a glass slide for examination. The Gram method should be used for staining, as only in this manner can we be reasonably certain of the identity of the organisms.

The size of the urinary meatus should next be ascertained. It is astonishing to note the number of patients who are treated for recurrent attacks of urethritis without attention being given the small, inadequate meatus. This is one of the most frequent single causes of relapse or recurrence. If the meatus is too small to admit any instrument of less than No. 26 F. calibre, meatotomy must be performed before the examination proceeds and need not delay such examination.

Study of the urine. The usual two glass test will simply give the information that there are shreds, pus, or mucus in the urine. For an accurate determination of the origin of shreds or pus or mucus, one of the multiple glass tests must be performed. The Wolbarst five glass test has, in our hands, proved to be the most advantageous and satisfactory for this purpose.

Urethral shreds present certain characteristics which allow, occasionally, of their localization. Small, granular flakes, which float in the urine, usually arise from the anterior urethra and are composed of superficial epithelial cells and leucocytes. Threadlike shreds, which sink to the bottom of the glass, also have their origin in the anterior urethra and consist, for the greater part, of leucocytes. The comma or tadpole shred usually arises from an ulcerated or granular area, which most often is present in the posterior urethra and occasionally in the anterior portion. The dot or head is composed of pus cells, while the tail contains epithelium. The long, filmy shreds come from the prostatic or ejaculatory ducts and consist of mucus, leucocytes, epithelium, and often a few spermatozoa. Irregular and broken shreds usually originate in the anterior urethra and denote a chronic inflammatory process most often of the type which exists posterior to a stricture.

Palpation of the prostate and seminal vesicles. Palpation of the prostate should reveal definite information as to size, consistence, and pain. The normal sized prostate, if there is such, is solely a question of relative values. If the lateral lobes are flat and not prominent, if the gland substance is soft and flaccid and is not painful on moderate pressure, it may be said that the prostate is normal in size to rectal palpation.

A diseased prostate may present one of many appearances. The chronically congested, nongonorrheal prostate, as well as the gonorrheal, parenchymatous organ, presents an uniformly enlarged gland, dense, and at times boggy and painful to the touch. In the gonorrheal type, a moderate amount of pressure is followed by a free flow of prostatic secretion, which contains normal prostatic fluid, pus, epithelium, and inflammatory débris. In the follicular type the gland is enlarged, one lobe is more prominent than its fellow, lumpy and hard to the touch. Pain on pressure is variable, and stripping of the gland is not so productive of secretion as the parenchymatous form. The lumps represent groups of acini which have been infected during the acute stage. The interacinous tissue, or stroma of the gland, is not so greatly involved.

The normal seminal vesicle is usually not palpable. When it is inflamed and enlarged, the fundus may be felt above and to the outer side of the prostate. The information revealed by palpation is indefinite at best. If we feel the vesicle, it is said to be enlarged. Inflammatory thickening around the vesicle is often present and may be mistaken for actual involvement of that organ itself.

Secretion which appears at the meatus during palpation of these organs should be caught on a slide and submitted to microscopical examination.

Study of the urethra. The study of the urethra is the final step in the examination and should begin with a determination of the calibre of the canal. It is assumed that the meatus is large enough to admit a No. 26 F. instrument, and if not, that a meatotomy has been performed.

The instrument of choice is the bougie-à-boule. I prefer to begin with No. 26 F. and pass the instrument as far as the bulbomembranous junction of the urethra, and from there on into the bladder. If an obstruction is met, successively smaller sizes are used until one passes without marked difficulty. As the instrument is withdrawn, the shoulder of the bougie will be felt to impinge on the obstruction. The exact site of obstruction is thus easily found. The character of obstruction can often be determined only by urethroscopic examination, as it is not only stricture which may cause a diminution in the calibre of the urethra; infiltrations in the mucosa or in the periurethral tissues may impinge on the canal and lead us to erroneous conclusions. If the obstruction is of such extent as to prevent the passage of even the smaller sized instruments, filiform bougies must be used to enter the bladder.

After the localization of obstructions has been completed, it is good practice to pass the largest, straight steel sound which the urethra can comfortably admit. The penis is put on the stretch and the urethra palpated with the sound in place. In this manner we often detect, still more clearly, glandular enlargement and periurethral infiltration.

For the urethroscopic examination the patient is prepared in the lithotomy position and the water-dilating cystourethroscope employed. With this instrument the neck and base of the bladder, the prostatic, membranous, and even pendulous portions of the urethra may be closely examined. If there is sufficient reason, the anterior portion of the urethra is examined further, using an air dilating type of instrument for that purpose.

With such an examination it is a comparatively simple matter to clinch the tentative diagnosis which should have been partly made as a result of the preceding steps. Abnormalities of the verumontanum (i. e., enlargements due to hyperplasia, contracture, granulomatous excrescences, so called polyps, cysts). or dilated prostatic ducts, ulcerations, granular areas, chronically inflamed Littré glands, soft and hard infiltrations, and strictures may be definitely visualized and localized. With such information at hand the physician is in a position to begin treatment with the assurance of definitely successful results.

TREATMENT.

The treatment must aim to accomplish two things, namely, 1, the disappearance of all organisms, and, 2, the resorption of all inflammatory or postinflammatory lesions with a return to the normal of all parts of the tract. The successful attainment of these prerequisites for a cure, depends solely, to my mind, upon one thing, i. e., successful cooperation with the natural forces of each individual. The treatment should, with few exceptions, aim to cause a mild hyperemia in the parts. Such hyperemia is attended by a mild leucocytosis. The phagocytes attack the bacteria and render them inert; the increased flow of blood to the parts aids in the resorption of the round cell infiltration which accompanies chronic inflammatory processes. Thus are strictures and infiltrates softened, glandular enlargements reduced, and erosions and ulcerations encouraged to heal. All therapeutic measures are to be employed only so far as they aid in the establishment of such hyperemia.

Before speaking in detail of the various therapeutic measures, it is well to sound a warning. The tendency, in the treatment of chronic affections, is to attempt to do altogether too much. A large number are overtreated and consequently not at all benefited. In my opinion it is much more profitable to sin on the side of omission than to injure the patient by errors of commission. Gentleness in all maneuvres is of the greatest importance, and this applies to the passing of sounds or other instruments, massage of the prostate as well as to the strength of solutions employed.

Lastly, the physician must impress upon the patient the impossibility of effecting a rapid cure. Nature works slowly, and as our treatment aims to be an aid of natural forces, it is to be expected that all cases will require considerable time to be brought to a successful conclusion.

Chronic anterior urethritis. As detailed before, the definite lesions of chronic anterior urethritis are, *a,* folliculitis, *b,* infiltrates, and, *c,* stricture. The most useful measure in the treatment of these lesions, as a class, is dilation, but it must be used with a keen insight and knowledge of the dangers as well as of the benefits accruing to its intelligent application. Careful and gentle dilatation is always followed by a mild hyperemia. If there are any bacteria in the lacunæ and glands, they are attacked by the leucocytes. Scar tissue, whether surrounding periurethral glands or in the mucosa itself, is softened and soon approaches the normal elasticity. Forceful and energetic dilatation nearly always has a deleterious effect upon the tissues. It is followed by congestion rather than by hyperemia, with a resulting round cell infiltration; simple erosions are transformed into veritable fissures and their healing, delayed instead of being encouraged, is attended by scar tissue formation.

The instruments used for this purpose are the Kollmann dilator and the steel sound. I use the dilator only when there is a moderate amount of infiltration and of recent origin. For more advanced infiltrations, strictures, and stubborn cases of folliculitis, I prefer the steel sound.

The dilator is inserted into the urethra, closed, at No. 22 F., and gradually opened to any desired size. To be successful, the dilatation must be gradual and gentle. At the first application I rarely dilate beyond No. 28 F. The instrument is allowed to remain in place for at least ten minutes—longer if practicable. At the next application the instrument is opened to a few degrees below the last maximum, and after a few moments is gradually advanced one or two degrees beyond that point. This is repeated at suitable intervals until there is no difficulty in reaching No. 35 F.

Following the withdrawal of the instrument, which should not occur until it has been closed, the urethra is stripped and any secretion which may appear is transferred to a slide for microscopical examination. If bacteria can be demonstrated, one of the silver proteid or colloidal iodine solutions is injected into the urethra and retained for five minutes. If bacteria cannot be found, the urethra is copiously irrigated with potassium permanganate or silver nitrate solution in weak strengths.

For cases of actual stricture, the steel sound surpasses the dilator in usefulness. The smallest sound which can be introduced without undue traumatism, is used. After a few moments the next size larger is passed. At subsequent visits the same sized sounds are used and followed by the next size larger, and so on until the urethra admits No. 30 F. without difficulty. We must take into consideration the size of the penis. Given a patient with a small organ, No. 28 F. is usually sufficiently large as the upper limit, while in patients with large organs, I often go as high as No. 32 F. The last sound used at each visit is allowed to remain in place for at least ten minutes, and after its removal the urethra is either injected or irrigated according to the indications.

Massage of the anterior urethra is the next most valuable therapeutic measure. The largest sized straight steel sound which can be easily passed into the urethra is used. The penis is put on the stretch, so as to obliterate all folds of mucous membrane. The finger can then palpate and distinguish all urethral and periurethral thickening. These areas are very gently, but withal very thoroughly massaged, care being taken that the mucous membrane is not unduly traumatized. Following such massage the urethra is stripped and the secretion examined for bacteria. If organisms can be demonstrated, I inject either one of the silver proteid or colloidal iodine solutions, to be retained for five minutes. When bacteria are not found the urethra is irrigated. It is remarkable to note, after a few such treatments, that the periurethral and mucosal thickening gradually disappear and the shreds in the urine become smaller and finer.

Direct application of medicinal agents through the urethroscopic tube is useful, if employed carefully and when indicated. The agent most often used is silver nitrate, in strength varying from one to twenty-five per cent. Solutions of fuchsin and weak iodine are used at times. For ulcerated areas I use silver nitrate, ten per cent., applied on a fine swab directly to the desired area. It is also of benefit, in this strength, when applied to the mouths of the glands of Littré. For simple erosions and granular areas I employ silver nitrate five per cent.

For cases of folliculitis which do not respond to the various measures already mentioned, fulguration gives very good results. The mouth of the gland is entered with a fulguration needle and the Oudin current applied for a few seconds. The current must not be too strong or applied for too long a period. Such applications should not be repeated oftener than once a week.

The bulbous portion of the urethra is one of the most prolific sources of lesions which aid in the prolongation of these cases. Because of their site, they often escape detection and for the same reason are difficult to treat. Dilatation of the posterior urethra with the Kollmann dilator followed by injection or irrigation is alternated with direct application of silver nitrate. These applications are best made at the same time that lesions in the posterior urethra are treated. The instrument is gradually withdrawn until the membranous urethra comes into view. Granulations and erosions abound in the cul-de-sac just anterior to the membranous urethra, and are medicated as they come into view on withdrawal of the urethroscope.

Chronic posterior urethritis. Diseases of the verumontanum occupy a prominent place among the lesions found in the posterior urethra. Simple hyperplasia, accompanied by congestion, is the most common pathological entity and is usually present along with chronic prostatitis and seminal vesiculitis. With the treatment of these last named conditions the verumontanum usually approaches the normal. Direct application, through the urethroscope, of silver nitrate, ten per cent., on a fine swab needs to be repeated but a few times in order to encourage such return to normal.

Atrophy of the verumontanum, associated with cicatrices, may be ameliorated. Constant and careful dilatation causes a resorption of the scar tissue and may be followed by improvement in the verumontanum itself. More often, however, the verumontanum does not regain its normal size.

Granulomatous excrescences from the verumontanum, erroneously called polyps, may be destroyed by the direct application of silver nitrate, ten to twenty-five per cent. Dilatation, with the Kollmann instrument or sounds, of the posterior urethra may aid in their destruction. Where these measures are unsuccessful the Oudin current, carefully applied, usually gives satisfactory results.

Retention cysts of the verumontanum may be destroyed by dilatation, but I usually find that recourse must be had to fulguration with the Oudin current. The cyst wall is penetrated and the current applied for a few moments.

The floor of the posterior urethra as well as the lateral walls are the sites of many lesions. Granulomata and cysts are found as well as in the verumontanum itself. Ulcerated and granulated areas are common. Direct application of silver nitrate, alternated with careful and gentle dilatation with recourse to fulguration only when indicated, are the measures.

Dilated prostatic ducts are common and are a source of great annoyance. They are to be found on the floor of the posterior urethra in almost every case of long standing in which the prostate is involved. I have, at various times, injected silver nitrate, weak iodine, and colloidal iodine solutions, and fulgurated, with but poor success. Constant prostatic massage, associated with dilatation of the posterior urethra, usually brings about an improvement. Mixed gonococcus vaccines are indicated in these cases and are to be used if the treatment outlined does not give satisfactory results.

For dilatation I use, as in the anterior urethra, the Kollmann dilator and the steel sound. When the anterior urethra is not involved or has improved under treatment, I use the Beniqué curved sound for the posterior urethra. The dilator is used when there is little or no cicatrization. It is inserted into the urethra, closed, at No. 22 F., and gradually opened to the desired size. At the first application, unless there is difficulty, dilatation is carried up to No. 28 or 30 F., and at subsequent visits up to No. 40. It is to be noted that the posterior urethra is much more easily dilatable than the anterior portion of the canal. The dilator is left in place for at least ten minutes, closed, and withdrawn. In cases associated with dilated prostatic ducts and prostatitis, I always instil either silver nitrate, 0.5 to one per cent., one of the silver proteid or colloidal iodine solutions into the posterior urethra upon withdrawal of the instrument. In other cases I usually irrigate with a weak silver nitrate or permanganate solution, using the Janet syringe.

Where it is necessary to overcome cicatrization, I find that the steel sound is superior to the dilator. As in the anterior urethra, dilatation is gradual and gentle. The sound is allowed to remain in place for ten minutes and the posterior urethra either irrigated or injected, upon its removal, as the indications demand.

Chronic prostatitis and seminal vesiculitis. The treatment of chronic prostatitis gives, at times, brilliant results, while in other instances it is disappointing. To a great measure this is due to the manner in which each case is managed. Prostatic massage, in experienced hands, is a safe and satisfactory measure, while in careless hands it is a dangerous weapon.

Massage of the prostate is performed with a definite purpose in mind as to just what is to be accomplished. First, there is the actual, manual expression of the contents of the acini and ducts. Second, there is established a mild hyperemia which causes and aids in the resorption of inflammatory material and brings about a return to the normal in size, shape, and consistence. Further than this, careful massage exerts a beneficial influence on the posterior urethra itself. The hyperemia is evidenced here as well as in the prostate and so acts as an adjuvant in the treatment of lesions in that portion of the urethra.

The bladder is first filled with a warm solution of silver nitrate (one to 3,000) or permanganate (150 c. c.). The patient leans over a stool, the legs widely separated, and holds a glass under the penis. The finger should be well lubricated and gently inserted into the rectum. The massage must be gently, slowly, and carefully performed. To be of any benefit the massage should consume at least from three to five minutes. The finger begins at the upper limit or base of each lobe and is carried, firmly but gently, down to the apex. The finger then travels from side to side until both lobes have been covered. Only a moderate amount of pressure is needed to secure the desired results.

In cases of follicular prostatitis, which do not respond after a reasonable length of time, I often insert a suppository of iodine and potassium iodide into the rectum and then apply the high frequency current directly over the prostate for five to ten minutes, using a vacuum electrode. Following this, the bladder is filled with solution and the prostate carefully massaged. The heat engendered by the high frequency current, together with the action ot the iodide, seems to favor a more rapid absorption than is ordinarily secured by massage alone.

In other cases, especially where dilated prostatic ducts exist, it is well to dilate the posterior urethra before the prostate is massaged. In this manner we may facilitate the free escape of secretion from the acini and ducts.

Chronic seminal vesiculitis exists, very often, in such mild form as to escape detection. As a general rule, I endeavor to include the vesicles when the prostate is massaged. Where the process is further advanced, massage must be very gentle. As a matter of caution, the prostate or vesicles must never be massaged too vigorously, as I have seen many cases of acute epididymitis develop in the course of the treatment of chronic prostatitis when this rule was disregarded. The results from the operation of seminal vesiculotomy, as I have observed them, are not such as to encourage me in advising operation for the relief of symptoms said to arise from chronic seminal vesiculitis. Mixed gonococcus vaccines are used in conjunction with the treatment outlined.

Chronic relapsing epididymitis. The treatment of this condition is, first, prophylactic. Careful massage of the prostate and seminal vesicles will reduce the frequency of its occurrence, incidental to the treatment of lesions in these organs.

When it does happen, I have found that the best measure is multiple, subcutaneous puncture of the epididymis and then the external application of some counterirritant. Binding of the testicle around its long axis, with a rubber bandage after the manner of Keyes, is also very useful. Vaccines or serums may be employed in addition. The operation of vasotomy has been discarded by me in favor of the simple, subcutaneous puncture method.

Chronic cystourethritis. The treatment of this condition is incidental to that of other lesions in the posterior urethra and annexa. Irrigations with silver nitrate, the internal administration of some antiseptic, and careful regulation of the bowels are in order. Where colon bacilli can be demonstrated as added organisms, vaccines may be employed. At times, the neck of the bladder must be swabbed with silver nitrate, applied through the cystourethroscope.

Summed up, then, the treatment of chronic affections of the lower genitourinary tract in the male resolves itself into an application of suitable measures, in a definite manner, and with definite knowledge of the pathological lesions present. The keynote of all therapeusis is gentleness as well as precision. The various measures are alternated so as not unduly to irritate any one portion of the tract. The patient calls at intervals of about three to four days and only one portion of the tract is treated. At subsequent visits some other part is treated and so on until there is a distinct improvement in the entire picture. Persistence is essential and is a most important factor in a successful conclusion. Internal medication is rarely employed, except to meet some special indication.

119 East Tenth Street.

THE PHYSICS OF THE HIGH FREQUENCY CURRENT.

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In speaking of the physics of the high frequency current I shall take into consideration the fact that my audience is principally made up of physicians in general practice. I shall attempt to avoid, as much as possible, technical terms, but will explain their meaning if occasion arises. The underlying laws of electricity do not differ; they are the same for currents of low potentials or high potentials, for low frequencies or high frequencies, for unidirectional as well as alternating currents. It is essential to have a clear conception of such fundamental units of electrical measurements as the volt, the ampere, and the ohm.

For some unaccountable reason, the moment that electricity is mentioned, everything connected therewith seems to become obscure and difficult of comprehension. When the same terms are applied to something more familiar, however, they become clear and easy of comprehension. Let us suppose that we are dealing with an ordinary hypodermic syringe; the barrel is filled with a solution of morphine. When this syringe is held with the needle pointing downward, the fluid does not escape. The question is, Why not? For the same reason that when the needle is plunged into the tissue the fluid does not enter the tissue. In the first instance the atmospheric pressure against the needle opening prevents the escape of the fluid by resisting the force of gravity. In the second instance, to this resistance is added that of the density of the tissue into which the needle has been plunged. In order to overcome this resistance we use pressure on the piston. When the resistance of the tissues has been overcome by the pressure, then we have deposited into the tissues the contents of the syringe and we begin to appreciate the results or the effect of the morphine.

A volt is an electrical unit of pressure. An ampere is an electrical unit of the rate of flow. An ohm is an electrical unit of resistance.

It is plain now that we cannot have a rate of flow (amperage) of the morphine solution into the tissues without having an adequate amount of pressure (voltage) exerted upon the piston to overcome the resistance (ohms) of the tissue. We can appreciate the meaningless remark that a few thousand volts were passed through a criminal during an act of electrocution. It is equivalent to exerting much pressure upon the piston of an empty syringe.

Now that we understand the value of the terms volt, ampere, and ohm, we may attempt an explanation of the term, high frequency. We distinguish two main sources of supply, the direct current (DC) and the alternating current (AC). For the purpose of producing the high frequency current the alternating current is the one of choice. The ordinary alternating current derives its name from the fact that the current alternates its direction 120 times each second. This current flows in one direction for 1/120 of a second, then ceases entirely for an inconceivably short space of time, then directly changes its direction. When the current has thus flowed in one direction for 1/120 second and has changed its direction for another like period, it has completed its first cycle. We have therefore sixty cycles and 120 alternations during each second.

If such an alternating current is passed through a primary coil, inductions are set up in any secondary coil which may happen to be near it.

The primary coil consists of a relatively few turns of coarse wire, while the superimposed secondary consists of thousands of turns of fine wire. The ratio of these turns may be to each other as one is to 1,000.

This ratio of one to 1,000 is of considerable importance, for if we remember that our original current which passed into the primary coil was approximately 100 volts, then by multiplying this voltage with the ratio of 1,000 we have 100,000 volts coming from the terminals of the secondary coil. This increase of voltage in the secondary coil has been gained at the expense of amperage. Such a device as a primary current, inducing a secondary of higher voltage, is known as a "step up transformer." In the same manner, a current of high voltage and low amperage can be passed directly into the former secondary coil, the resulting induction in the former primary coil will be one of lower voltage and correspondingly higher amperage. Such an arrangement is therefore designated as a "step down transformer."

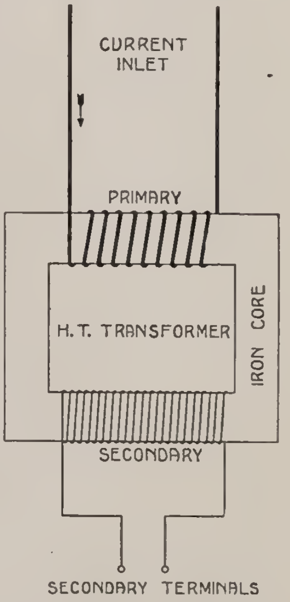

Fig. 1.

In the production of the high frequency current the primary current is at first stepped up to secure the necessary tension. A tension of 100,000 volts is sufficient for our purpose. Such a current is then led into a pair of Leyden jars or other similar condensers. A condenser is a device or arrangement where some electrical capacity such as tin foil, salt water, or even the human body, charged with an electric current, is separated by some nonconducting material such as air, glass, fibre, or hard rubber, from some other electrical capacity. A Leyden jar, therefore, is a perfect condenser. Here we have a glass jar which is a nonconductor. The inside is either filled with a solution of salt water or coated with a layer of tin foil. The outside of the jar is covered with tin foil. We have here two good electric capacities separated by the nonconducting glass.

The previously created high tension current is passed by a metal conductor to the inside of the Leyden jar. One terminal of the secondary coil ends in one jar, while the other terminal ends in the other jar.

Let us revert for a minute and recall to mind that we were making use of an alternating current in the primary wire. This current flows in a certain direction for 1/120 second. We will try to understand what happens during this one alternation. Before the current from the secondary coil reaches the Leyden jar or condenser, we have a movable spark gap. When the spark gap is closed, equalization of the positive and the negative ends of the secondary coil takes place through this path. Every electric current takes the path of least resistance.

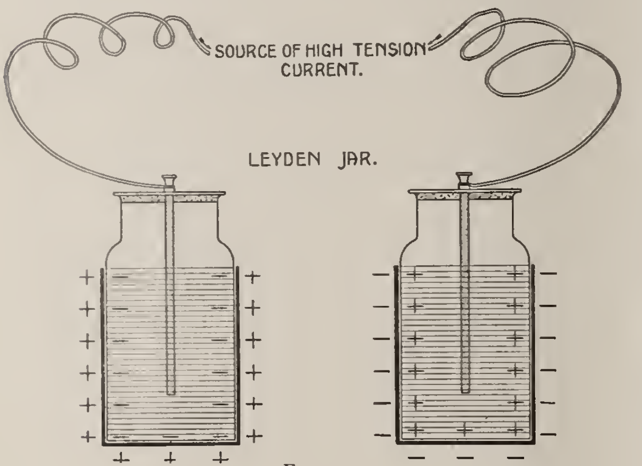

Fig. 2.

When the spark gap is open never so little, it offers a certain resistance to the current; as a consequence the current spreads all over the inside of the jar until sufficient pressure has been created by the accumulation to overcome the opening or space in the spark gap previously created. The result of this arrangement is that the jar is kept filled with a stress equal to the stress required to break down the distance of the spark gap. The greater the spark gap, the greater the stress in the jar. The spark gap is used as a control. The greater the voltage, the greater the amperage.

To return to the Leyden jars. As soon as the inside capacity of the Leyden jars becomes charged with their respective electricity, say positive, an equal amount of negative stress is induced upon the outside capacity of the same jar. One jar on the inside is electropositive, while the other is electronegative. The inside of the jars is always balanced by the induction of an equal amount of the opposite electricity.

If we take a spiral of a certain size and number of turns of wire and connect the outer sides of the two jars, we have furnished for the jars a path over which equalization can take place. In other words, we have furnished a short circuit. If two wires are attached to the ends of the spiral, or solonoid, as it is termed, the outside capacity of the Leyden jars is thereby increased and some of the current spreads over these two wires.

In the ordinary high frequency machine the patient is placed between the terminals of these two wires. When a patient is so attached, each time that an equalization takes place between the outer coating of the jars the patient shares in this equalization, because he is a part of the outer capacity. Whatever happens to the outer capacity of the jars also happens to the solonoid and the patient. When equalization takes place between the jars, an oscillating current is set up. These oscillations are strongest in their beginning and gradually reach a zero point. To understand these oscillations, let us imagine a steel spring put on tension. As soon as the spring is released it overshoots its mark, and, like a pendulum, gradually comes to rest. There may be from ten to one hundred such oscillations in each equalization.

Bearing in mind that electricity travels at about the same speed as light, which is 186,000 miles a second, we may be able to form an idea as to how many times the inside space of the Leyden jars or condensers can be covered during each alternation of the primary current.

If the inducing current travels 186,000 miles a second, then in 1/120 part of a second it covers 1,550 miles.

If the inside of the jars measures three inches from the centre to the periphery, the space can be covered several million times during each alternation. Since each primary alternation causes at least ten secondary alternations, we may have millions upon millions of alternations a second.

From such figures we see that this current is justly entitled to the title "high frequency."

Most high frequency machines are built upon the foregoing underlying principle. For a long time the profession has been aware of the fact that the voltage or tension in most of the machines was unnecessarily high. The noise from such machines was nerve racking to the patient, and the spark gap could not be kept in order on account of the enormous amount of heat generated in it.

In the Wappler high frequency machine, the current that ordinarily goes to the patient is passed into a primary coil of many windings, which induces a current of lower voltage and higher amperage into a movable secondary with fewer windings. In other words, the current is stepped down from a high tension to a low tension current. The movable coil enables the operator to vary and to control the dose from a current that is hardly perceptible to one of 3,000 milliamperes.

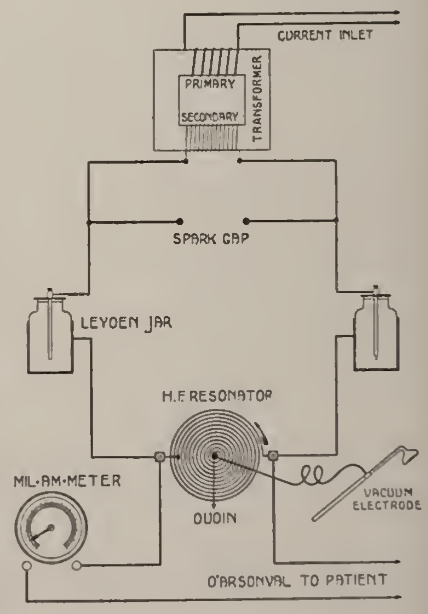

Fig. 3.

When several thousand milliamperes can be passed through a patient with alternations amounting to several millions a second, we have a therapeutic agent in diathermia (heating through) that surpasses all human expectations.

231 West Ninety-sixth Street.

PRIMARY SYPHILIS OF THE RECTUM.

Report of a Case,

By W. E. Jost, M. D.,
St. Louis;
And R. B. H. Gradwohl, M. D.,
St. Louis.

Primary syphilis of the rectum is rare. It is, of course, classified with extragenital chancres. According to Fournier's statistics from 1,124 cases of extragenital chancre we have the following data:

TABLE I. FOURNIER'S STATISTICS.

Cephalic region	849	Mouth	729	Lips	567
				Tongue	75
				Tonsils	69
				Gums	11
				Palate	4
				Mucosa of cheek.	1
		Face	119	Chin	54
				Cheek	24
				Eye	21
				Nose	18
				Forehead	2
		Scalp	3		
Upper extremites.	70				
Anus and perineum	78				
Breasts	5				
Trunk	33				
Lower extremities	14				
Cervical region..	14				

TABLE II. STATISTICS OF E. GAUCHER IN 135 CASES.

Cephalic region	98	Mouth	81	Lower lip	30
				Upper lip	21
				Tongue	12
				Tonsils	12
				Labial comissures	3
				Gums	3
				Mucosa of cheek.	1
		Face	16	Chin	10
				Jaw	5
				Forehead	1
		Scalp	1		
Trunk	24	Pubic region	6		
		Anus and perineum	12		
		Breast	6		
Upper extremity..	8	Forearm	1		
		Arm	7		
Lower extremity..	5	Inguinal region ..	2		
		Thighs	2		
		Legs	1		

It may be seen from these figures that cephalic chancres constitute perhaps seventy-five per cent. of extragenital chancres. Most of them occur upon the lips, indicating that transmission is by kissing. As for anal chancres, they are observed in women more than in men, usually *a præpostera venere;* in man this is always the case. They are classified as anal, perianal, and rectal. It is to the latter class that the case we report belongs. The perianal chancre resembles a fissure in appearance. The edges are everted and the base is indurated. More than anything we know, its appearance may be compared to an anal fissure that has been cauterized. The anal chancre may be intraanal and may not be seen unless the anal opening is stretched. According to Fournier, it appears as a mere red erosion, composed of two segments which fold upon each other like the leaves of a book. The true rectal chancre, which is very rare, is situated three to four cm. above the sphincter. Bogrow observed one as high up as eight cm. Often it is discovered only in a patient with already pronounced secondaries, where after searching in vain for an initial lesion we are told by the patient that he has had pain upon defecation and that the discharges are colored red from blood. By speculum examination the lesion is then discovered.

It has been noted that there is an accompanying lymphadenopathy in these cases in the external inguinal glands, as was the case with our patient. It must be remembered that inguinal gland enlargement occurs in these cases through the anastomoses between the lymphatics in the concavity of the sacrum and those in the groin. The history of the case is as follows:

Case. The patient was referred to one of us (Jost) by Dr. L. A. Mendoza, on May 3, 1916. He was a French Jew, twenty-nine years old, presenting some characteristics of effeminacy; a waiter by occupation. He complained of a swelling in both groins and a soreness in the rectum. Before coming under our observation he had consulted several other medical men, who had simply ordered local treatment, but had ventured no diagnosis. His rectal trouble had been very annoying to him for about three months prior to the first visit to us. He gave no history of any cutaneous changes before or subsequent to our examination.

Upon rectal examination a well defined lesion was seen upon the anterior wall of the rectum, beginning at the middle part of the sphincter and extending upward. The lesion was single and about the size of a twenty-five cent piece. There was little if any discharge. There was an accompanying bilateral inguinal lymphadenopathy. It might be added that the chancre was fan shaped, as if it were an extension of the mucosa.

Without making any direct examination of the lesion for spirochetes, the blood was examined, resulting in a strongly positive Wassermann and Hecht-Weinberg-Gradwohl test. The patient, upon hearing our opinion of his case, confessed that he had exposed himself to the sexual attack of a sodomist.

An immediate injection of arsenobenzol was given, and within two days the lesion began to disappear rapidly and fade in color. On the fourth day the lesion had completely healed and the tissue covering it had taken on the appearance of the surrounding mucosa.

928 North Grand Avenue.

THE ORAL ADMINISTRATION OF ADRENALINE.

By Henry R. Harrower, M. D., F. R. S. M. (Lond.),
Los Angeles, Cal.

The active chemical entity prepared from the adrenal medulla is oxidized and destroyed very easily in the body. This accounts for the ephemeral effects which follow its administration as a remedy; and also the comparative rarity of the symptom complex of hyperadrenia. *In vitro* adrenaline is quickly destroyed by numerous reagents and it has also been shown experimentally to lose its activity when in contact for a short time with an artificial gastric juice under conditions as nearly similar as possible to those in the stomach. If adrenaline is given by mouth, and the stomach is evacuated ten minutes later, it is usually impossible to detect this substance by colorimetric chemical measures. In the fasting stomach this disintegration is accomplished in almost the same time, though here the writer is by no means sure that this really means that the adrenaline is destroyed, for some of it is absorbed.

All these technical experiences have led to a quite natural impression that adrenaline was not effective when given by mouth, and that to obtain other than the well known results, it must be given by hypodermic or intravenous injection. There are not a few references in medical literature, including that of the manufacturers, which indicate that this idea is well grounded in the minds of the profession.

For years I have been convinced by personal experiences that this opinion was misleading, and am confident that unquestioned therapeutic effects have followed the oral administration of adrenaline.

In a short communication to the editors of the NEW YORK MEDICAL JOURNAL (July 8, 1916, p. 94) Leland Boogher relates some interesting personal experiences following the use of fifteen minims of adrenaline solution (presumably the standard one in 1,000 solution) in a tablespoonful of water by mouth for the relief of excruciating abdominal pain due to an abscess in the transverse colon. Boogher has since recommended this measure as an analgesic remedy for gallstone and renal colic, and "it gave splendid relief." This reference emphasizes what is probably an original application of this much used remedy; and credit for this should be given to Dr. George Richter, of St. Louis, who prescribed the treatment outlined above.

However, this experience is also corroborative evidence of a well established fact, still denied in many quarters, that adrenaline *per os* is both potent and useful. In *American Medicine* a number of items have been reported which substantiate this view. In the issue for April, 1915 (p. 253), there appears an article entitled Giving Organotherapeutic Products by Mouth, in which reference is made to the prevalent but mistaken notion as to the availability of many organotherapeutic extracts when given *per os*. Reference was there made to a statement to the effect that "these (organotherapeutic) extracts, with the possible exception of thyroid, are destroyed in the stomach; hence it is useless to give them unless hypodermically." The writer then proceeded in the following terms: "This is not true, and the statement can be easily disproved. . . . Why, if organotherapeutic remedies generally are destroyed by the digestive juices, should thyroid be the lone exception to the rule? Wherein does the active principle of the thyroid differ in its absorbability or destructibility from the hormones of the adrenals, pituitary, or gonads? The most conclusive and practical proof of the inaccuracy of such a position would be to have those who make such statements (or believe them) take, say, an ounce of one in 1,000 adrenaline chloride solution—it contains less than half a grain of the adrenal active principle —and note carefully if there is not a considerable modification of the circulatory equilibrium!"

Several of the statements as to the destructibility of adrenaline when given by mouth appear in the publications of the American Medical Association, though, curiously enough, in the weekly department on Therapeutics in the *Journal A. M. A.* (October 16, 1915, p. 1366) there is a brief consideration of the emergency treatment of sudden cardiac failure from which the following statement is cited: "Epinephrine may be given in a dose of five drops on the tongue, which may be repeated in half an hour if advisable. . . . All of the foregoing (including strychnine, hot coffee, camphor, etc.) are quick acting treatments." This casual statement is of unusual interest, since the use of epinephrine (which, by the way, is not obtainable on prescription, as there is no such preparation on the market, but is presumably intended to mean adrenaline) is advised to be given by the mouth, contradicting statements in the *Journal A. M. A.* and elsewhere which indicate that this drug is useless given in this manner; and here, be it noted, this remedy, in a dose of only five drops on the tongue, is classed as a "quick acting" cardiac stimulant.

There are a number of other references to the effective administration of adrenaline by mouth, a few of which will be referred to shortly. It should be understood, however, that such fundamental errors as the one under discussion are due to the drawing of conclusions from laboratory experiments alone. We grant that adrenaline is "digested" in the test tube. It is easy to prove that it cannot be recovered from the gastric contents after being in the stomach for only a short time. None will deny that it is rapidly and thoroughly oxidized. But adrenaline is also very easily absorbed, as every rhinologist knows and as any physician can quickly find out if he cares to hold a dram or two in his mouth for a few minutes. Is it not possible, then, as the writer suggests, that the factor of destruction in the stomach is not concerned at all, but that much or all of the active principle is taken up by the mucous membrane of the mouth, palate, esophagus, and cardia. thus enabling it to exert its therapeutic effects and to maintain its reputation as a "quick acting" remedy when given by mouth?

In connection herewith it should be recalled that the administration of hormones—and adrenaline is certainly a hormone and has been quite properly called the "chromaffin hormone"—brings about physiological effects in two ways: First, by the direct action of that part of the actual substance administered; and, second, by the increased production by the organism of the hormone corresponding to that which is given. In other words, when we give adrenaline, not only do we get the direct drug effect from the dose which is absorbed, but at the same time we are increasing the capacity of the adrenal medulla to produce more of its chromaffin hormone This important principle of organotherapy is embodied in Hallion's law of homostimulation: "Extracts of an organ exert on the same organ an exciting influence which lasts for a longer or shorter time. When the organ is insufficient it is conceivable that this influence augments its action, and when it is injured that it favors its restoration."

We know, from many experiences with thyroid therapy, that with a presumably normal or even a slightly deficient thyroid, certain doses of thyroid extract will bring about symptoms of hyperthyroidism the results of which are not directly due to the drug administered, but to the increased thyroid activity, and these results remain long after the comparatively small amounts of thyroid which were given have been used up. This shows that the principle of homostimulation applies to normal as well as disordered glands, and this is by no means impossible with the adrenals as well as with the thyroid.

To lend emphasis to the position taken by the writer, as well as to Boogher's brief but interesting communication, a few clinical reports from recent literature may advantageously be collated here:

Hutinel (*Arch. de méd. des enfants*, February and March, 1915) recommends three or four drops of adrenaline one in 1,000, diluted, every two or three hours, as a part of the treatment of severe infectious diseases in children. Each child may receive as much as twenty minims a day by mouth, and Hutinel remarks that he has never obtained so much benefit from the usual supporting measures and that the effects are remarkable even in the gravest cases, since the blood pressure is increased and there is an immediate response in the general mental and physical condition, while the pulse rate is reduced and diuresis is favored.

M. H. Smith (*Medical Record,* October 2, 1915, p. 586) reports having successfully treated several cases of Rocky Mountain spotted fever with ten drop doses of adrenaline solution every four hours This obviated the prostration common in these cases, convalescence was established earlier than usual, and there was an apparent beneficial effect upon the course of the disease. That the remedy given by mouth was "quick acting" is emphasized by Smith's remark that within a few minutes of the administration of each dose, a fullness of the pulse and a fading of the eruption were noticeable.

Not much has been done in this country with the use of adrenaline for the treatment of nephritis, though at least five articles have appeared in current Italian medical literature speaking well of this method. The most recent reference is abstracted in the *Journal A. M. A.,* June 10, 1916. This abstract from *Il Policlinico* (April 30, 1916) may be cited in full: "Borelli reports two cases of acute and one of chronic nephritis in which remarkable benefit was realized by epinephrine[1] treatment. One patient was a child of nearly five years, the others were men of fifty and sixty-two. He gave the child sixteen drops a day of a one in 1,000 solution of epinephrine, four drops at four hour intervals. The adults were given forty drops a day, eight at a time. Ercolani called attention, in 1910. to the benefit from epinephrine by the mouth in nephritis, commending the harmlessness, ease, and efficacy of this method of treating kidney disease, which has proved its usefulness again and again, and Borelli's experience has confirmed his statements."

Previous to this report another exhaustive study on the subject was published by Silvestri (*Gaz. d. osp. e d. clin.,* September 1, 1915), in which he analyzes the reports of a number of other clinicians, adds several personal experiences, and proves that adrenaline is a most valuable aid in the acute stages of nephritis, but of little value in chronic conditions. He also tells of the experiences of Fede, who found this procedure comparatively more effective in children, since in them the elasticity of the renal glomeruli and tubules is greater, while the adrenal glands are proportionally larger in children than in adults (presumably being more susceptible—quantitatively—to the homostimulant action referred to previously). Silvestri suggests that one or two minims of the one in 1,000 solution of adrenaline chloride be dropped on the tongue every three hours—the total amount given *per diem* being regulated by the clinical response of the patient. For adults the dose may be larger.

There are also numerous reports in the literature of the therapeutic efficacy of total adrenal gland, and of course this is given *per os* in tablet form. In a recent monograph on the Drug Therapy of Cardiovascular Diseases, Satterthwaite (*Int. Clinics,* 1, 1916, page 26) recommends desiccated adrenal gland as a useful vasomotor tonic in doses of two and a half grains three times a day, and remarks that single doses as a rule will relieve palpitation in a comparatively short time. The active principle of the desiccated gland is naturally similar to that which is available in a pure state, and the favorable experiences with total adrenal gland therapy, by mouth of course, is additional proof that the position of those who have contended that the oral administration of adrenaline is useless, is fallacious.

715 BAKER-DETWILER BUILDING.

ANESTHESIA REVIEWED.

By JAMES T. GWATHMEY, M. D.,
New York.

(*Continued from page 830.*)

NITROUS OXIDE.

	Nitrous oxide gas (Bevan).	*Nitrous oxide and oxygen (Gwathmey).*
1. Safety.	Gas for short anesthesia, such as pulling teeth, opening abscesses, etc., is the safest anesthetic known. In prolonged anesthesia, a half hour or more, gas is now known to be more dangerous than ether. I refer now to the use of gas and ether in the hands of experts. In nonexpert hands, gas in prolonged anesthesia is much more dangerous than ether.	Gas should never be used alone, as it is unsafe even in *short* operations. Some surgeons in opening abscesses, and some dentists in extracting teeth, have become so accustomed to asphyxiating their patients, removing the mask and then operating, that the words "asphyxia" and "anesthesia" are synonymous with many of them. As asphyxia is the principal danger with this anesthetic, and as oxygen in a measure removes this danger, it should always be used in combination. But even in combination it is safe in *some* cases and dangerous in others. The *longer* the operation the *easier* and *safer* it becomes to maintain anesthesia.
2. Comfort.	Gas affords the most agreeable inhalation anesthesia.	With oxygen, a most agreeable anesthetic.
3. Relaxation.	Gas is not an efficient anesthetic, such as chloroform or ether. Complete anesthesia and complete relaxation for prolonged periods are difficult to maintain, and are not possible in a considerable proportion of cases.	With proper preliminary medication, complete relaxation for prolonged periods is easily maintained.
4. Control.	Gas can at once be stopped at danger signals, and the agent already in the system is rapidly eliminated, more rapidly than any other agent.	If patient is asphyxiated, removal of mask alone will remedy that trouble. If a weak heart becomes dilated, the issue is doubtful.

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[1] "Epinephrin" is the term used uniformly in all the publications of the American Medical Association, although in this instance the title of Borelli's original article is as follows: "Cura della nefrite con la soluzione di *adrenalina* nella pratica di condotta."

5. Simplicity.	The apparatus for giving gas is not very complicated, more so, however, than that used in giving ether and chloroform. It is not so widely adaptable as ether. The apparatus is heavy and cumbersome, and somewhat difficult to transport. This objection can be overcome.	Apparatus is less complicated and lighter than that used in giving ether or chloroform.
6. Aftereffects on Blood, Tissues, and Viscera.	Aftereffects on blood tissues, and viscera, practically negative.	Same.
7. Complications.	Vomiting occurs in but a small proportion of cases.	Same.
8. Effects on Immunity.	It has little or no influence on immunity.	Same.
Conclusions.	Gas should be one of the general anesthetics employed in the surgical clinic. Its place should be for short anesthesias in which unconsciousness is desired and local anesthesia is not applicable—in reducing fractures and dislocations, opening abscesses, and in some more prolonged operations in which for special reasons gas becomes safer than ether, such as operations on the urinary organs with kidney insufficiency. A surgical clinic which does not frequently employ gas anesthesia is, from the standpoint of anesthetics, a poorly conducted clinic.	As ninety per cent. of the deaths with this anesthetic, as with all others, occur in the first few minutes, it should never be used in short operations, except by an expert. Nitrous oxide and oxygen will be used less as a routine method as the profession becomes more thoroughly acquainted with the fundamental principles underlying the proper administration of ether and chloroform.

INTRAVENOUS ANESTHESIA WITH ETHER.

1. Safety.	Both clinical and laboratory work shows that it is a dangerous method. Clairmont and Denk, after careful experiments on dogs, have concluded that it is too dangerous to employ in clinical work. Kuttner has two cases of lung embolism in twenty-three cases.	Like all others, when thoroughly understood, this is a perfectly safe procedure.
2. Comfort.	It is an agreeable anesthetic, as it does away with the disagreeable odor and irritation of inhalation of ether.	Same.
3. Efficiency.	It is efficient, but the border line between anesthesia and a toxic dose is too narrow.	Efficient; border line between anesthesia and toxicity, wide.
4. Control.	When once injected into the circulation, it is beyond immediate control.	Under control at all times.
5. Simplicity.	The apparatus and technic are complicated and require special watchfulness. It could not be generally adopted.	Apparatus and technic simple, and admit of general adaptability.
6. Aftereffects on Blood, Tissues, and Viscera.	Aftereffects are much the same as in the case of ether inhalation.	Compared to the open drop, the aftereffects are entirely in favor of intravenous anesthesia.
7. Complications.	Complications are the same as with ether inhalation.	Infection and embolus are the only dangers. The usual complications of drop ether inhalation are unknown.
8. Effects on Immunity.	Effect on immunity is the same as with ether inhalation.	A more favorable effect than with inhalation ether.
Conclusions.	Too dangerous, too complicated, no special advantages, should be rejected.	This method gives a beautiful anesthesia when the technic of Honan and Hassler(13) is followed. The danger of infection, embolus, and thrombus must always be considered. "The employment of ether in this way seems almost devoid of danger from either immediate or remote complications."

COLONIC ANESTHESIA.

	Intrarectal anesthesia (*Bevan*). (This is an old method introduced as early as 1847, and revived from time to time.)	*Oil ether colonic anesthesia* (*Gwathmey*). (Introduced in 1913.)
1. Safety.	It is not a safe anesthetic.	It is a *perfectly safe* anesthetic.
2. Comfort.	It is not a comfortable method of taking ether.	It has been given to hundreds of patients without their knowing that they were getting an anesthetic.
3. Efficiency.	It is not very efficient.	Entirely efficient.
4. Control.	Much the same as with intravenous anesthesia.	The anesthetist has perfect control of the anesthesia all of the time. It can be lightened or deepened when needed, or concluded when necessary.
5. Simplicity.	The method is complicated, and cannot be generally adopted.	The apparatus required consists of two rectal tubes and a funnel. The technic is as simple as the apparatus. Admits of universal use.
6. Aftereffects on Blood, Tissues, and Viscera.	Aftereffects on blood and tissue same as inhalation anesthesia.	Tissues of colon and lungs not affected, as is tissue of lung with inhalation anesthesia.
7. Complications.	Distention of bowels, very severe, local irritation of colon, with colicky pains and bloody diarrhea, often fatal.	Colicky pains are rare, no local irritation or bloody diarrhea in over 2,000 cases.
8. Effects on Immunity.	Effect on immunity same as in ether inhalation.	The general effect is about the same as with warmed ether vapor inhalation, with the *notable exception* that *gas pains are rare.*
Conclusions.	Rectal anesthesia should be rejected.	*Oil ether rectal anesthesia* will be used more and more as the fundamental principles upon which it is based are known. When properly used in conjunction with local anesthesia, or with blocking or infiltration anesthesia, these latter methods are greatly increased in value.

Endotracheal[1] *anesthesia.* (*Bevan*). (This interesting method, introduced by Meltzer and Auer, has not yet been used in a very large series of cases.)	*Endotracheal*[1] *anesthesia*
1. Safety.	
Robinson collected 1,400 cases with seven deaths, one from lung rupture and one from emphysema.	A few deaths were reported upon the introduction of this method. These deaths were avoidable. Judging from the *large number* of successful cases at Mount Sinai and Roosevelt Hospitals, and at other clinics, this seems to be a safe method. In the writer's opinion it should not be used except when positive pressure is needed.
2. Comfort.	
The same as drop ether which precedes the intubation.	The same as the nitrous oxide-oxygen-ether sequence, which usually precedes it. *Drop ether* takes longer and does not produce the *deep*, safe anesthesia necessary for the introduction of a catheter, and should therefore *never* be used.
3. Efficiency.	
It is an efficient method.	Entirely efficient.
4. Control.	
The same as with drop ether.	A better control than drop ether.
5. Simplicity.	
It requires a complicated apparatus. It requires, first, anesthesia by drop ether and then a change to intubation. It could not be generally adopted.	The "apparatus" is much simpler than the automobile engine, now universally used.
6. Aftereffects on Blood, Tissues, and Viscera.	
Aftereffects same as drop ether.	Aftereffects are much better than drop ether, unless this method has been used as a preliminary.
7. Complications.	
Complications same as drop ether.	Complications unlooked for, unless a poor preliminary anesthetic has been used.
8. Effects on Immunity.	
Effect on immunity same as drop ether.	Resistance is not impaired as much as when drop ether is used.
Conclusions.	
The method is dangerous. It is complicated and it possesses advantages in very few cases. When it was introduced it was welcomed as a simple method which had all the advantages of the complicated differential pressure methods which had been experimented with in thoracic surgery. As a matter of fact, both the complicated differential pressure and the intratracheal methods have practically been largely eliminated as a result of further investigations in thoracic surgery, which have demonstrated the fact that most of the operable cases in thoracic surgery can be done either under local anesthesia or drop ether or gas and oxygen; that the necessity of preventing collapse of the lung when but one pleural cavity is opened was theoretical and not real, and lastly, by the fact that the extensive work in which both pleural cavities are involved and such extensive work as attacking the thoracic part of the esophagus cannot as yet be accepted as warrantable surgical procedures; furthermore, the introduction of the simpler method of intrapharyngeal anesthesia has eliminated the intratracheal method from the field of head surgery, in which for a time it seemed to have a place. On the whole, therefore, intratracheal anesthesia has little place in practical surgery.	The method is now perfectly safe. It will fall into disuse because endopharyngeal anesthesia accomplishes practically the same results without loss of time for insertion of tube. Furthermore, the ether vapor mask (a semiclosed method) is a better procedure than the endopharyngeal.

Endopharyngeal Anesthesia (*Bevan*). (This is an old method introduced years ago and reintroduced from time to time with changes in apparatus. The special advantage is that in mouth and jaw work after the patient has been anesthetized by drop ether, the mask can be removed, the catheter introduced into the pharynx through the nose or mouth and anesthesia continued without interfering with the operative field).	*Endopharyngeal Anesthesia* (*Connell*). (This method was popularized and placed upon a scientific and successful basis in our own time by Karl Connell, of Roosevelt Hospital. It should be used instead of the endotracheal.)
1. Safety.	
It is about as safe as drop ether.	It is much safer than the drop ether method, as a glance at the chart will show.
2. Comfort.	
The same as drop ether, which it succeeds.	It is usually preceded by the gas-ether sequence, but preferably the gas oxygen ether sequence. A quicker, *safer* anesthesia is thus induced, with *all reflexes* abolished, and should be used in preference to the open drop method. This sequence is the usual procedure in New York.
3. Efficiency.	
Not quite as efficient as drop ether, but nearly so.	More efficient than the drop ether, when proper preliminary medication is used.
4. Control.	
Same as with drop ether.	A more even plane of anesthesia is maintained than is ever possible with drop ether. Patients come out of this anesthesia in much better condition than with the drop method.

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[1] The Greek prefix *endo* is preferable for use with "trachea" and "pharynx," both Greek derivatives, rather than *intra*, which is a Latin prefix. It is also more euphonious.

5. Simplicity.	
It can be operated with a hand bellows, but better by an electric pump, if this is kept up in perfect working shape. It can be fairly generally adopted for use in mouth and jaw work.	Compares favorably with all other forms of ether anesthesia.
6, 7, and 8.	
Aftereffects, complications, and effects on immunity same as drop ether.	Aftereffects, complications, and effects on immunity *much less* than with the drop method of ether. Both clinical and laboratory experiments seem to bear out this statement.

MIXTURES AND SEQUENCES.

As already stated, if safety is the first consideration, mixtures and sequences of anesthetics will be used more and more. This seems borne out in part by the work in the laboratory already referred to, and also by statistics. The reader is respectfully referred to an article, Nihilism in Drugs, by Dr. Abraham Jacobi (14), in which he states: "The word polypharmacy contains a reproach to which nobody will submit"; and also, "by the purists among us polypharmacy is called even the prescribing of more than one medicine at one time. . . . There is no ground for the pedantic demand that two medicines with similar action should not be prescribed together." We are not, therefore, disturbed by the reproachful phrase of "shotgun" prescriptions. If, as many physiologists hold, different anesthetics and narcotics affect different parts of the central nervous system, why should not preliminary medication combinations, sequences, and mixtures be used instead of some one drug or anesthetic?

GENERAL CONCLUSIONS.

1. The "drop method of ether" has won unusual and unmerited favor within the past few years, entirely on account of its advocacy by certain eminent surgeons. Its bid for popularity is not on scientific grounds, but on account of the simplicity of administration, and its supposed safety. It should be discontinued for simpler and safer methods. Those wedded to ether by the open drop method, and who have good results and statistics, will get better results and statistics by using ether administered as described. Any anesthetist who can give the open drop ether can readily acquire facility with the *vapor method*.

2. Oil-ether colonic anesthesia should be used whenever the anesthetist is in the way, or whenever the element of fear dominates the patient. The obese alcoholic, who takes kindly to no form of inhalation anesthetic, is the best subject for this special agent.

3. "Gas" should never be used alone. Nitrous oxide and oxygen should take its place.

4. *Preliminary medication of some kind should be used in all surgical cases unless contraindicated.*

5. Sequences, combinations, oxygen, warmth (about 98° F.) are additional factors of safety in the administration of nitrous oxide, ether, ethyl chloride, and chloroform.

6. Anesthesia, like other branches of medicine, is still in an evolutionary state. It is, therefore, wrong to attempt to settle upon any anesthetic or method at this time. The subject should be approached with a free mind. Advice should be withheld unless reinforced by laboratory and clinical facts.

Believing absolutely in the sincerity of purpose of those who advocate the plan of one method for all cases, I am, nevertheless, so convinced of the greater wisdom of suiting the agent and the method to the patient and the procedure that I would be glad of the opportunity of convincing those of the opposing view. *I should be glad, for instance, to demonstrate in any clinic that warmed ether vapor with oxygen is as good from every viewpoint as nitrous oxide and oxygen. I shall willingly demonstrate that modern methods of ether administration are superior in every way to the drop method of ether.*

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40 East Forty-first Street.

TRACHEOBRONCHITIS DUE TO NITRIC ACID FUMES.

Bronchoscopy; Drowning of the Patient in his Own Secretions Averted by Tracheotomy,

By Chevalier Jackson, M. D.,
New York.

Case. David E., aged thirty-five years, pipe fitter by occupation, previously in good health, was admitted to Allegheny General Hospital, complaining of burning in the throat following a two hours' exposure to nitric acid fumes. Half an hour after exposure, his lips became blue. Five hours later, patient fell, becoming unconscious for a few minutes. Then cough, difficulty in breathing, and blueness of lips and face were noticed.

Physical examination (Dr. J. P. McKelvy): Sibilant and subcrepitant rales all over both lungs anteriorly and posteriorly. Fine moist rales heard in axilla. In left axilla and in front inspiration markedly increased. Whispered voice plus. Showers of fine crepitant rales were audible at end of inspiration.

Indirect laryngoscopy. Frothy mucopus could be seen bubbling up and down in the trachea, which seemed full of secretion; but there was no coughing effort to expel them and no glottic bechic placement.

Bronchoscopy showed intense acute tracheitis and bronchitis; the trachea and bronchi were full of frothy mucopurulent secretion. On wiping this away, patches of grayish furred mucosa, with a surrounding areola of intensely engorged cyanotic mucosa, were seen in the trachea and right bronchus.

The patient was cyanotic and at times unconscious. He was choked with his own secretions until he was apparently drowning. Tracheotomy was therefore advised.

Tracheotomy was done by Dr. Walter Dearth and a large full curved Jackson tube inserted, through which large quantities of tenacious frothy mucopus were continuously removed. The temperature, which on admission was 101.3° F., never rose above 102° and subsided to normal at the end of a week. The air passages were cleared by gentle swabbing through the tracheotomy wound. The cyanosis disappeared as the secretions were got rid of. At the end of the fourth day, the patient could cough out the secretions through the cannula. The windows were kept open, and compound tincture of benzoin was vaporized from a croup kettle close to the cannula. Atropine and stimulants were given as needed. The symptoms gradually subsided, and the patient was discharged well at the end of three weeks.

REMARKS.

In view of this and similar cases it would seem that when the physical signs as here noted by Dr. J. P. McKelvy, taken together with the laryngoscopic findings and the absence of cough reflex, all point to the drowning of the patient in his own secretions, tracheotomy should be done in order to give easy access to the lower air passages for the frequent removal of secretions, provided that the basic condition is curable. Manifestly the procedure is not indicated in patients filling up in process of dying of a necessarily fatal illness, such as thoracic cancer, aneurysm, etc., as previously reported.[1] While possibly the frothy, tenacious mucopus could have been removed by repeated bronchoscopies; yet in the acutely inflamed condition of the mucosa bronchoscopy three or four times daily seemed less desirable than tracheotomy. The cause of the feebleness and inefficiency of coughing effort is difficult to explain; possibly it was toxemia or shock.

40 East Forty-first Street.

MALOCCLUSION OF THE TEETH.

Its Pathological Effects,

By Henry C. Ferris, D. D. S.,

New York.

A review of recent pathology discloses a tendency to neglect or to minimize the importance of the oral cavity. The oral cavity should be considered an organ of the human body. With thirty-two teeth of the highest organized physical structure operated by eight pairs of muscles with power only second to those of the heart, with forty-eight ounces of secretion daily, having an enzymic value and a reflex action upon the primary gastric secretion, it compares well with any other organ.

The abnormal locking or malocclusion of the inclined planes of the teeth in this organ are considered the result, rather than an etiological factor in pathological states; but a careful consideration of the relation of the human teeth to the growing organism from the tenth week of fetal life to maturity will greatly modify the accepted pathological theories.

"The Babylonians located the brain in the liver; and it was not until the discovery of the physician, Galen, about A. D. 160, that the brain was acknowledged to be the seat of thought and feeling (Thompson)."

May it not be that scientists in their search for knowledge of the maladies that our system is heir to, guided perhaps by a desire to relieve acute painful conditions, have neglected to study the portal of the alimentary canal, because of its easy access and its supposedly simple anatomical and physiological mechanism? Frequently diseases which are regarded as deep seated and serious, are found to be only symptoms of very simple cause, which the orthodontist locates in the patient's mouth.

Biologists examining saliva have encountered problems worthy of their best study; but so far they have not been able to analyze completely the properties of this secretion. That it contains three ferments and a specialized mucus is sufficient for our present consideration.

This secretion, as shown by Professor Pavloff in his most recent investigation of the secretory glands, is stimulated and specialized by the sense of taste, and controlled by psychic influences from the optic, olfactory, and auditory nerves. Clinical experience has taught the dental surgeon that the services he performs improve the general health of his patients. Dental surgery, therefore, is only a highly specialized form of medical practice, and its field is in one of the most important organs.

The pathologist may take good care of his own teeth, but he pays little attention to the teeth of his patients when studying etiology. The reason for this neglect may be properly credited to the dental surgeon, whose attention has been largely centred on the mechanical restoration of the teeth lost through caries. Moreover, as an association we may be to blame because so few of the records of the physiological benefits derived from our labor have been reported, and not all oral specialists themselves are fully informed as to the influence our region exerts upon the whole organism.

It is rightfully contended that man can live without teeth by natural selection of his food, but these cases are comparatively few, without accompanying pathological conditions. A visit to our hospitals and insane asylums would establish the truth of this assertion. We may exist without one kidney, or with an artificial fistula in the stomach. These cases are rare; but literally thousands are suffering from diseases which slowly and surely are destroying their systems as a result of loss of function of the organ of mastication.

The United States Government does not accept men in army or navy who do not have at least four molar teeth in contact, because statistics have shown that men without molars spend a large portion of their time in hospitals, and become a charge upon the government.

This rule has been adopted after years of experience and tabulated reports; and may be due to a mechanical locking of the inclined planes of the teeth. When in normal occlusion, thirty-two teeth have 206 inclined planes of their cusps in contact, and assuming this as representing 100 per cent., we may calculate the mechanical functioning ability of this organ. The loss of three first molars decreases the organ to seventy-four per cent. of its normal ability to reduce the carbohydrate food, as the tongue selects these teeth to perform that function.

In Class I (Edward H. Angle's classification) the molars are in occlusion, but the premolars and the incisors (patterned after the carnivora) are in malocclusion. These teeth are involuntarily selected by the tongue to reduce meat and proteid food.

In Class II, Division I, we have both classes of teeth in malocclusion. As in Class III, owing to the abnormal relation of the mandible to the head, we find the angle of contraction of the muscles altered, which results in reducing the power; thus minimizing the normal mechanism of the organ.

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[1] *Laryngoscope.*

An analysis of the feces of seventy-five patients before and after the restoration of missing teeth, is reported by Professor A. Michels, of Würzburg, Germany, in the transactions of the Odontological Society of Frankfurt, to show the value of the function of the molar and premolars upon digestion.

Acknowledging that these abnormalities do reduce the function of this organ, what effect has this condition upon the pathological condition? In order to study this subject in the space allotted, we shall divide malocclusion into three classes:

1. Malocclusion due to congenital or hereditary tendencies.
2. Malocclusion where the child is normally born and the developmental forces are interfered with after birth by infectious disease, traumatic injury, etc.
3. Malocclusion due to the loss of function of the organ owing to environment, dietetic habit, or mutilation of the arches by extraction.

We shall consider only the latter class, dividing it again into primary and secondary. We assume that all are familiar with the effect upon the anatomy of the head as influenced by the loss of function in the growing child.

First, a loss of function lateral or bilateral, resulting in an underdevelopment of the bones of the head as proved by the experiments of Dr. Lawrence Baker, of Boston, Mass. On account of this lack of development, we produce mouth breathing, and disturbances of the respiratory system. This interference with nasal breathing results in abnormal development of the nasal bones and tissues, producing curvature of the vomer, adenoids, polypi, etc.

The circulatory system is affected as a result of insufficient oxidation of the blood, owing to a contracted thorax in this class of cases, voluntarily reducing the lung capacity in an effort to overcome thermal shocks to the lung tissues. It is rightfully said "we may live forty days without food, three days without water, but only three minutes without air." Premature extraction of the deciduous teeth may prevent normal nasal breathing by reducing the diameter of the anterior nares.

DIGESTION.

The digestion of carbohydrates is reduced in varying degrees. A patient with a twenty per cent. efficiency has to chew fifty times to accomplish the same reduction. Whoever bolts his bread overtaxes the powers of gastric and intestinal digestion, and diseases of the stomach and intestines result.

"It is true that in laboratory experiments with test tubes the pancreatic secretion has a stronger and more complete hydrolytic action upon the digestion of starch than saliva, but if salivary digestion of mankind does not act normally upon starch, the pancreatic secretion is never sufficient to digest this material. The undigested starch that remains partly ferments and is accountable for pathological states such as cardialgia, duodenal catarrh, and fermentative lientery with air bubbles." (Felix von Oefele.)

This undigested starch fermenting in the intestines produces lactic and acetic acids, and establishes acidosis, autointoxication, and a chronic irritation to the kidney and urinary organs, with its accompanying maladies. A vicious circle is established, showing high acidity in the salivary secretion as in urine. A coefficient of the undigested food is greatly increased, while the index of autointoxication is decreased. These findings are sufficiently pernicious to be considered primary etiological factors in most any disease of the body.

NERVOUS SYSTEM.

The nervous system is influenced by the lesions produced in the stomach and intestinal tract; and because of the loss of development of the bones of the head and face, small orbits, small foramens, and small antra for the type result. It is beyond our power to analyze the effects of the underdeveloped brain box as a result of loss of function of the masticatory muscles of the growing child; but in view of the present surgical operations upon the skull and the marvelous effects of trephining upon the general nervous system we must pause before discrediting the possibility of depressed function of a brain in an osseous cavity smaller than the architectural plan for any individual type.

Infantile forms of epilepsy are influenced, if not entirely cured, by the return of the teeth to their normal position. I have had two patients, one in a medical man's family and one under the observation of a medical attendant. Both patients had fifty attacks a year, but after two months of teeth movement, with the expansion of the superior arch, the attacks entirely disappeared.

Radiographic records of Class III cases frequently show an enlargement of the pituitary body, and the mental balance is markedly influenced in Class II, Division I, cases, while the scholastic ability is immediately improved after correction in this class.

REPRESSIVE TISSUE CHANGES.

Such changes are marked locally, first in atrophy of the alveolus. Caries is increased, owing primarily to the accumulative spaces between the teeth and the inability of the tongue and cheek muscles and the lowered physiological value of the saliva to cleanse the surfaces; secondly through lowered vitality of the system, reducing the blood pressure to the teeth and rendering them more susceptible to caries; and the metabolism of the tissues is disturbed by insufficient nourishment.

PROGRESSIVE TISSUE CHANGES.

In Class III we find an enlargement of the body of the mandible and accompanying hypertrophied tonsils, and in most cases of acromegaly the upper arch is mutilated by extraction of teeth and malocclusion is progressive.

INFLAMMATION.

Locally, in mutilated cases, we find teeth loosening; pyorrhœa alveolaris, stomatitis ulcerosa, papilloma, carcinoma of the tongue and mucosa, ulcers of the stomach and duodenum are not uncommon, and the urinary organs have their share of irritation in acidosis.

PLANT PARASITES.

The mouth breather dries the mucous membrane, reducing the natural protection of the secretion to tissue and tonsil, carrying large quantities of bacteria to the lungs, increasing their liability to infection from this source. These patients are susceptible to phthisis, pneumonia, diphtheria, and follicular tonsillitis. The tonsils become impaired, permit of streptococcic infection, resulting in heart and stomach lesions, and we seldom see patients with a Class II, Division I, over forty-five years of age, in spite of their large numbers in youth. They have passed to another world.

MALFORMATION.

As previously stated the spine is curved, ribs are underdeveloped, rickets, clubfoot, and knockknee, disturbed metabolism, and bone diseases of the head and face follow. It is said that all specialists can trace diseases to their own region of activity, and some may take issue with many of the statements made in this paper, but show me the case of chronic lesion in the body, and I will show you a defective mouth, or if perchance the occlusion is normal, I will prove with a series of pills of a given diameter that the subject is a "bolter" of his food and neglects the function of mastication. This function is largely voluntary and, therefore, much more difficult for the specialist to control than any other.

This paper deals with only one class of patients, but I have treated the congenitally defective and greatly improved their hearing, eyesight, digestion, and metabolism, and caused them to develop where the chances of life were small.

This subject is in its infancy, and as we learn to trace the etiology of diseases, pathologists themselves will, in due time, come to appreciate the value of thirty-two teeth in normal occlusion. If this attention is not given, they must look to their laurels, for many pathological conditions yield to normal functions of the organ of mastication without medication.

104 East Fortieth Street.

AUTOTHERAPY IN IVY POISONING.

By Charles H. Duncan, M.D.,
New York.

In the New York Medical Journal for September 2, 1916, was an editorial article reviewing an article by Dr. J. M. French that appeared in the August, 1916, issue of *Clinical Medicine,* in which the writer stated that ivy poisoning may be cured or prevented by chewing the young leaves of the plant and swallowing the juice. The writer acquiesces in every respect with the editorial comment on this method of treating ivy poisoning which was as follows: "The remedy appears to be in accord with the theory and practice of Dr. Charles H. Duncan, who will pounce upon this case report as a fine example of his beloved autotherapy."

In the New York Medical Journal for December 14 and 21, 1912, the writer stated in an article under the title of Autotherapy: "Disease may be said to be the proving of one or more toxins. Symptoms are the expression, or the language, of toxins. *The cure of disease is brought about by placing the exact toxins that cause the symptoms in healthy tissues.*" This method of treating ivy poisoning is nothing more or less than treating the symptoms with the substance that caused them, or an autotherapeutic procedure, and has long been known and employed successfully by the writer, as in other forms of anaphylaxis.

In Fairmount Park, Philadelphia, it was the custom a few years ago upon hiring park hands, to instruct them, upon clearing away poison ivy, to chew a few leaves of the plant as a preventive to the well known cutaneous eruption. Last spring, this autotherapeutic method of preventing ivy poisoning was introduced in Bronx Park, and several of the workmen employed it as a prophylactic. It is noteworthy that no one who chewed the leaves suffered afterward from poisoning.

Case. C. V., male, living in the country, one evening when defecating in the woods was unfortunate enough to select a spot that was covered with poison ivy. When seen, three days later, he presented the most terrible spectacle of ivy poisoning the writer had ever seen. The cutaneous manifestation was severe, covering the whole scrotum, penis, groin, rectal and gluteal regions. Each testicle appeared to be the size of the fist, and the penis several times its natural size, puffy, and edematous. He was instructed to return to the spot of evacuation and to select a leaf from this particular plant, a part of which he was instructed to chew and to swallow the juice. This he did. There was a reduction of swelling, and the symptoms of itching and burning rapidly subsided, so that within three days he was able to resume his duties as butler. The reason for instructing him to return to the spot and chew the leaves of this particular plant was that there are several species of ivy and in attempting to treat the patient with the tincture from the fresh plant I might have given him a tincture of some ivy other than the one with which he had been poisoned.

The species of Rhus that are common throughout North America are Rhus glabra, Rhus venenata, Rhus toxicodendron, and Rhus aromatica; the last is the least poisonous. This method of treating ivy poisoning has long been known and employed by homeopathic physicians, who considered the cures resulting from the treatment as homeopathic cures, till the writer pointed out the fact that it was not a similar remedy, but the exact or the autotherapeutic remedy, for it treats the symptoms with the exact unmodified substance that caused them, and not a substance that causes a similar set of symptoms. Their failures, which they do not always record, may result from giving, as the remedy. a tincture of Rhus other than the one with which the patient was poisoned.

In the same way phosphorus poisoning may often be cured by giving the patient small doses of phosphorus, often repeated. The failures in this instance may have been from the same cause, but the percentage of cures has been such as cause it to be widely employed. The remedy given may not be of the exact chemical composition as the poison, often an impure product, while the substance given as the remedy may be, and usually is, the pure product.

Other autotherapeutic measures that may be cited are: Giving the unmodified snake and scorpion venom to cure the respective bites: and giving the virus of the mad dog to cure the effects of its bite. Other cures of a similar nature could be cited where the *exact unmodified substance that caused the symptoms is employed as the curative remedy.* This is the principle upon which autotherapy rests.

6212 Broadway.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

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All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXV.—How do you treat furunculosis? (Closed.)

CLXXVI.—How do you treat Colles's fracture of the radius? (Answers due not later than November 15th.)

CLXXVII.—How do you treat delirium tremens? (Answers due not later than December 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXIV has been awarded to Dr. Melville A. Hays, of New York City, whose paper appears below.

PRIZE QUESTION NO. CLXXIV.

THE TREATMENT OF IVY POISONING.

By MELVILLE A. HAYS, M. D.,

New York.

The type of dermatitis venenata due to contact with Rhus radicans, or poison ivy, is caused by the active principle of the plant, toxicodendric acid, which is a volatile oil or oleoresin. Poison ivy grows in great profusion on rocks, trees, shrubs, stone walls, etc., in fields, woods, and parks; poisoning may occur at all seasons, but is most frequently met with in the summer months.

Sodium bicarbonate being an alkali, neutralizes acids; it also has the property, not usually mentioned in textbooks, of saponifying light oils and certain fats. Since the causative agent in ivy poisoning is both an acid and an oil or oleoresin, sodium bicarbonate is naturally the best remedial agent for the treatment of the condition. It is used as follows:

The affected parts should be well sponged with a cold saturated solution of sodium bicarbonate, and wrapped in gauze which has been thoroughly moistened with the same solution, the moist condition being maintained by adding fresh solution, and covering the entire dressing with oiled paper or oiled silk; on the face or other parts of the body, where it is difficult or impossible to retain dressings, the parts may be frequently sponged with the solution, or a thin paste made with cold water may be applied. Hair is turned a dirty brown color by strong solution of sodium bicarbonate, hence diluted Burow's solution (solution of aluminum acetate) or a one in 10,000 solution of mercury bichloride may be substituted for use about the forehead, the moustache, or the beard. In children where it is difficult to retain dressings while asleep, the sodium solution may be used at frequent intervals during the day and replaced at night by a five or ten per cent. watery solution, or ointment of ichthyol; the same method may be used with older persons when appearance is of little importance.

Prevention rather than cure is the aim of medicine. Ivy poisoning may be prevented by thorough washing of the exposed parts of the body with the saturated solution of sodium bicarbonate after every probable exposure.

During nearly five years' service on the new Catskill aqueduct (1909-1913), where poison ivy is always found in abundance, the writer used the foregoing method of treatment in hundreds of cases, both for prevention and cure, with splendid results.

Dr. J. D. Arnett, of Pavilion, N. Y., directs:

Prophylactic. Wash the exposed parts in a saturated solution of sodium bicarbonate or a solution of carbolic acid, one teaspoonful to a pint of water.

Acute stage. Do not cover the eruption with cotton or bandages, but leave exposed to the air, and apply a carbolic acid solution one in sixty every three hours, with cotton compress; apply until vesicles have a whitish appearance. The serum that collects may be washed away gently with sodium bicarbonate solution. Do not rub nor break the vesicles if possible. After the acute stage has subsided and the eruption becomes crusted, apply a zinc oxide ointment, to prevent cracking of the skin. Keep the parts covered for several days. If any constitutional disturbance manifests itself during the acute stage, a saline purge is indicated.

The skin should be kept clean by daily baths, using no soap, but with sodium bicarbonate added to the water.

Dr. H. J. Achard, of Chicago, writes:

It would be futile to enter into the many methods that have been suggested for the treatment of ivy poisoning, because, at most, they afford only temporary and transitory relief. The most successful methods of all those proposed consist in bathing the parts with alkaline solutions, in sponging with alcohol, and in applications of iodine. An interesting method is referred to by Doctor French in *Clinical Medicine* for September, which was proposed by a homeopathic[1] friend of his, and has been very successful for a number of years in a construction gang of railroad workmen, the foreman of which vouches for the efficacy of the treatment from his own experience. It consists in chewing some of the young leaves of poison ivy and swallowing the juice. Since doing so, they have all been free from rhus poison, while before, from eight to ten members of the gang were always laid up during the season.

Personally I have obtained gratifying results from bathing the affected parts in a solution of magnesium sulphate, one heaping tablespoonful to the quart, and in keeping those parts of the body which were affected by the poison, covered with cloths soaked in the same solution. In all cases where this treatment was applied, the irritation diminished immediately and the dermatitis disappeared in the course of a few days. I have in mind a school girl, eighteen years old, whose face and arms were badly swollen and inflamed last summer from rhus poisoning, and who was relieved from her distress in the course of a few hours, although it took four or five days for the redness and swelling of the skin to disappear entirely. I have found it a good plan to open the bowels freely by means of saline laxatives, and to exclude from the diet all irritating substances, permitting only bland and easily digested articles of food.

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[1] Competent homeopaths deny that this is a real *Similia* treatment. See Duncan, page 901, this issue.

Dr. J. Otis Carrington, of Malden, Mass., observes.

When a person has been exposed to the plant and is known to be susceptible, he should scrub his hands and face with hot soapsuds as soon as erythema first appears, followed by alcohol. Absorbent cotton or lint soaked in a saturated solution of sodium bicarbonate and applied continuously to the parts affected is very grateful during the day, while at night diachylon ointment (half strength) or zinc ointment is valuable.

Sometimes dermatitis venenata can be aborted in the early stages. The affected area is completely covered with flexible collodion. The following will also sometimes abort:

℞ Zinci oxidi, Magnesii carbonatis,	āā 4 drams;
Aristol,	8 drams;
Aquæ rosæ,	q. s. ad. 120 drams.

M. et Sig. Apply locally three or four times a day.

Lead water and laudanum are valuable for allaying the pain, burning, and itching, but should not be used when the skin is broken. It should be combined as follows: Lead subacetate four parts, laudanum one part, water sixteen parts, to be varied according to severity of inflammation and pain.

Vesicles or bullæ should be incised under aseptic conditions, care being taken to prevent the contents from touching unaffected parts of the skin. After incision, paint the involved areas with fifty per cent. solution of ichthyol and, when dry, sprinkle with a light dusting powder and bandage lightly.

An aqueous solution of aluminum acetate two to five per cent. on gauze is good after incision. Also the following:

℞ Sodii hyposulphitis,	30 drams;
Glycerini,	15 drams;
Aquæ,	ad. 240 drams.

M. et Sig. Apply locally three or four times a day.

Grindelia robusta one part and water ten parts also aid in causing subsidence of the eruption. Black wash (lotio nigra) is valuable where the case is not extensive and should be applied for half an hour at a time, two or three times a day. In extensive cases, the following is serviceable:

℞ Zinci oxidi,	16 parts;
Phenolis,	4 parts;
Aquæ calcis,	q. s. ad. 500 parts.

M. et Sig. Apply locally on gauze three or four times a day. Poison—for external use only.

An aqueous solution of boric acid may be used intermittently during the day, applied on cheesecloth compresses.

After the eruption becomes dry and scaly, but itching persists, use calamine lotion; it acts splendidly:

℞ Pulveris calaminæ, Pulveris zinci oxidi,	āā 16 parts;
Glycerini,	āā 8 parts;
Sodii biboratis,	4 parts;
Acidi phenici, Aquæ calcis,	q. s. ad. 240 parts.

M. et Sig. Apply locally on gauze three or four times a day. Poison—for external use only.

At night use carbolic oil (phenol one part, olive oil nineteen parts).

Guard against using irritating lotions or soaps or anything that may cause a dermatitis, as the skin will be very susceptible to irritants. Should eczema ensue, apply calamine lotion. If constitutional disturbance is severe, treat on general medical principles.

Dr. S. Weingrad, Mountain Dale, New York, remarks:

Before considering the treatment of poison ivy, it is well to remember that its poisonous property lies in a nonvolatile oil (toxicodendrol) which is present in all parts of the plant, even in the wood after long drying.

It seems to be well proved, as many a patient tells me, that on their first day of arrival in the mountains, not having come in contact with any grass, they become affected with the poison. To account for this, some believe that the active principle may be an acid similar to crotonoleic acid, which is volatile, while others suppose the oil to be carried by the pollen.

When the plant is applied to the skin, after a few hours the patient experiences an intense itching and burning followed by swelling of the skin of the affected parts with a papular eruption which to the untrained eye may look like hives or one of the infectious eruptions.

I have used with success in a number of cases during the summer months the following treatment:

I order the patient to make a thick suds of plain laundry soap to be applied to the affected parts until it dries up. This usually takes about ten minutes, and is to be followed by a washing of the dried soap suds with a lysol solution, one dram of lysol to two quarts of cold water. When the itching is intense, I order some resinous ointment before bed time; this, by the way, is very seldom needed.

Dr. A. L. Taylor, of Fort Worth, Texas, states:

A victim is more susceptible in the spring than at any other season of the year. The attending physician should use all necessary precaution to prevent the spread of infection to other parts of the body, that is, if the case is seen early enough. In case of a small child, its hands should be confined or well wrapped up. An adult should be instructed not to scratch other parts of the body, for in this way infection is spread.

We find some cases in the chronic form that require symptomatic treatment, but I must say that seldom, if ever, when treated according to my method will you find such cases.

For all practical purposes the following remedy has never failed me, neither have I seen it fail in the hands of others.

Take cream from freshly skimmed milk and copper sulphate. First powder your sulphate well, then to an ounce of cream add five grains of the powder. Mix and make a paste. Smear lightly over the irritated surface. Do this three times daily.

It seldom takes over three or four applications and the dermatitis disappears in from twenty-four to forty-eight hours.

Dr. Harry Koplin, of Springfield, Mass., with admirable conciseness, suggests:

Protect healthy area by rubbing in a little petrolatum. The affected area should be washed thoroughly with soap, water, and brush.

After that apply fluidextract of grindelia robusta one part to nine parts of water.

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Abstracts and Reviews

A CLINICAL AND EXPERIMENTAL STUDY OF THE METASTATIC ARTHRITIDES.*

By the Late John B. Murphy, M. D.,
Chicago,
And Philip H. Kreuscher, M. D.,
Chicago.

(*Read by the Latter.*)

Dr. Philip H. Kreuscher began his address with a eulogy of the late Dr. John B. Murphy. In summing up his qualities, Doctor Kreuscher said that nothing was so typical of the life of the great surgeon as the quotation found after his death in his day book: "He went away nobly careless of himself, thinking only of the things he had endeavored to do."

In considering the subject of the present lecture, stress was to be laid on the following points:

1. Every case of acute joint infection was a surgical lesion and must be treated surgically.
2. These lesions, which had been thought to be infections in the joint cavities, were in reality infections about the joint.
3. There was a definite incubation period for every type of infection.
4. The joint fluid contained no bacteria in a large proportion of the cases.
5. Metastases to the joints occurred because of a definite, logical reason.

The etiological factors, symptomatology, diagnosis, and treatment of joint infections were considered in compiling this report. Tuberculosis of the joints was not included, nor the trophic joint involvements of syphilis.

Metastatic arthritis was an infection in or about the joints due to the invasion of pathogenic organisms which had been harbored and were capable of multiplying within the tissues of the host. The acute, subacute, and chronic varieties were distinguished and the monarticular, biarticular, and polyarticular types were named. The cases were classified etiologically into those due to a known pathogenic organism and those in which the origin could not be found. Pathologically, the acute or chronic serous acute, chronic suppurative, and the fibrinous or plastic types of arthritis were recognized.

Anatomy. In order to appreciate the problems in the management of these infections, it was necessary to keep in mind the synovial membrane with its layers, its pockets and diverticula, and the blood supply of the joints.

Etiology. In considering the causative agents, it was necessary to include the specific, exciting, etiological factors and the predisposing causes, as well as the atria through which the microorganisms gained entrance into the body.

It was found that the tonsils, the teeth, Neisserian infection, accessory nasal sinuses, infections of the respiratory, genitourinary, and gastrointestinal tracts had been the seat of the primary infection, the involvement being in the order named.

The streptococci, gonococci, pneumococci, and colon bacilli, singly or in mixed form with staphylococci, were responsible for most of the lesions. Nearly every case of chronic joint involvement was found to have had a number of lesions, with as many separate and distinct organisms. One patient who had an arthritis of fifteen years' standing was found to have infected tonsils, alveolar abscesses, accessory nasal sinus infections, and a severe pyelitis. Four distinct organisms were found.

Of the predisposing causes, trauma of the joints was to be mentioned, especially that of the spine which was so prevalent among those pursuing agricultural occupations. There were four such cases in Doctor Murphy's clinic at one time.

Incubation. There was a definite incubation period for nearly every type of joint infection. The failure to recognize this had caused the profession to overlook the connection between the primary infection and the resulting arthritis. From analysis it was found that Neisserian arthritis did not occur until from eighteen to twenty-two days after the primary urethral, vaginal, or ocular infection, or a secondary exacerbation. Joint lesions following infections from the upper air passages occurred between the tenth and fourteenth day after the primary manifestation of the trouble. Furuncles and carbuncles, usually due to mixed infections, caused metastases to the joints from the eighth to the fourteenth day. Infections of wounds of the extremities, for instance, those of staphylococcic or colon bacillus origin, showed manifestations about the tenth day. Streptococci, however, could cause a metastasis within forty-eight hours.

Metastasis did not usually take place, except in a pure streptococcic infection, unless a mixed infection occurred. In striking contrast with the streptococcic cases were the very late manifestations of the arthritic involvement of typhoid. These came from the fourth to the eighth week, or about the time that the typhoid ulcers were healing, or had healed.

Symptoms. The pain and swelling, constant symptoms in the acute cases, might be mild or apparently absent in the subacute or chronic cases. Chills and fever were rarely present when the trouble was of insidious onset. Luxation deformities and ankylosis were late manifestations of the disease.

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*Abstract of the Wesley M. Carpenter lecture, read at the New York Academy of Medicine, October 19, 1916.

Diagnosis. It was necessary to differentiate tuberculosis, chronic osteomyelitis near the joint, sarcoma involving the epiphysis of the bone, Charcot joint, and Schlatter's disease. After finding that the lesion was one of joint infection, it was advisable to find the atrium of infection and the causative organism in each individual case. Diagnosis of the type of infection could not be made from the joint fluid. In thirty-seven cases, only one showed a positive bacterial growth on the culture. Of course, these patients had not been aspirated, injected, or previously treated.

The infection was found to be periarticular, and only in rare instances did the bacteria pass directly into the joint cavity. Culturally and microscopically the fluid and tissues taken from three distinct cases of hypertrophic villous synovitis showed negative bacterial findings. On one occasion, however, pathogenic organisms were isolated from the synovial tissue of a case of chronic arthritis.

Treatment. Every case of joint infection was a surgical one and must be treated surgically. While it was not always possible to control infection, or prevent ankylosis, distortion could be controlled and the horrible, disfiguring deformities, resulting from these infections avoided. The plan of treatment was as follows:

1. Aspiration of the joint to relieve the tension of the infection products in the acute cases. Drainage tubes, when inserted into the joint, caused ankylosis in ninety-six per cent. of the cases.

2. A Buck's extension must be applied to relieve the intraarticular pressure on the bone ends. It must be applied on the first day in every case of acute arthritis.

3. A cofferdamming and infiltration of the lymph spaces must be produced by the injection of an antiseptic solution into the joint.

4. The focus of infection must be removed.

5. Deformities must be avoided by the application of extensions, Travois splints, plaster casts, and other appliances.

6. Autogenous vaccines were of value, if made and exhibited scientifically for the lesions for which they were intended.

Prevention. By way of prophylaxis, it was the duty of every physician to advise his patients that infected tonsils, abscessed teeth, and a chronic nasal discharge sometimes led to joint infections. Prophylactic management of even the most trivial disorders should be instituted.

A review of 859 cases gave the following statistics:

Age incidence.—Seventy-five per cent. of patients were from ten to forty years old. The period of greatest susceptibility was between thirty and forty years.

Sex incidence.—Sixty-one per cent. were females.

Season incidence.—Seventy-six per cent. had onset in late fall or winter.

Trauma incidence.—In ninety per cent. there was a history of definite trauma preceding the joint infections.

The proportion of the localization of the focus of infection was as follows:

	Per cent.		Per cent.
Tonsils	25	Appendix	2
Teeth	18	Gallbladder	2
Urethra	17	Furunculosis	6
Sinuses	17	Typhoid fever	6
Lungs and bronchi	5	Scarlet fever	6
Bladder	4	Tetanus	6
Kidney and pelvis	4	Dysentery	6

The proportion of causative pathogenic organisms was:

	Per cent.		Per cent.
Streptococci	31	Colon bacillus	4
Gonococci	14	Combination of two or more	38
Staphylococci	8		
Pneumococci	5		

Incidence of joint involvement was polyarticular in seventy-eight per cent. Type was chronic in sixty-six per cent.

Involvement of both extremities and spine occurred in seventy-three per cent. Seventy-four per cent. subsequently had chronic partial incapacity.

Experiments determined the intraarticular pressure resistance of human joints to be from thirty-five to fifty pounds to the square inch in the hip and sixty to 120 pounds in the knee.

After numerous experiments with formalin, it was found that a two per cent. solution in glycerin, mixed twenty-four hours before using, was the most suitable antiseptic for joint infections.

From a series of experiments it was concluded that the localization of a metastatic infection in a large percentage of the cases occurred outside the joint. The tissues immediately surrounding the joint were usually involved rather than the joint surface itself.

Clinically and experimentally, it was found that, except in the pure streptococcic infections, metastasis did not usually take place unless a mixed infection by an organism of another strain, or of a different variety, was superimposed upon, or concomitant with the first or primary infective organism. Metastases followed an acute cold, acute sinusitis, and acute alveolar abscesses in patients who had had a chronically diseased mouth and throat condition. In other words, a metastasis from a staphylococcic pyorrhea, or a staphylococcic alveolar abscess did not usually take place unless a foreign strain staphylococcic or a streptococcic infection superimposed itself upon the original infection in the form, for instance, of an acute root abscess or gumboil.

It had not yet been decided whether the rapidity of the metastasis depended upon the specific infectious organism, or upon the variety and virulence of the mixed infection.

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Contemporary Comment

Holes in the Harrison Law.—In June, Justice Holmes of the United States Supreme Court handed down a decision in the Jin Fuey Moy case which interpreted the Harrison Narcotic Act as a revenue measure, controlling dealers and physicians, but in no way holding the mere possessor or user of narcotics liable to the law. This resulted in making it impossible for United States attorneys to continue prosecutions, as formerly under the act, against mere possessors of the drug. The

Texas statute is far superior and in many instances, observes the *Texas State Journal of Medicine* for October, 1916, county attorneys must take up the work of fighting the narcotic evil, in place of the United States attorneys, if results are to be accomplished.

Now comes Federal District Judge Bourquin, in Montana, with a decision, which, if it stands, will exempt the prescribing physician from one of the restrictions placed upon him by the official interpretation of the statute. He decided, in effect, that there is no restriction in the law against the prescribing of any quantity of a narcotic. He says:

> In said law is nothing prescribing quantities or forbidding orders or prescriptions for the drug in any quantity. Any attempt to find it therein by construction or implication does violence to that elementary principle, that when legislatures undertake to create offense it must be in language clear and definite, making it obvious to ordinary intelligence that by a certain conduct a crime and the offense denounced by the statute is committed. Hence such construction or implication is never permitted.

It has all along been evident that the law has been so soldered over by departmental rulings as to make a clear view of the statute impossible. The courts are slowly melting this away, until the act now seems so leaky that it will hold nothing unless Congress soon does some recasting.

A Judicial Blunder.—If newspaper reports are true, a Chicago judge has given a man convicted of an assault on a little girl the alternative of being sterilized by vasectomy and freedom, or twenty years in the penitentiary. Naturally, observes the *Chicago Medical Recorder,* for October 15, 1916, the man accepted vasectomy.

Evidently the judge thought vasectomy and castration the same in effect. He should have known that vasectomy in no way destroys the sex instinct or desire. The only good vasectomy does is to prevent a man from reproducing his kind. He will have the same desire to assault other little girls after vasectomy as before, and it is no fit punishment for his crime. It may well be questioned whether the judge will not be culpable in case the convicted man repeats the offense.

The Doctor on the Border is depicted true to life by W. H. Blodgett in a letter to the *Indianapolis Medical Journal.* He writes:

Four thousand Indiana soldiers taken from a healthy temperate climate to a climate filled with pestilence, from a land of peace and plenty to a land where poisonous reptiles and poisonous insects abound. They were dumped into a wilderness without water to drink or water to bathe in and there was no sanitary preparation. The rain beat down upon them, some of them slept in mud. The storms tossed them about, a blazing sun burned their skin, and the hot sands scorched their eyes. The war department sent out bulletins calling attention to the very small sick rate in the camp, but made no mention of the men who were responsible for that extremely small sick rate. No credit was given to the doctors on the border who certainly were entitled to a very large share of the credit. It is not much of a compliment to the doctor on the border if he has a large sick list and so he has to work the harder to keep his sick list down to the minimum; and sometimes he may send a man back to duty who should be in quarters. But during the three months I was there I never knew a doctor to mark a man for duty who should be in the hospital and I watched the hospital record and the work of the doctors closely because the folk back home were anxious about the health of their dear ones. One of the things the doctor on the border has to contend with and against which he has to be on a constant lookout is a staller. With a staller, or the hypochrondriac, the civil life doctor can use his own time and methods in dealing, but the army doctor must act at once. Sick calls on the border come just before the hour for drill and it is to keep off the drill ground that the staller is the most ingenious. A rookie was before the examining doctor.

"What's the trouble, my man," asked the doctor, looking at the soldier.

"Bad wound in my leg, sir. Something bit me, sir."

The keen eye of the doctor saw that the bad wound was a stab, and by examination he found that the staller had deliberately stabbed the calf of his leg with a bayonet in order to get into the hospital and escape drill. Instead of the hospital, the staller got into the guard house and did hard labor for thirty days on a bread and water diet. No doctor in civil life could have dealt with a staller in that way.

Another was suffering, apparently, the greatest agony. He declared that "appendicitis had got him bad," but the medical officer was wise to the situation. He placed the supposed sufferer on a cot and called in several other doctors, each of whom made a careful examination, with the utmost solemnity, and then they went just outside the tent, but within easy hearing distance of the supposed sick man:

"That's the worst case of desmachymatous I ever knew," said one of the doctors loud enough for the man within the tent to hear. "I think only an operation in gastrocomy will save him."

"I don't think we ought to go that far," spoke up another doctor. "We should at least save one of his legs."

"He cannot stand more than one amputation," said the first doctor. "Which leg shall we take off."

There was a rush from inside the tent and the staller was seen streaking it across to his quarters and later was in the drill squad.

A lad was before the medical officer for examination and was complaining of all kinds of pains and a variety of aches. The doctor looked him over.

"My boy," said the medical officer with a shake of the head, "I'm sorry to tell you you have a very bad case of nostalgia."

"Good Heavens, doc, if my mother knew that she would go wild. How in the world did I ever get it?"

"This climate breeds all sorts of things," said the doctor. "You go back to your quarters and I'll see you later."

In a short time the lad was given a detail of light work that kept him busy all day and kept his mind off his home and in a few hours his home sickness was gone.

Editorial Notes and Comments

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A SUBSTITUTE FOR THE SPHYGMOMANOMETER.

We all meet with practitioners, mostly of the old school type, who are inclined to scoff at instruments of precision. We knew one such who never carried a stethoscope, while his colleague and bosom friend was never without one—would return to his office if by chance he started on his rounds without it. The former gentleman—the one without the stethoscope—always maintained that he could hear better with his unaided ear than his friend could with his instrument and, moreover, was fond of boasting that his ear he always had with him, while stethoscopes were easily mislaid.

The rank and file of the profession, however, have become so accustomed to various aids to diagnosis that their loss would be keenly felt. Next to the thermometer and the stethoscope perhaps the most valuable of these accessories is the sphygmomanometer. We all pride ourselves on the amount of information conveyed to us by the simple feeling of the pulse, but there are many pathological conditions associated with changes in the blood pressure where we feel the need of a more accurate estimate, and rely upon the sphygmomanometer.

Suppose, however, that one of these instruments is not available and we wish to determine whether or not the blood pressure is elevated; where we are undecided, for instance, between a diagnosis of senile dementia, which is essentially chronic, and of arteriosclerotic psychosis, which should end in recovery, the diagnosis may depend somewhat on the blood pressure and yet the patient may be too irritable to permit of any such procedure as the application of the sphygmomanometer. From a French physician, Doctor Molle, comes the announcement of a simple means of estimating blood pressure with fair accuracy without the aid of an instrument. The physician, standing on one side of the sitting patient, asks him to cross his legs. In subjects whose arterial tension is increased, the upper leg, viewed from the side, shows an oscillation synchronous with the arterial pulsation; this is due to partial obstruction at the level of the popliteal vessels. The oscillation, according to Molle, becomes apparent when the systolic pressure reaches 160 mm. or more; over 170 it is marked. The sign can be made more striking by covering the leg with a piece of paper. A little practice with this method and a comparison of its estimated results with the actual blood pressure will add one more trick to the repertoire of the "snap diagnostician."

WHEN CALOMEL IS CONTRAINDICATED.

Dr. A. Satre, in *Paris médical* for October 14, 1916, states that in fifteen years of practice he has never had a case of mercurial salivation from the exhibition of calomel. After giving details of three cases which fell into his hands from those of colleagues, he summarizes his precautions. In the first place, he says, the prescriber must never forget the chemical composition of calomel, i. e., that it is a protochloride of mercury. Then calomel must never be exhibited where there is renal disease; this means that it is best not to give it to patients over fifty years of age, a time when the kidneys are justifiably under suspicion. Before prescribing calomel, there should be a searching examination of the mouth and teeth, and it is best to substitute some other cathartic if there is the slightest sign of gingivitis, of carious stumps, or of a heavy layer of tartar. In addition, Satre always precedes the exhibition of calomel by prescribing preventive mouth washes and gargles, based usually on potassium permanganate or thymol, as well as an alkaline tooth powder. His favorite powder is the following:

Potassium chlorate, ...	20 grams;
Sodium borate, ...	āā 40 grams;
Calcined magnesium (heavy),	
Menthol, ...	1 gram.

By taking all the foregoing precautions, Satre is glad to say that he has been able to use a most excellent remedy in many cases where the condition of the teeth left much to be desired.

THE ANTIQUITY OF MAN.

The date of the origin of the human species, by each new discovery of missing chapters in its history, is shifted to a more and more remote time. The Neanderthal skull, which, by its prominent supraorbital ridges, its length, and flattening from above downward, seemed to link man closely if loosely to the higher apes, still had a brain capacity quite equal to that of the average modern man and, on this account, pointed to a still more remote beginning of the human being. The brain of Neanderthal man was not only large but elaborate and, as shown by the remains of his culture, he possessed fire and made flint implements. Though ancient he was anything but an ape. The Heidelberg skull, which resembled the Neanderthal remains but was still more markedly simian in general features, had also a capacious brain case and is believed to have belonged to a creature with comparatively high mental development. The Neanderthal man is placed some 300,000 years back, while the Heidelberg skull is presumed to date to a doubly remote time.

The prehistoric remains found by Doctor Dubois in Java, the bones of Pithecanthropus, as he has been called, were of decidedly earlier geological date, as indicated both by their surroundings and by their own features; the brain case was small and the cranial traits were otherwise more apelike than those of any other known remains. "All the structural characters of Pithecanthropus, so far as we know them, are exactly of the kind we expect to find in the early ancestral type of man." The unearthing of the Java man pushed the date for the origin of the human type backward another period of a few hundred thousand years, or into the Miocene epoch of geological time.

The chain linking modern man directly with an early type similar to the gorilla or chimpanzee seemed to be growing strong until, in 1912, the bones of an ancient man of another type were discovered in England in the Piltdown cave. This, according to Dr. Arthur Keith, who is as great an authority as can be found, is the "oldest specimen of true humanity yet discovered." The brain of this being was, in size at least, up to the modern standard, but otherwise the bones are "the most simian recorded."

According to Doctor Keith's reasoning, we can no longer consider all these ancient remains as linking us in one line with our apelike ancestor, but, in his restoration of the family tree, the Java man, the Neanderthal and Heidelberg man, the Piltdown man, and modern man have all sprung from the same original stem, which dates back some two million years to the Oligocene epoch, when, in turn, it diverged from a parent stem from which the great orthograde primates, and earlier, the small primates and monkeys developed.

Although these early remains are few, and their restoration is not without difficulty, our notions of the age of man and the steps of his evolution have been much modified by the information they disclose. It is certain that there exists today on the earth, in the person of the Australian native, a type of human being as low in brain case capacity, and in mental development, as any of the types revealed by the prehistoric remains, for, while even the Java skull had room for about 1,500 c. c. of contents, the skull of the aboriginal Australian has a capacity as low as 930 c. c. As Doctor Keith puts it, there are living remains of man in Australia older than any fossil forms of modern man in Europe. It is not impossible that these living men are direct representatives of the type from which even the fossil types sprang, and which has persisted, though the latter have disappeared from the face of the earth. They may also represent the stock from which the living races, African, Mongolian, and European, have developed.

YEAST AS FOOD.

Abnormal conditions of food supply caused by the European war are bringing about one scientific result of no small interest. This result follows the effort to utilize unusual food sources and especially to find substitutes for certain important food elements. Thus considerable work has been expended on the utilization of food elements in straw and other available, but ordinarily unassimilable substances. The scarcity of meat in Germany has caused a serious search for substitute nutritional substances, and among the articles considered has been yeast, in which it seemed possible to find available nitrogen as well as active vitamine principles.

A recent paper by Funk, Lyle, and McCaskey in the *Journal of Biological Chemistry* for October, 1916, takes up this last problem. These authors find rather a low biological value for yeast as a source of protein. This is partly due to the large percentage of ingested yeast which passes with the feces, to the difficulty of preparing it in palatable form, and to the fact that yeast definitely raises the blood content of uric acid.

The earlier findings of Abderhalden, Foder, and

Rose were confirmed, that a positive nitrogen balance was harder to obtain with a vitamine free diet of white rice and white bread, than with potatoes and whole grain bread. The experiments described were too short to decide whether the entire fault lay with a lack of vitamine. The authors suggest the importance of investigating yeast as a supplementary nutritional agent in communities suffering from dietetic deficiencies.

THE TRANSFUSION OF BLOOD.

Transfusion of blood is an operation of great antiquity, and a procedure which has always appealed to the imagination. Shelton Horsley, in his work on the surgery of the bloodvessels published a short time ago, mentions that the idea of rejuvenation by transfusion is to be met with in Ovid's *Metamorphosis,* while Pope Innocent VIII, when in a state of coma, was transfused three times, without benefit to himself, and unhappily at the cost of the lives of three donors. The method has now and then been abandoned, mainly because of the difficulties in the way of its successful completion. Of recent years, however, stimulated largely by the work of Crile and Carrel, and chiefly, perhaps, as the result of the simplification of technic, the method has come into vogue again and is frequently employed. Indeed, a great deal of ingenuity has been exercised in the invention of cannulas or tubes to facilitate the operation, some of which appear to fulfill in a satisfactory manner the object for which they were designed.

Horsley advocates the method of direct suturing of the vein of the recipient to the artery of the donor. End to end anastomosis of artery to vein, however, is not possible when rapidity of operation is incumbent, and this is frequently the case. Moreover, the method predicates for its success, the possession of considerable skill on the part of the operator and assistants, and therefore is not well adapted to the exigencies of war. The European war has brought direct transfusion of blood into prominence, as manifestly there are numerous occasions when its revitalizing effects are urgently needed. According to some Canadian surgeons who have had experience in war surgery on the European battlefields, surgeons from the British Isles have been chary of employing the method, and it has been left to their brethren from the Dominion to test the value of the remedy on soldiers suffering from loss of blood and shock.

In the *British Medical Journal* for July 8, 1916, L. Bruce Robertson, of Toronto, gives his views as to the therapeutic merits of transfusion of whole blood regarded from the standpoint of the wounded soldier. Robertson first points out that the broad indications for blood transfusion are based on the fact that transfused blood is the best substitute for blood lost in acute hemorrhage and is thus eminently suited for use in war. In fact, it may be granted that its employment is indicated in certain conditions which are apt to be encountered in war, provided that the supply of healthy donors is at hand, and that the technic of the procedure is not only simple, but supplies the blood to the recipient in a rapid and satisfactory way. That is to say that the donors must be examined carefully, so that certainty exists that no disease can be transmitted—naturally syphilis must be especially guarded against—and that whole unmodified blood without clotting is transfused.

Robertson states that there is little or no difficulty in picking out a robust and healthy donor, who can withstand the loss of from 600 to 1,000 c. c. of blood without more than temporary disturbance, from among soldiers suffering from sprains, minor fractures, etc., but who are otherwise in good physical condition. No ill effects should be felt by a donor if at the end of a transfusion, a quantity of saline equal to the amount of blood withdrawn from the circulation is infused and he rests for the space of twenty-four hours. The good results are most apparent in cases of primary hemorrhage. In secondary hemorrhage, where the factor of sepsis has to be combated, the additional blood often carries a patient over a critical period, and aids the vital forces to withstand further surgical procedures necessitated by the infective process, or increases his resistance to such an extent that by his natural resources he is able to overcome the infection.

Primrose and Ryerson, in the *British Medical Journal,* for September 16, 1916, emphatically corroborate the statements of Robertson.

AN ENGLISH VIEW OF TWILIGHT SLEEP

In the *British Medical Journal* for October 14th. Dr. F. W. N. Haultain and Mr. Brian H. Swift discuss the morphine-hyoscine method of painless childbirth and give their conclusions as follows:

It is a safe and efficient means of managing labor painlessly in the majority of cases. It requires, however, the constant attendance of a competent attendant. This role can be efficiently undertaken by a trustworthy nurse under supervision, which makes its adoption in better class private practice possible to the medical practitioner. It is of special value in primiparæ, in whom as a rule the first and second stages of labor are long and painful. It is also of great value in a prolonged second stage, due to a large head or slightly contracted pelvis, as it allows of head moulding without unduly exhausting the patient.

So far as amnesia is concerned, it is of little use to begin the treatment during the second stage. The strength of the uterine contractions is not diminished, hence its advantage over chloroform. There are no contraindications to its use beyond extreme restlessness, which is exceptional and is probably due to an idosyncrasy. The absence of exhaustion is one of its greatest advantages. Thirty-seven of forty patients arose from bed on the third day after labor.

It is to be regretted that such a great deal of publicity has been given to the subject, and that prominent specialists have allowed themselves to be exploited through the lay press, as the lay community suffers from the want of knowledge and sense of proportion, which allows of an estimate of its value under various conditions, and is, therefore, apt to attempt to force the hand of the careful practitioner.

A NEW OFFICIAL QUARTERLY.

The *Bulletin of the Department of Public Charities* makes its bow with the issue for October, 1916, promising to appear quarterly henceforward. The editor in chief, Orrin S. Wightman, B. A., M. D., presents 114 pages of excellent matter, drawn from the wealth of material at the disposal of the Department of Public Charities, with its 9,000 beds filled with patients of every kind. The contributors are all members of the various staffs of the hospitals under departmental control. The quarterly is solid reading matter and carries no advertising. The subscription price is two dollars a year. We extend a hearty welcome to the newcomer and shall be glad to see it prosper.

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News Items

Change of Address.—Dr. George Hohmann, to Laurette Court, 2480 Grand Concourse, New York.

Aftertreatment of Poliomyelitis.—The November 14th meeting of the Philadelphia Pediatric Society will be devoted to a discussion of the aftercare of poliomyelitis patients.

Lutheran Hospital Dedicated.—The new home of the Lutheran Hospital, Convent Avenue and 144th Street, New York, was dedicated on Sunday, October 29th, and was opened to the public on the following day.

New Hospital Opened in Paterson, N. J.—The new $250,000 Nathan and Miriam Barnett Hospital was opened in Patterson, N. J., on Tuesday, October 24th, with suitable ceremonies. Among the speakers was Dr. Abraham Jacobi, of New York.

Fordham Medical Alumni Organize.—Medical alumni of Fordham University have organized an association, with the following officers, to serve for the first year: Dr. James McSweeney, president; Dr. John J. Sheridan, vice-president; Dr. Francis McGovern, secretary and treasurer.

Mount Sinai Hospital Clinical Society, Philadelphia.—The following officers were elected at the annual meeting of this society, held on Tuesday, October 17th: Dr. Simon Wendkos, president; Dr. Abraham I. Rubenstone, vice-president; Dr. Arthur M. Dannenberg, secretary and treasurer.

Connecticut Public Health Association.—This association, which was organized at a meeting held in Hartford on Saturday, October 21st, aims to ascertain the needs of the State in health matters and to coordinate the forces now working for public health interests. Dr. Stephen J. Maher, of New Haven, presided at the meeting.

Antitoxin for the Allies.—Health Commissioner Haven Emerson, of the Department of Health of the City of New York, reports that since the beginning of the European War the department has sold $205,000 worth of antitoxin, two thirds of which has been purchased by the Allies.

Physicians for the Central Powers.—Philadelphians of German and Austrian descent are making arrangements to send an expedition of six physicians to the armies of the Central Powers for six months. The expenses of the trip will be about $16,000, of which $10,000 has already been subscribed.

A Public Clinic in Genitourinary Diseases will be held every Thursday evening at 8:30 o'clock, by Dr. Abr. L. Wolbarst, at the West Side German Dispensary and Hospital, 328 West Forty-second Street, New York. The clinics began on November 1st and will end in April. Physicians and medical students are cordially invited.

Compulsory Health Insurance.—A public meeting to consider this subject will be held at the New York Academy of Medicine, under the auspices of the Committee on Medical Economics of the Medical Society of the State of New York, on Thursday evening, November 23d. The speakers will include men of national reputation and experts on health insurance.

Columbia University Dental School.—One contribution of $100,000 and another of $25,000 have been received toward the $1,000,000 foundation and maintenance fund for the Dental School of Columbia University. The giver of the larger amount stipulates that the money be spent to equip a room to be known as the William Jarvie Infirmary, in memory of his brother, Dr. William Jarvie.

Birth Control.—At a meeting of the Medical Society of the County of New York, held on Monday, October 23d, a committee was appointed to consider the advisability of changing section 1142 of the Penal Code, making it lawful for a qualified physician to give advice on birth control, and present a report at the December meeting of the society. Dr. Abraham Jacobi was made chairman of the committee.

Typhus Fever in Texas.—According to reports received in Washington, D. C., by the United States Public Health Service, during the two weeks ending October 16th six cases of typhus fever were reported at El Paso, Texas, making a total of 17 cases since July 1st. At Laredo, Texas, one case was reported on October 21st and another on October 23d, making a total of three cases since October 16th.

Clinical Lectures on Skin Diseases.—Dr. L. Duncan Bulkley began his eighteenth series of clinical lectures on diseases of the skin in the Out Patient Hall of the New York Skin and Cancer Hospital on Wednesday afternoon, November 1st, at 4:15 o'clock. These lectures are given every Wednesday afternoon at the same place and are free to the medical profession on the presentation of professional cards.

Personal.—Dr. William Sharpe, professor of neurological surgery in the New York Polyclinic Medical School, delivered an address on Recent Advances in Brain Surgery, illustrated by moving pictures, before the College of Physicians of Pittsburgh, Pa., at a dinner at the University Club, October 27, 1916.

Dr. Leon Brinkmann succeeds Dr. Melvin M. Franklin as visiting surgeon to the Jewish Hospital, Philadelphia.

Dr. Victor C. Pedersen will be at St. Mark's Hospital, 177 Second Avenue, corner Eleventh Street, Monday, Wednesday, and Friday mornings, 11 a. m. to 1 p. m., Tuesday evenings, 8 to 9 p. m., to examine urological cases in men, women, and children for operation and treatment in the hospital.

Dr. K. C. Haas has resigned as State Commissioner of Health of Kansas.

Dr. Bernard Glueck, who has been in charge of the psychopathic clinic recently established in Sing Sing Prison, has been appointed physician to the institution, succeeding Dr. Amos O. Squire, who has resigned

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, November 6th, Academy of Surgery, Clinical Association; Tuesday, November 7th, Wills Hospital Ophthalmic Society, Laryngological Society, Medical Examiners' Association; Wednesday, November 8th, County Medical Society; Thursday, November 9th, Polyclinic Ophthalmic Society, Pathological Society; Friday, November 10th, Psychiatric Society, Northern Medical Association.

Street Accident Fatalities in New York.—Police records show that the number of known deaths due to accidents during the month of October was 59, compared with 79 for the month of September, which was increased to 87 by a subsequent mortality in October. Last year the record for October was 61 at the end of the month, and 77 when the later mortality became known. The automobile was the chief cause of death, 20 fatalities being charged to its account, and there were 12 deaths from motor trucks.

Medico-Chirurgical Professors Added to Faculty of University of Pennsylvania.—The following former members of the faculty of the Medico-Chirurgical College of Philadelphia have been elected members of the faculty of undergraduate medicine of the University of Pennsylvania: Dr. Joseph McFarland, professor of pathology; Dr. John C. Heisler, professor of anatomy; George H. Meeker, Sc.D., professor of chemistry; Dr. Horatio C. Wood, Jr., professor of pharmacology and therapeutics; Dr. Seneca Egbert, professor of hygiene.

The Fundamental Principles of Good Lighting.—A lecture on this subject will be given at the Franklin Institute, Philadelphia, on Wednesday, November 8th, by P. G. Nutting, Ph. D., director of the research laboratory of Westinghouse Electric and Manufacturing Company, Pittsburgh. The question of visual sensibility, efficiency, and tolerance will be reviewed, and principles deduced governing visually efficient lighting. Ideal lighting will be described and applications to practical lighting will be outlined. The lecture will be illustrated. All physicians who are interested are invited to attend.

Develcpment of Red Cross Teaching Centres.—The demand for the courses of instruction conducted under the direction of the National Committee on Red Cross Nursing Service has developed so rapidly that some of the Red Cross chapters in the larger cities have organized teaching centres. Directors of instruction or instructors for full or part time, as the amount of teaching would indicate, are employed to direct the teaching. The centralization of instruction under carefully selected directors or instructors, who must be enrolled Red Cross nurses, and approved by the bureau of nursing service at Washington, has been found to result in greater economy and more uniform teaching.

New Inspectors of New York's Charities.—Dr. John A. Kingsbury, commissioner of charities of New York, announces the appointment of twenty-one new inspectors of the city's charities. Commissioner Kingsbury believed that the inspectors were made necessary by the refusal of the State department to certify that the charitable institutions which draw money from the city were complying with all the requirements. Upon the ground that institutions which received city money should be inspected the board of estimate has established the new bureau of inspection. Quarterly inspections will be made of 305 institutions and semiannual inspections of 22 agencies for boarding out dependents.

American Medical Editors' Association.—Dr. George Morris Piersol, of Philadelphia, editor of the *American Journal of the Medical Sciences*, was elected president of the association, at the forty-seventh annual meeting held in New York last week. Dr. George W. Kosmak, of New York, and Dr. Robert M. Green, of Boston, were elected vice-presidents, and Dr. Joseph MacDonald, Jr., of New York, was reelected secretary and treasurer. Dr. James P. Warbasse, of New York, acted as toastmaster at the annual banquet of the association, held on Thursday evening, October 26th, and among the speakers were Dr. Abraham Jacobi, Dr. H. Edwin Lewis, Dr. Henry O. Marcy, Dr. Ira S. Wile, and Mr. Paul U. Kellogg, editor of the *Survey*.

The Clinical Congress of Surgeons of North America.—At the seventh annual meeting of this congress, held in Philadelphia during the week of October 23d, the following officers were elected: Dr. John G. Clark, of Philadelphia, president-elect; Dr. George Henderson Lee, of Galveston, Texas, first vice-president; Dr. Edgar W. Allin, of Edmonton, Alberta, Canada, second vice-president; Dr. Franklin H. Martin, of Chicago, secretary-general (reelected); Dr. Allen B. Kanavel, of Chicago, treasurer (reelected); Mr. A. D. Ballou, of Chicago, general manager (reelected). Next year's meeting will be held in New York.

Harvard Appointments.—Fifty-seven appointments were confirmed at the last meeting of the corporation of Harvard University, among them being the following in the medical school: Dr. Edward H. Nichols and Dr. Charles A. Porter, clinical professors of surgery; Dr. Robert E. de Courcy Ward, professor of climatology; Dr. Arthur B. Lamb, professor of chemistry and director of the chemical laboratory; Dr. Roger I. Lee, professor of hygiene; Dr. Donald M. Glover, assistant in histology; Dr. Joseph H. McGuire, assistant in histology; Dr. MacIver Woody, assistant in pathology; Dr. Harry S. Bernstein, assistant in pathology; Dr. Francis L. Burnett, assistant in pathology; Dr. George Clymer, alumni assistant in neurology; Dr. LeRoy U. Gardner, instructor in pathology.

American Surgeons to Tour South America.—At the meeting of the Clinical Congress of Surgeons of North America, held last week in Philadelphia, announcement was made that the United States Government had requested the congress to select a number of prominent American surgeons to make a tour of Central and South America for the purpose of bringing the surgeons of the United States into closer professional relation with the surgeons of Latin America. The more prominent surgeons of South America will be invited to join the American College of Surgeons. Dr. Charles H. Mayo, of Rochester, Minn., Dr. Franklin H. Martin, of Chicago, Dr. Albert J. Ochsner, of Chicago, Dr. George W. Crile, of Cleveland, Dr. Edward Martin, of Philadelphia, and Dr. Frank F. Simpson, of Pittsburgh, were named by the congress for the Latin American expedition.

Medical Association of Central New York.—The forty-eighth annual meeting of this association was held in Buffalo on Thursday, October 19th, under the presidency of Dr. A. L. Benedict. At a luncheon given to the members by Dr. Lucien C. Howe, Colonel Jefferson R. Kean, of Washington, D. C., director general of military relief of the American Red Cross Society, spoke on medical and surgical preparedness for war and explained the details of the reorganization of the American Red Cross Society, whereby it became a part of the regular medical service of the military and naval forces of the United States. The following officers were elected: Dr. Ledra Heazlit, of Auburn, president; Dr. J. J. Buettner, of Syracuse, first vice-president; Dr. Charles Hennington, of Rochester, second vice-president; Dr. J. R. Burns, of Syracuse, secretary; Dr. T. F. Laurie, of Auburn, treasurer. Next year's meeting will be held in Auburn.

American College of Surgeons.—At the annual meeting of the college, held in Philadelphia during the week of October 23d, coincidentally with the Clinical Congress of Surgeons of North America, the following officers were elected: President, Dr. George W. Crile, of Cleveland; first vice-president, Dr. Robert R. G. Le Conte, of Philadelphia; second vice-president, Dr. Rudolph Matas, of New Orleans; secretary (reelected), Dr. Franklin H. Martin, of Chicago; treasurer, Dr. A. J. Ochsner, of Chicago. Chicago was settled upon as the permanent headquarters of the college. Announcement was made at the meeting that the American College of Surgeons had decided to form an international committee on standards, with representatives from each State in the Union and the Provinces of Canada, which will take the necessary steps for the enactment of laws to protect the public against untrained surgeons, and by legislative enactment and other means prevent dishonest practices, and finally to provide means for the supplementary and graduate training of surgeons.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-third Communication.

STOMATITIS.

Of the several forms of stomatitis with which human flesh is afflicted discussion will be confined to the most frequent type—aphthous stomatitis, known generally among the laity as "canker." Small in latitude but mighty in its potentiality for discomfort, aphthous stomatitis is a disturbance of the alimentary tract deserving of careful investigation; yet very little is known concerning its etiology, and even less as to the means of suppressing it. Some pathologists think the ulcerative lesion is due to spasmodic constriction of the arteriole, reflex in origin, leading to necrosis of the area of supply; others ascribe the affection to bacterial invasion; some think it an unexplained manifestation of gastric disturbance; while still others believe the trouble to be due to local injury. With such variations as to the etiology there have inevitably been many suggestions as to treatment—none of which seems to possess any particular efficiency. Under the circumstances the pharmacological discussion must become preponderatingly speculative; but a few suggestions may not be amiss.

The appearance of the primary vesicle is almost invariably preceded by localized passive congestion of the adjoining tissue of gum and mucosa, particularly noticeable with those wearing artificial plates. This congestion, and the sense of pressure accompanying it, is a fairly sure herald that in the immediate vicinity a canker spot will soon develop. With the local symptoms there will also appear a mild salivation, some anorexia, a sense of gastric heaviness, and irritability; all pointing to a systemic disturbance. At this time, a light calomel purge, followed by a strictly limited diet, seems to prove abortive in a small percentage of cases, thereby indicating a probable gastrointestinal disturbance; but more commonly the local symptoms become acute, with the appearance of an exquisitely painful ulcerating patch.

Aphthous stomatitis seems to be a self limited disease, so far as each individual ulcer is concerned. In the discrete form the affection seems to run a course of nine days' duration, counting from the first feeling of pressure in the gums to the final healing of the ulcer, about equally divided between progressive aggravation, height of discomfort, and gradual decline; and medicines seem to be of little avail. If the difficulty is contriction necrosis, cleanliness is the local treatment, with bowel depletion as accessory; if bacterial invasion is the causative factor, local disinfection would be in order, but personal experience with chemical and electrical caustics, excision, and powerful germicides, seems to indicate utter uselessness of this mode of attack. The only local treatment seems to be palliative of the discomfort, and consists of the application, especially before meals, of a five per cent. solution of cocaine, the neighboring mucosa having been dried and walled off with cotton pledgets. This gives temporary relief in time of greatest need; the balance of time the distress is not usually unbearable. Internal treatment to correct gastrointestinal disturbances or other dyscrasia is helpful in averting a succession of attacks.

Potassium chlorate has been highly lauded by some writers, but it probably has no curative influence whatever; indeed, its chemical nature indicates no possibility of value in this trouble, unless the potassium base has some selective influence, in which case a less poisonous salt of potassium would be preferable. But whatever may be its value, it ought not to be given except in small doses, and not at all to children. Seek out the underlying cause.

Bacterial Vaccines in Pulmonary Tuberculosis.—S. G. Bonney (*Journal A. M. A.*, October 21, 1916) gives his observations of the effects of vaccine therapy in pulmonary tuberculosis as follows: That vaccine therapy should certainly not be used as a routine measure although it seems to have some place as a tentative measure in a certain class of cases. In all, the number of cases for which it is suitable is relatively small, its results are uncertain and the proportion of cases improved by it is very disappointing. In a few, however, the improvement produced is striking, but, on the other hand, vaccines frequently are very injurious. One of the most important factors in the use of vaccines in tuberculosis is the careful adjustment of the doses. Incidentally, the same statements may be made in general with regard to the use of tuberculin and in the case of both agents the profession should adopt an extremely conservative attitude. These impressions are supported by the citation of a few cases which have come under the author's observation and it is pointed out that there is no valid excuse for giving vaccines to patients who are doing well and that the results offer little encouragement for their use in cases which are declining rapidly. Finally, emphasis is laid upon the fact that the better cooperation of the patient in the general treatment and the encouragement given him by the belief that something is being done for him when vaccine is used are often chiefly responsible for the beneficial results. The greatest difficulties are encountered in the determination of the secondary organisms which are to blame for the nontuberculous portion of the disease and we can never be absolutely certain that the vaccine used is the right one. If a polyvalent mixed vaccine is used to overcome this difficulty one or more of the contained organisms may do great harm

Sublingual Medication.—W. Paulson (*Practitioner,* October, 1916) recommends the sublingual space as the most reliable place in the body for the rapid absorption of concentrated remedies directly into the circulation. This space has a considerable area, a thin membrane, which always is clean, never furred, and never shielded by mucus. A morphine and atropine disc powdered with the point of a penknife and dropped just behind the teeth, or an apomorphine disc similarly powdered will be absorbed in a few seconds, and the full effects of the dose may be depended upon to appear almost immediately. Compared with hypodermic injection he holds that the sublingual method is quicker, easier, safer, cleaner, and far more reliable. Three emergency cases are quoted showing the prompt effects of apomorphine when administered in this way.

Dysentery.—R. Tanner Hewlett (*Practitioner,* October, 1916) gives the following summary of the recommendations of the advisory committee for the prevention of epidemic diseases in the Mediterranean expeditionary force on the treatment of diarrhea and dysentery, given in the *Journal of the Royal Army Medical Corps:*

a. Dietetic. In every instance the diet should be liquid. For the first twenty-four hours milk should be avoided and barley, rice, oatmeal, or albumin water, or chicken broth given. Afterward milk may be given, preferably diluted with water or barley water, and a little sodium citrate added, three or four grains to the pint. If milk cannot be tolerated, Benger's food, Brand's essence, bovril, and light soups may be substituted. No solid food should be given until the active processes in the bowel subside, when arrowroot, custards, etc., should be added with due caution.

b. Medicinal. 1: Diarrhea. A patient seen at the beginning should at once be given an ounce of castor oil; if colic is present, ten minims of tincture of opium should be added to the oil. This with rest, warmth, and a suitable dietary will often check the condition. It may frequently be followed by one dram doses of castor oil in emulsion, every four or six hours for twenty-four hours. At the same time, to be on the safe side, emetine should be given from the onset—two thirds of a grain once or twice a day. In severe cases which show every sign of passing into true dysentery, larger doses of emetine should be given—two or even three grains in the day, in half grain doses, every four or six hours. If the castor oil fails after a fair trial salines should be given. The following is a useful prescription:

℞ Sodii sulphatis, ...gr. lx;
Acidi sulphurici aromatici, ...♏xv;
Tincturæ zingiberis, ...♏vii-viii;
Aquæ menthæ piperitæ, ...ad ℥i.

This may be given every two, three, or four hours, according to the severity of the symptoms, and should be continued until the stools become watery.

2. Amebic dysentery. A dose of one grain of emetine hypodermically, given once, or at most twice a day, is usually ample to kill the amebas, but has no action on the ulcerative colitis, local treatment of which is generally indicated. For this purpose the foregoing saline mixture may be given every four hours, with a saline enema douche night and morning. Later, when blood has disappeared but mucus still persists, daily enemata of 150 grains of tannin and fifteen of quinine in a pint of warm water, may be substituted. If painful half strength may be employed. Tannin alone may be used, from a half to one per cent.; and calcium permanganate, six grains or more to the pint, is an alternative solution. A sedative enema of bismuth ʒii, tincture of opium ♏xxx, and thin starch ℥ii, is sometimes useful. Warm linseed tea also forms a soothing injection. A suppository of cocaine and morphine will frequently facilitate the administration of enemata, and may benefit spasm and tenesmus as well. In severe amebic dysentery emetine should be given intravenously, as much as one and a half grain in ten c. c. of saline daily, in lessened doses as the case improves. If emetine is going to do good its beneficial action is quickly apparent. Failing emetine, the old ipecacuanha treatment must be tried. During convalescence bismuth salicylate should be employed if diarrhea persists. In all severe cases the tendency to heart failure must be borne in mind. When the condition becomes chronic local treatment is most useful, large enemata of copper sulphate, one to 1,000, or silver nitrate, with starch and opium.

3. Bacillary dysentery. Antidysentery serum should be given, if available. If salines are employed the sodium sulphate mixture mentioned above will be found to act well. In very bad cases, drained by incessant evacuations, intravenous injections of saline will often save life, but they must be used in good time. Chronic cases receive local treatment, similar to that for chronic amebic dysentery. In cases of doubtful etiology a combined therapy of emetine and polyvalent serum should be employed. In all forms colic is benefited by turpentine stupes to the abdomen, and hemorrhage may be controlled by morphine and adrenaline hypodermically, calcium chloride or lactate by mouth, or oil of turpentine in capsules.

4. Flagellate dysentery. The only parasite causing diarrhea or dysentery that can be satisfactorily treated is Trichomonas hominis. In the early stage an enema of boiled water should be given, followed by one of iodine, one to 1,000, given very slowly every evening for three consecutive days. If the parasites persist a tablespoonful of the following mixture should be given every two hours for three days:

℞ Infusi cinchonæ (1 in 50, not acid), ...℥iiss;
Extracti cinchonæ, ...ʒiij;
Tincturæ cinnamomi, ...ʒv;
Syrupi opii (0.5 ext. in 1,000), ...ʒiij;
Tincturæ camphoræ compositæ, ...ʒj;
Olei terebinthini, ...♏xlviii.

with

Gummi acaciæ, ...ʒss;
Aquæ floris aurantii, ...ʒss;
Aquæ distillatæ, ...ʒv;
Syrupi, ...ʒij.

In addition, the following enemata are indicated night and morning:

(a) Three and one half pints of decoction of eucalyptus.
(b) Two ounces of boiled water, yolk of an egg.
Ten minims of laudanum.
Fifteen minims of essence of turpentine.

The committee insist on the need for absolute rest and warmth to the abdomen in all cases of dysentery.

Nails and Screws Through Joint Surfaces.—Arthur T. Mann (*Journal A. M. A.*, October 14, 1916) has found, as the result of animal experiments and two human experiences in which nails or screws were used through joint surfaces in fractures or autografts, that both nails and screws were tolerated with astonishingly little reaction. The surface over them was covered with connective tissue and hyaline cartilage, and the joint was left free and mobile. Autografts also united perfectly and seemed to live, but were ultimately replaced by the ingrowth of new bone and the absorption of that original to the graft. Condyles also united like free autografts. Projecting bodies were covered by new tissue and thus removed from the joint surface. These observations showed the possibility of satisfactory employment of these mechanical means in the treatment of fractures through joints and should serve to simplify the care of such injuries.

Blood Transfusion.—Lester J. Unger (*Canadian Practitioner and Review*, October, 1916) states that there are two general methods in use: 1. That which utilizes the whole unmodified blood. 2. That in which the blood is altered by the use of anticoagulants such as sodium citrate. The latter has the advantage of providing blood which can be stored and used in emergencies or transported as desired. But it has two disadvantages: 1. The alteration of the coagulation time of the recipient's blood, and, 2, the danger of causing high temperature and chills. The first method is free from these objections and if performed with the author's apparatus requires no special skill and is very simple. In a series of eighty-five transfusions no chills were produced and only eight cases showed fever following the transfusion. In sixty-one per cent. of the cases there was improvement or clinical cure and the transfusion was life saving in twenty-two per cent. of the cases. Life was saved in cases of postoperative hemorrhage, hemorrhage of the newborn, intraabdominal bleeding, duodenal ulcers, and ruptured ectopic gestation sacs.

Aftercare in Pulmonary Tuberculosis.—P. C. Varrier-Jones (*Lancet*, September 30, 1916) points out with emphasis that many of the ultimate failures encountered in the treatment of pulmonary tuberculosis are due to the lack of facilities for the proper aftercare of the patients following their discharge from sanatoriums. A patient may have been able to do a moderate amount of work while in the sanatorium where he received adequate nourishment. Then he is discharged and is forced at once to earn a living for himself and possibly also for a family. The strain of the increased work and the longer hours, coupled with an almost certainly inadequate food supply, is often enough to carry him down again. From such relapses the patients often pass into a state of chronic progressive tuberculosis, instead of becoming useful citizens. What is seriously needed is some means whereby such persons may return slowly to full working capacity, while receiving sufficient financial aid to eke out their earnings to a point sufficient to provide good food and favorable living conditions. Such a form of aid would cost less in the end than the present plan of letting these patients relapse and become public charges in a few months.

Duodenal Alimentation.—Joseph W. Larimore (*Journal of the Missouri State Medical Association*, September, 1916) considers that the duodenal tube is our most efficient means of continuing artificial ingestion. While the tube is in position the patient must lie either on the right side or on the back—never on the left side. Cocainization of the throat and esophagus is unnecessary and feeding progresses better and patients are more comfortable if the tube is allowed to pass into the third part of the duodenum or even into the jejunum. The tube is known to be in the duodenum when yellow bile can be persistently aspirated. Feeding is accomplished by three methods—slow injection, gravity flow, and the drop method. Laxatives may be given through the tube.

Use of Insecticides against Lice.—A. Bacot (*Brit. Med. Jour.*, September 30, 1916) conducted many carefully controlled experiments upon man to discover a practical means of preventing the spread of lice among the troops. A large number of drugs and preparations were tried; the only one which proved of value and which was at the same time cheap and harmless was found to be crude liquid phenol. It was found that this could be made into an emulsion with soft soap in the proportion of about fifty per cent. of each and the underwear of the men saturated with this mixture after its dilution to five per cent. with warm water. The efficiency of such an impregnation declined so that after about six days the garment required fresh impregnation.

Puerperal Septicemia Cured by Autogenous Vaccine.—William Grier (*Brit. Med. Jour.*, September 30, 1916), after two doses of an antistreptococcic serum and one of a streptococcic vaccine, administered an autogenous vaccine prepared from the patient's organisms and given on the sixteenth day of her illness. The initial dose contained twenty-five million organisms. This vaccine was repeated at intervals of two or three days, and the dose was finally raised to seventy-five million organisms. Improvement began in a few days after the beginning of this treatment and progressed favorably to complete recovery. The organism isolated from the patient's blood was a diplostreptococcus which conformed to the characteristics of the organism found by Mair in scarlet fever.

Hexamine in Aural Suppuration and Meningitis.—Douglas Guthrie (*Brit. Med. Jour.*, September 30, 1916) noted that hexamethylenamine appeared in the discharges from the ear and in the spinal fluid, and therefore sought to make use of it as a means of treating aural suppuration by douching the ear with an acid solution to liberate the formaldehyde. He gave the drug, therefore, in large doses to each of four cases with chronic otitis media and applied the Rimini-Burnam test to the discharges. He found the secretions in all cases entirely free from either hexamine or formaldehyde, although the latter was present in the urine in effective amounts. Similar results were obtained with the spinal fluid in two cases of meningitis, in one of which no trace of the drug could be detected even after a single dose of nearly four grams of the drug.

Recent Progress in the Treatment of Uterine Cancer.—J. H. Jacobson (*Journal A. M. A.*, October 21, 1916) draws the conclusion from his own experience and a critical analysis of the results of others that the best results are obtained from the early radical abdominal operation in early or operable cases. Since there are decided differences in the malignancy of the various types of uterine cancer the type should be determined whenever it is possible to do so. The use of radium, x ray, and Percy's operation should be restricted to the extensive cases until their superiority over surgical measures has been demonstrated. Finally, the combination of radical operation with postoperative radiotherapy probably offers the best results of all the methods available at present.

Rate of Absorption of Various Digitalis Preparations.—C. C. Haskell, C. S. McCants, and F. P. Gardner (*Archives of Internal Medicine*, August, 1916) point out that certain experimental observations have strongly indicated that the presence of alcohol in any drug preparations used tends to retard the absorption of these drugs from the alimentary tract or when injected subcutaneously. They sought to ascertain whether an appreciable influence of this nature was exerted in the case of digitalis preparations. Their experiments were performed on dogs and cats. Unexpectedly it was found that the official tincture of digitalis is absorbed more rapidly from the gastrointestinal tract of cats than is an infusion made from the same leaf. Three special digitalis preparations, viz., digipuratum, digalen, and digipoten, were also investigated, but appeared to possess no decided advantage over the official tincture. Digalen was absorbed more rapidly than the tincture, but this advantage is deemed more than offset by the variability in strength, low standard of power, and high cost of this preparation.

Surgical Treatment of Perforated Ulcer of the Stomach.—Abraham O. Wilensky (*Annals of Surgery*, October, 1916) draws attention to the fact that in a few cases of perforated ulcer of the stomach jejunostomy will be indicated. When the ulcer which has perforated is high up near the cardia in an inaccessible location, or in those conceivable cases when it is impossible to find the perforation, or the condition of the patient does not permit an extended search, the indication is to exclude and put at rest the entire stomach and duodenum, and this is best done by jejunostomy and jejunal feeding. Cases are also met in which large perforating ulcers are found on or near the greater curvature, in the general region in which it is proper to make a gastroenteric anastomosis, and in which the presence of extensive adhesions precludes the possibility of making a gastroenterostomy. In such cases the condition of the patient and the local limitations prevent the excision of the ulcer area. In these cases, jejunostomy is indicated, and it practically becomes a matter of necessity. Excision of the ulcer area in the presence of an acute perforation is a dangerous procedure, and is rarely, if ever, indicated. It would find its chief indication in acute perforations of carcinomatous ulcers.

Simple Procedure for Nasal Bleeding.—William Lapat (*Journal A. M. A.*, October 14, 1916) reports that spontaneous recurrent epistaxis is usually due to ulceration over capillaries or a vessel in the anterior nares, but at times it is difficult to locate the precise area from which the hemorrhage comes. This difficulty may be overcome by an application of epinephrine to the anterior portion of the septum. This blanches the whole mucosa except at the spots which give rise to the bleeding. These then stand out clearly against the pale surface as red, circular areas. The treatment is cauterization of these spots with ninety per cent. trichloracetic acid.

Prevention of Gallstones.—Thomas A. Watson (*Brit. Med. Jour.*, September 30, 1916) concludes that the essential feature in the prevention of the formation of calculi in either the urinary or the gallbladder, is by keeping the viscus properly emptied. In the case of the gallbladder this can be accomplished readily once each day by massaging the region of the organ each morning with the round end of a twelve pound dumb-bell. The emptying of the bladder, which is full in the early morning can be heard as a gurgling sound and its result is the production of a free movement of the bowels in about half an hour. This treatment should never be used during an attack of biliary colic, but is an effective prophylactic.

Operating upon Ulcers of Stomach by the Intercoloepiploic Route. — B. Sherwood Dunn (*American Journal of Surgery*, October, 1916) says that gastric ulcers repair best if they are resected. Resection is easy if the ulcer is located at the level of the pylorus. It is more delicate and difficult if they occur upon the lesser curvature or posterior gastric face, and especially if found high up near the cardiac opening. By his new route it is comparatively easy to find the hidden ulcer, and it is a boon to the surgeon when inflammatory adhesions must be separated. The ulcer once liberated may be resected, but if the surrounding surfaces are much inflamed, it is better to perform a partial gastrectomy, which will be found less grave and more efficacious.

Spinal Anesthesia.—Percival P. Cole (*Lancet*, October 7, 1916), using the Billon solution of ten per cent. of stovaine in sodium chloride solution, has secured ideal results from the following plan of procedure. Half to one hour before operation a dose of morphine and atropine is given and the patient is told that consciousness will not actually be lost, but that there will be drowsiness and absence of sensation. The ears are then plugged with cotton and the eyes bandaged. The stovaine is then injected intraspinally, and the patient placed on the operating table with the feet elevated. During the operation all noise is avoided and there is no talking. No tests are made of the height or degree of the anesthesia, but the patient's face is watched while the towels are being clipped to the skin. This plan gives perfect anesthesia, perfect muscular relaxation, and is not followed by aftersymptoms. It is specially valuable in avoiding shock and is indicated particularly in acute abdominal conditions and in cases in which a general inhalation anesthesia would be contraindicated.

Carbon Tetrachloride in the Treatment of Wounds.—L. MacAuliffe (*Bulletin de l'Académie de médecine,* September 5, 1916) recommends carbon tetrachloride as a satisfactory and inexpensive substitute for benzine, ether, chloroform, or alcohol in removing fatty substances from the skin around wounds. Though it does not mix with water, a few drops of it placed on the skin greatly facilitates the removal of greasy material with hot water when the latter is rubbed over it. Carbon tetrachloride is neutral and stable under ordinary conditions, is slightly less volatile even than chloroform, more strongly antiseptic than the latter, and practically devoid of danger from inflammability. Its ethereal odor, by some deemed unpleasant, is easily disguised by dissolving a little menthol in it. In the author's experience. one litre of carbon tetrachloride sufficed in the cleansing of over 300 wounds.

Röntgenotherapy in Hypertrophy of the Thymus Gland.—Philip H. Cook (*Boston Medical and Surgical Journal,* October 5, 1916) reports three cases of enlarged thymus in small children, which were affected favorably by x ray treatment. In conclusion, he quotes the following deductions of Lange, which he endorses. Röntgen irradiation of the thymus produces artificial involution of the gland. X ray therapy is the method of choice in cases of enlarged thymus in children, whether the symptoms be mild or urgent. Urgent cases should receive repeated massive doses. Recurrences due to regeneration of the gland are to be watched for and controlled by further treatment. Children whose physical or mental development is retarded should, if suspicion is directed toward the thymus, receive tentative x ray treatment even though a positive diagnosis cannot be established. X ray therapy as a precautionary measure, or preoperative treatment may enable children of the so called lymphatic type to withstand intercurrent disease or anesthetics, which would otherwise prove fatal. Preoperative exposure of older children and adults, where there is a suspicion of enlarged thymus, might lessen operative mortality. Routine preoperative x ray treatment in cases of hyperthyroidism should be resorted to with a view to lessening operative mortality. X ray exposure of the thymus gland has proved harmless, whether in normal or abnormal subjects; a therapeutic test with the x ray is, therefore, always permissible.

Vaccine Therapy in Septic Wounds.—Kenneth Goadby (*Lancet,* September 30, 1916) concludes from an investigation of the natural history of septic wounds, that intelligent vaccine therapy may be employed with the hope of increasing resistance to disease. Vaccines will diminish the general constitutional reaction following the surgical manipulation of the infected wound, and will also prevent or reduce the extension of the bacterial invasion in the vicinity of the wound. They further increase the power of tissue regeneration in the parts affected. Since military wounds are apt to contain anaerobic organisms such as Bacillus aerogenes capsulatus, Bacillus perfringens, and Hibler's bacillus, and since the activity of these depends to a large extent upon a symbiosis with common aerobes, efforts should be made to check the activity of the latter. Polyvalent vaccines should be kept on hand, prepared from strains of organisms isolated from infected wounds, and used at once in all septic cases as soon as they come under treatment. The initial dose of such a mixed vaccine should contain 5,000,000 sensitized, polyvalent streptococci and 10,000,000 proteus. Where there is gas gangrene the mixed vaccine should contain ten million each of streptococci, proteus, and Bacillus lactis aerogenes. The injection should be repeated on the third day and the dose of the organisms other than streptococcus doubled. By that time an autogenous vaccine can have been prepared and may be substituted if necessary. If the stock vaccine is giving good results it may be continued. In addition to the use of vaccines, the general methods of surgery should be carried out.

Celluloid in Plastic Surgery.—Charles Higgens (*Lancet,* October 7, 1916), after trying paraffin and other suggested substances for the plastic restoration of tissue defects, finally adopted a solution of celluloid as the means which gave the best results. The celluloid was used either in solution in acetone or in the form of a secret preparation of dissolved celluloid, the latter being the more satisfactory. Through a small incision beyond its limits the scar tissue was separated from its attachments to the underlying parts and the celluloid was injected slowly and continuously from a strong syringe with a screw attachment to drive out the semifluid mass. Enough was always injected to raise the scar slightly above the neighboring skin; the syringe was then withdrawn and the scar smoothed down by manipulation to the level of the surrounding part and the incision closed with collodion. Celluloid plates were also found serviceable where the fluid preparation could not be employed.

Immune Human Serum in Acute Poliomyelitis.—C. W. Wells (*Journal A. M. A.,* October 21, 1916) believes that from an analysis of the facts this method of treatment is based upon the principles of immunity, but he contends that since the lesions are not limited to the central nervous system, and since the nerve lesions are essentially of the vascular areas, it is rational to administer the serum intravenously or both intravenously and intraspinally. The intravenous dose should be from fifty to one hundred mils daily, and more if obtainable. Each intravenous injection should be followed by lumbar puncture and the withdrawal of some spinal fluid both to relieve the pressure and to promote the circulation through the spinal bloodvessels. In small infants and children it may be necessary to give the serum intramuscularly on account of the difficulty of entering the veins. This plan of combined treatment was followed by the author in fifteen cases and in all there were prompt beneficial effects produced, though these were only transitory at times and four of the cases died. The beneficial effects were more pronounced following the intravenous than the intraspinal injections and no ill effects followed either. The earlier in the course of the disease that the treatment was begun, the better were the results, and serum obtained from persons who had had the disease many years before was less effective than that obtained from more recent cases.

Treatment of Eclampsia.—J. Fleming Goodchild (*Canada Lancet*, October, 1916) advises that at the first signs of danger there be given the imperial drink in large quantities. This is merely the well known cream of tartar and lemon solution and to this may be added sodium acetate one dram to the quart. If the urine does not become normal in amount and findings after a fair trial then active treatment should be instituted with a dose of calomel three grains and compound jalap powder thirty grains. If the bowels are not moved in a few hours then two drops of croton oil should be given in sugar, olive oil, or butter. Ether or chloroform is then given and manual dilatation performed, version done, and the fetus delivered. This usually takes one hour. When the third stage of labor is over a solution made of sodium acetate and sodium chloride one dram of each to the pint is injected under each breast and the patient is put in a hot pack. A fresh pack is used every twenty minutes until there is free perspiration. If the patient is still restless there may be given either by mouth or by rectum thirty grains of potassium bromide with twenty grains of chloral hydrate every two hours. If the patient cannot swallow obviously this must be given by rectum.

Sodium Cacodylate, Its Antiluetic Value in Large Intravenous Doses.—William F. Bernart (*Medical Standard*, October, 1916) is of the opinion that this drug in large doses is of considerable value in the treatment of syphilis, but by no means the equal of our newer remedies. It has an inhibitory action on the spirochetes, but this action is slight even in large doses. It can be classed as a valuable adjuvant in the treatment of syphilis, and can be administered in moderate doses to patients who show idiosyncrasies to the use of the newer arsenicals and along with a mercurial medication it assists in the production of better results. Its only objection is the production of a garlic tainted breath.

Treatment of Tragic Forms of Ruptured Ectopic Gestation Sacs by Vaginal Section and Clamping.—W. Wayne Babcock (*American Journal of Obstetrics*, August, 1916) points out that there are certain tragic cases of rupture in extrauterine gestation in which death usually occurs unless hemorrhage is controlled surgically. Patients with this condition suffer shock not only through loss of blood, but through a blood pressure lowering reflex awakened by the peculiar irritant action of the blood upon the peritoneum. Often the additional shock of an abdominal section determines the patient's death in such cases. To avoid this, Babcock recommends in all alarming cases the following procedure, which he employed in twenty-four instances, with recovery in every case: Under spinal or light ether anesthesia after the usual vaginal preparation and introduction of a weighted vaginal speculum, the cervix is pulled downward and forward, and the cul-de-sac of Douglas opened behind the cervix in the midline by thrusting through a pair of sharp pointed scissors toward the posterior uterine wall. The scissors having been opened and withdrawn, the incision is widely enlarged by traction after insertion of both index fingers through it. Two fingers are at once introduced into the cul-de-sac, the diseased tube located, thoroughly isolated, and pulled down into the vagina, along with the ovary, and a clamp applied close to the uterus, thus arresting the bleeding. The tube and ovary distal to the clamp may then be cut away, unless the patient is moribund. A piece of gauze fully occupying the vaginal incision is introduced into the pelvis high enough to isolate the clamp from the intestinal coils. The patient can thus be returned to bed in from three to ten minutes, with little or no increase in the preexisting shock. The clamp is cautiously opened half an inch at the end of forty-eight hours, rotated ninety degrees in each direction, and removed. The gauze is removed on the fourth or fifth day, and usually need not be replaced.

Rest and Exercise in the Treatment of Pulmonary Tuberculosis.—Charles L. Minor (*Medical Record*, October 7, 1916) states that rest lessens circulation and hence toxin absorption, diminishes oxidation, and lowers temperature, so decreasing tissue waste, puts the diseased lung at rest, rests the heart, lessens cough and expectoration, encourages weight gaining, and also puts the mind at rest. Exercise, however, is of great importance in the latter months of a successful cure. When the afternoon temperature is not over 99.5° F. with a slow pulse, exercise should begin with one to five minutes a day, increasing by one to five minutes daily up to three hours on a stretch or eighteen holes of golf. Temperature is the best guide to exercise, 100.6° F. or over indicating absolute rest in bed, while a pulse rate of 100 or over indicates rest. Abundant cough and expectoration, especially blood streaked, contraindicate exercise, as do loss of weight and fatigue on exertion. Exercise begins with sitting up in a chair, then crocheting for women and solitaire for men, progressing to walking, which is the best of all exercises. Automobile riding is forbidden until the patient can walk one half to one hour without ill effect. Minor never discharges a patient as cured until he can walk for three hours over hilly country without undue dyspnea, loss of weight, fatigue, or tachycardia.

Vaccine in Mediastinal Actinomycosis.—W. S. Malcolm (*Brit. Med. Jour.*, October 7, 1916) states that salvarsan, the use of iodides locally or of massive doses of potassium iodide by mouth, have all afforded cures, but there are some cases in which they fail, probably because the drugs are prevented from reaching the infected tissues in effective quantities. Such a case was observed by the author, in which there was pulmonary and mediastinal actinomycosis which had broken externally through the sternum. Weekly injections were given of a vaccine containing two and a half million actinofragments a dose. This was slowly raised to ten million. But constitutional symptoms indicated that this was too large a dose. About five million was finally adopted as a suitable dose and this injection was continued until about fifty had been given. Cure followed before all of the doses had been given, but treatment was continued for safety. Under the injections the discharge soon stopped, the sinuses healed, and the nodules and thickening of the parts disappeared.

Miscellany from Home and Foreign Journals

The Etiology of Epidemic Poliomyelitis.—E. C. Rosenow, E. B. Towne and G. W. Wheeler (*Journal A. M. A.,* Oct. 21, 1916) give this preliminary report as a brief summary of the results of bacteriological and animal inoculation studies made during the recent widespread epidemic of poliomyelitis. The studies showed that a peculiar streptococcus could be isolated from the throats, tonsils, tonsillar abscesses, and the central nervous tissues in cases of infantile paralysis, and that cultures of this streptococcus were capable of producing typical flaccid paralysis in a wide variety of laboratory animals when injected intravenously or intracerebrally. The organism was, in turn, isolated from the tissues of the nervous system of the injected animals while the other tissues of the animals were sterile. Study of the organism itself showed it to be remarkably polymorphous, growing especially in two forms, the one a large, the other an extremely small form which would pass through a Berkefeld filter and produce typical growth in culture media and infection of animals. Both forms were found equally infectious to animals and depending upon the nature of the culture medium used either form could be produced from the other. The organism grew best in aerobic cultures and it was chiefly in the anaerobic ones that the small form predominated. The small form seemed to be the one which was assumed by the organism when in the central nervous system.—John W. Nuzum and Maximilian Herzog (*Ibidem,* October 21, 1916), working independently of the preceding group of investigators, have isolated an organism which is apparently similar to the one just described and have found much the same facts regarding its polymorphism and virulence for animals. They were able to recover it from the mesenteric lymph glands in fatal cases of the disease in man as well as from the tissues from which Rosenow and his associates secured it. They also found that the organism was very resistant to glycerination, retaining its virulence for thirty-five days in material preserved in fifty per cent. glycerin.

Deafness Due to Shells.—I. Ranjard (*Bulletin de l'Académie de médecine,* September 12, 1916) terms "shellitis" (*obusite*) the sum of the organic and functional disturbances brought on by a nearby shell explosion. It is one of the commonest causes of deafness in military practice. Such deafness is organic when the apparatus for mechanical or nervous transmission of sound or the organ of Corti is injured; it is neuropathic when the result of functional inhibition of the centres of auditory sensation or identification. The organic form is associated either with otitis media, labyrinthine concussion, or auditory neuritis. The otitis generally differs little from the common form of otitis media, and is recognized by the same signs: Vibrating tuning fork at the vertex best heard by the ear with greater impairment of hearing; or heard least well among the vowel sounds, but with no great difference between the vowels as a whole; vestibular reflexes unimpaired. Concussion often coexists, causing, when mild, deafness, tinnitus, and vertigo of brief duration; when severe, unconsciousness for several hours and a marked Ménière's syndrome. Deafness, which disappears last, may persist for a month or two, or become permanent. The vestibular reflexes are often impaired in these cases. An evanescent auditory neuritis may account for a temporary inhibition of hearing unaccompanied by signs of labyrinthine involvement. True neuropathic deafness, due to emotional shock, is nearly always accompanied by mutism, is bilateral and complete for all sounds, and is unassociated with vestibular disturbances. These three features are not, however, peculiar to it and may exist in organic deafness. One cannot prove clinically that in a given case deafness is purely neuropathic; but neuropathic deafness can be excluded. Secondary auditory identification is often impaired in concussion cases, the patient having difficulty in understanding articulate sounds. Precise diagnosis of the complex deafness from "shellitis" can be made only with a mathematically exact acoumetre such as the vowel siren of Marage, and is of great importance from the standpoint of treatment, neuropathic deafness being amenable to psychotherapy, while organic deafness can, in most cases, be cured or improved by auditory reeducation by the synthetic vowel method.

Dysentery and Dysenteric Diarrhea. — L. Giroux (*Presse médicale,* September 14, 1916) reports on 150 hospital cases, 117 of mucosanguineous diarrhea, forty of common diarrhea, and three of choleriform diarrhea. The onset was usually abrupt. All but five cases ended in recovery. In all the cases labelled dysentery, a sudden increase in the urinary output proved the most certain and early indication of approaching convalescence. This increase took place before any general or intestinal improvement, the output quickly rising from 500 c. c. a day to 1.000. 2,000, 3,000, and even more. An increased output of chlorides was simultaneously noted, the total daily amount rising to sixteen, twenty, and even twenty-three grams in twenty-four hours. The pulse rate also fell to sixty, fifty, and even forty at this time. In three cases paratyphoid infection was added to the dysenteric manifestations; one of these cases showed dysentery bacilli in the stools and ended fatally. In other instances, dysentery was complicated by such conditions as paroxysmal tachycardia, albuminuria, diaphragmatic pleurisy, general purpura, and Raynaud's syndrome. Antidysenteric serum, employed in all cases in which a diagnosis of dysentery had been made, whether upon a bacteriological or merely clinical basis, proved rather inefficient, even in typical instances of dysentery. On the other hand, emetine in doses of 0.04 gram a day, often gave prompt and striking results, the symptoms improving within forty-eight hours and recovery occurring within five or six days. This confirms the statements of Ravaut and Kronulitzky that many instances of dysentery, apparently bacillary, are really amebic, and that where both infections exist the ameba play the chief role. In choleriform diarrhea the author combats dehydration and circulatory weakness and finds saline solution containing morphine, given even in the presence of albuminuria, of great value to allay cramps and induce restful sleep.

A Simple Infallible Sign of Death.—Francisco Massana (*Revista de Medicina y Cirugia Practicas,* September 21, 1916) appeals for the widespread use of a sign of death first reported by Lecha Marzo of Granada. It consists of an acid reaction of the tears, blood, and organs coming on immediately after death and may be readily tried by introducing a piece of blue litmus paper for a few moments under the eyelid. This phenomenon is absolutely incompatible with life.

The Enterococcus and Trench Fever.—Thomas Houston and John M. McCloy (*Lancet,* Oct. 7, 1916) give extensive bacteriological studies that reveal a very frequent association between the enterococcus and trench fever and allied conditions. This organism was isolated from the blood, urine, sputum, or the pus of wounds in a large proportion of the cases studied. The conditions for which it seemed responsible, other than the infection of many wounds, were of three types. In the first there was a general septicemia with symptoms closely resembling typhoid fever. The second type comprised cases now known as trench fever. And the third presented symptoms of severe myalgia. In all of these forms the condition was relatively long in duration, but the administration of vaccines made from the enterococcus proved of decided therapeutic value. The pathogenicity of the organism and its etiological relation to the conditions mentioned were proved by its frequent isolation from the blood and other fluids, its opsonic reactions, its specific reaction when used as a vaccine, and its therapeutic effects when similarly employed.

Acute Epidemic Nephritis (Trench Disease).—Umberto Gabbi (*Riforma medica,* September 25, 1916) defines this condition as one probably infectious but noncontagious, with mild fever, head and joint pains, edema of face and extremities, and more or less dyspnea and albuminuria. The etiology is obscure, cold weather not being the cause, as the greatest number of cases occurred in June, while alcoholism, rheumatism, mild scarlet fever, typhoid, and dysentery have been excluded. The character of the urinary findings is that of an infectious nephritis in its glomerulotubular distribution, while toxic nephritis is almost exclusively tubular. Bacteriological examination of the blood, urine, and throat was without definite findings. Uranalysis shows reduced quantity, acid reaction, low specific gravity, albumin three to two per cent., hyaline and granular casts, rarely epithelial casts, very numerous leucocytes, and a number of red cells. Complications are acute uremia in seven per cent. of cases, retinal hemorrhage in acute cases, bilateral parotiditis, herpes, and acute mania in four of 500 cases. The mortality is two per cent., while treatment consists in excluding nitrogenous foods and giving a diet rich in carbohydrates, with complete abstinence from alcohol, and securing rest and warmth. The only medication indicated is theobromine in cases with diminished output of urine.

Diagnosis of Tuberculosis by Tuberculin.—H. A. Ellis (*Lancet,* Oct. 7, 1916) has shown, by careful experiment, that the papillary layer of the skin is the most sensitive in its reaction to tuberculin in infected persons. Employing original P. T. O and Koch's O. T. in full strength and in dilutions of one to ten, one to 100, one to 500, one to 1,000, and one to 10,000, applied by deep scarification, the author found that the character and intensity of the reaction bore a constant relation to the degree and stage of tuberculous involvement, but not to the amount of tissue involved. The reading of the reaction had to be made in conjunction with the clinical phenomena Thus when all dilutions gave negative reactions there was either no tuberculosis or the disease was very far advanced and the patient's resistance had been completely overcome. With reaction to the first and second strengths the patients were either dying or only slightly infected, the decision being clear on clinical examination. When first and second were positive and the third doubtfully so it pointed usually to an active process Positive reactions to the first four strengths were found in the majority of active cases in adults and to the gland cases in children. Cases reacting also to the fifth and sixth dilutions showed a state of hypersensitiveness and were in a dangerous condition of balance between infection and resistance. Most patients, however, did well under proper and careful treatment.

Psychic Vaginismus.—P. H. Williams (*American Journal of Obstetrics,* August, 1916) notes how the term vaginismus has been loosely used and expanded to include even such conditions as painful coitus due to tender masses in the cul-de-sac of Douglas, kraurosis vulvæ, senile vaginitis, etc. The term should be restricted to cases of reflex contraction of the constrictor ani, levator ani, and other muscles. He would divide the cases of vaginismus into: 1. The organic, depending on some ascertainable cause such as a tender myrtiform caruncle, irritable hymen, ulcer or fissure about the vulva or lower vagina; 2, the psychic, in which there is no such lesion about the external genitalia—remembering, however, that from repeated efforts at intercourse a condition of extreme irritability about the introitus may be set up, and that an actual neurosis may result from a very small lesion in the mucosa in a highly neurotic individual. Williams reports two cases of psychic vaginismus in which the causative psychic factors were easily ascertained and a permanent cure obtained without operation. In the first case the impulse causing vaginismus and inhibiting coitus had been conscious at first and imparted through suggestion by another person of pain attending intercourse; examination under codeine, sodium bromide, and anesthesin in warmed albolene locally, showed absence of tenderness or organic lesions. Hypnotic treatment failed, but detailed explanation of her case cured her. In the second case the vaginismus arose from long continued willful suppression of the sexual act through fear of the harmful effects of pregnancy on a tuberculous spine. Persuasion of the patient that her fears were no longer justified overcame the subconscious impulse to inhibit the sexual act.

Fixation of the Sacrum.—E. H. Arnold (*American Journal of Orthopedic Surgery,* October, 1916) believes that all cases of sacroiliac and sacrolumbar disturbances, whether due to disease, faulty posture or trauma, should be operated upon when the mechanical methods of fixation have not secured results. In fixing the sacrolumbar joint he either inserts a transplant on both sides of the spinous processes of the last three lumbar and the first two sacral vertebræ or else follows the Albee method at the same site. In fixing the sacroiliac joint, after having made a trough from the sacrum down to the ilium, he inserts a transplant. He reports eleven operative cases, the results of all being good.

Shortening Long Legs and Lengthening Short Legs.—R. Tunstall Taylor (*American Journal of Orthopedic Surgery,* October, 1916) states that in cases where there is a disproportion of at least three cm. between the length of the lower limbs, but where the limbs are straight and parallel, the shortening or lengthening of a limb may be accomplished by operative measures. For the lengthening of a limb, after having previously divided the adductors, iliotibial band, and hamstrings, he makes half sections of a desired length in the middle third of the femur and then exerting traction fixes the sliding fragments by the use of bone dowels. In the shortening of a limb he does not divide the muscles and tendons, but resects a portion of each half section of bone. Otherwise the technic is the same.

Ascaris Infection.—F. H. Stewart (*Brit. Med. Jour.,* Oct. 7, 1916), from a large number of experiments, has demonstrated that ripe eggs of Ascaris lumbricoides swallowed by rats or mice match, and their larvæ enter the animals' livers by the bile ducts or by boring through the venules of the portal system. In the liver they cause rapid degeneration of the neighboring cells, enter the hepatic vein, and gain access to the lungs. From these they soon pass by way of the air cells into the bronchi and appear in the animals' saliva about eight days after the initial infection. From the mouth they are conveyed by the saliva to articles of human food and lead to infection in man. These common rodents are, therefore, probably the usual intermediate hosts of this parasite and are the agents in its spread.

Significance of Pulse Form.—A. W. Hewlett (*Journal A. M. A.,* October 14, 1916) calls attention to the fact that our knowledge of the size and form of the pulse has not kept pace with that of other characters of the pulse. By means of a plethysmograph enclosing the hand, forearm, and lower arm the author has measured the size of the pulse in normal and abnormal cases. He found the size to vary normally between four tenths and one mil and that an unusually large volume pulse occurred in cases of aortic insufficiency—from one and four tenths to two mils. States of chilliness and warmth produced considerable alterations in the size of the pulse in normal subjects—from 0.26 to 0.96 mil, and a febrile chill greatly reduced the size of the pulse, which returned to normal as the sensation of warmth returned. The latter was probably due to vasoconstriction. The pulse form has also been studied by the author with the aid of the same instrument connected with a Frank recorder. Two main types of pulse form were found. The one showed an abrupt rise and a sustained and slow fall; the other differed in having a more or less abrupt fall. The latter gave the impression of a bounding pulse to the palpating finger. The dicrotic wave in this type of pulse varied from being absent to being very large, but appeared to be of less importance than the initial abrupt fall. Sustained pulses were found most commonly in normal persons or those with high arterial tension, while the pointed type occurred in those with abnormally low pressures and particularly in cases of acute febrile disease. The pointed type of pulse was found to be due to a reflection of the systolic wave backward into the vessels, and not to a rapid outflow through the capillaries. Such a reflection was favored by relaxation of the larger arm arteries and a constriction of the arterioles. The phenomenon could not be explained wholly on this ground, however, but rested in part upon the occurrence of a small or brief systolic output from the heart. The most important bearing of the pointed pulse was in connection with circulatory failure in which it became progressively more and more marked and decreased in size.

Value of the Ambard Quotient in the Estimation of the Renal Function.—Leon Jonas and J. Harold Austin (*American Journal of the Medical Sciences,* October, 1916) arrive at the following conclusions: 1, The Ambard formula in its original form, or as modified by McLean, does not express precisely the law of renal function with respect to the elimination of urea, and this is particularly true as regards the effect of urinary urea concentration. 2, The upper limit of blood urea in nonnephritic and normal subjects under ordinary conditions of diet and life is about 0.35 gram urea per litre of blood. Figures higher than this are, under ordinary conditions of diet, to be considered evidence of impaired renal function. 3, Using McLean's modification of Ambard's formula, it was found that in the great majority of nephritic cases a lowering of the index was accompanied by an elevation of the blood urea above normal limits, 0.35 gram per litre, and that the index afforded no information of diagnostic or prognostic value that could not be as readily deduced from the blood urea alone. 4, In certain cases the index was found to be lowered when the blood urea was within normal limits. This was especially true in arteriosclerotic cases and in cases with cardiac decompensation, which probably detracts from the clinical value of the index as compared with that of the blood urea rather than the reverse, since it is of importance to distinguish between cases of vascular and renal character. 5, In the determination of the index there is a possibility of error arising from undetected incomplete collection of the urine, which cannot occur in the simple blood urea estimation. 6, The urea index estimated repeatedly in the same subject exhibits wider variations in the normal or nonnephritic subject than in the nephritic. 7, For purposes of ordinary clinical diagnosis and prognosis the estimation of blood urea is preferred.

Proceedings of National and Local Societies

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting Held at the Academy of Medicine, February 21, 1916.

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

Vanadium Steel Bone Plates and Tap Screws in Compound Fractures.—This paper was read by Dr. WILLIAM O'NEIL SHERMAN, of Pittsburgh.

Dr. JOHN B. WALKER said that they were indebted to Doctor Sherman for bringing this important subject before them. While the general principles of operation on thirty-one simple fractures were well recognized, there was still some discussion as to the time when the operation should be done. Showing the increase in the number of operations for fracture, he had gone over the slips sent out by the Society for the Advancement of Clinical Research. In the first five months of 1915 there were 360 cases of fracture. Seventy-one of these were fractures of the femur and twenty-nine were compound fractures. In the last seven months there were 752 cases; 173 of these were fractures of the femur and forty-nine were compound fractures. In 1915 there were about 1,100 fractures, 250 of the femur, and seventy-five compound. When they recorded the experience of 1915, they appreciated that there was a great increase over 1910, 1911 and 1912, and they recognized that the profession was alert to the necessity of operation in simple fractures, the necessity in compound fractures was not generally recognized. The men who had had the largest experience found that they could put in plates, but many others doubted the possibility of doing so without danger to the patient.

Doctor Sherman had spoken of the large number of compound fractures reported from the seat of war—fifty per cent. compound fractures. Looking over the report of the American Ambulance, and also that of the English surgeons, they found that plates did well. They had had much experience, and were using plates or some form of internal fixation in many of these cases instead of relying upon plaster.

The question of early operating had not been definitely decided. Doctor Sherman gave a definite time for operation. Certain men, feeling that the compound fractures would give the greatest difficulty in healing, felt the operation ought to be within the first week, as by the end of the seventh day most of the retraction would have taken place.

Doctor Walker began using Lane's screws and plates six years ago, but during the last year and a half he had abandoned them and had been using Doctor Sherman's, and he felt confident that the latter had many advantages over Lane's and that they should be used in practically all cases.

Dr. CHARLES H. PECK expressed some hesitancy in joining in the discussion as in his service at the Roosevelt Hospital there were comparatively few traumatic cases since the ambulance service had been given up, and there were very few acute compound fractures compared with what they used to have. He had looked over the record to 1910, and found that on the second surgical division, there were ninety-one open reductions of fractures of various kinds; among them only twenty-nine cases had been plated; practically none were compound fractures. They were distributed among various bones of the body, the largest number being in bones of the forearm. There were two infected cases—one an infected radius which resulted in delayed union with final good function; the second patient had a fractured femur with multiple injuries, and died from a lung abscess which developed later from thoracic injury and had a slight secondary infection around the plate. The others healed, and there were no cases of recorded nonunion; one humerus had a delayed union, and the plate was removed after several weeks, and ultimately good union occurred. He believed that in fractures in general internal fixation of some sort should be used without question if good reduction could not be obtained and maintained by the closed method. If possible, most surgeons felt that closed reduction should be made under general anesthesia, and if, after careful trial, it was found that reduction could not be maintained, open methods should be instituted.

The speaker again expressed his regret that he could say so little in direct relation to Doctor Sherman's subject, the proper treatment of compound fractures. He wished, however, to refer to the application of these principles which he had seen at Panama in the service of Doctor Herrick, at the Ancon Hospital, in 1913. There they were using technic similar to that laid down by Doctor Sherman—making the incision away from the original wound, and carrying out the lines of treatment which Doctor Sherman advised.

In regard to the vanadium steel plate and tap screws, Doctor Peck said they had adopted that type of screw at Roosevelt Hospital for the last two years, and had practically given up the Lane plate and the aluminum plates formerly used. He joined with Doctor Walker in expressing indebtedness to Doctor Sherman for bringing before the the association this splendid mass of material for the treatment of compound fractures. These fractures should not be left to go on to vicious union which is so difficult to correct later in the case.

Dr. FRED H. ALBEE agreed with Doctor Peck, Doctor Walker, and Doctor Sherman that the vanadium plates and tap screws were preferable to the older, less accurate screws that had been used hitherto. The forcing of a wood screw into the bone did a good deal of tearing. Then, again, the wood screw did not hold so well as the tap screw used by Doctor Sherman, and might produce an amount of compression sufficient to cause the death of the neighboring bone cells followed by their immediate absorption and the loosening of the screws, thus defeating the very purpose for which they were inserted. The speaker had not had a very large experience in the treatment of fresh compound fractures. A large proportion of those that came under his care were ununited fractures, simple fractures, or old compound fractures where the soft tissues had healed. Reasoning from the repair of bone, he believed that internal fixation was especially indicated in such cases as Doctor Sherman had presented. The laceration of soft tissues, in compound fractures, interfered seriously with the fixation of the fracture, and the constant motion that must occur with an improperly fixed fracture contributed to the progress of infection, if any existed. Pringle, of Glasgow, had tabulated 230 cases of compound fracture, and had arranged them in reference to internal fixation. He had used three methods of fixation—the plate, the wire, and the screw. He had found in his series of cases (about one third treated without internal fixation, and two thirds with fixation) that of those treated with internal fixation 10.8 per cent. came to secondary amputation, whereas only 2.6 came to amputation when he did use internal fixation. He was strongly in favor of internal fixation in compound fractures, necessarily, from his statistics.

In following his report, it was interesting to note that for some time he had practised putting back the fragments of bone, where there had been a compound comminuted fracture—and if it was necessary to take them out in cleaning the wound he put them in a saline solution until they could be replaced. In a number of instances, they were cleaned of dirt and then put back. The fact that under such conditions these bone fragments lived and united to the near fracture fragments, went to prove the usefulness of the bone graft as an internal fixation agent. The resistance of the living bone graft to the infection had not yet been appreciated by the profession. This brought up the subject of whether in certain cases of compound fracture a bone graft could not be used from the end of one fragment in the form of a sliding inlay and employed as a means of fixation in place of metal. The speaker believed that in most cases it was preferable to metal.

A word in respect to silver wire: In the last few months he had been carrying on some experiments as to the trustworthiness—or rather untrustworthiness—of wire, especially of silver wire, and he had been somewhat surprised at the results. In some instances, the ordinary size used in bone work had parted at only ten pounds traction—usually at the twisted knot. On the other hand, he found that heavy kangaroo tendon was very strong and much more to be depended upon; some of the strands tested up to one hundred pounds' traction at the knot. That was very important; if a compound fracture could be held by wire, kangaroo tendon seemed preferable, since it was an absorbable material, very easy to insert, and disappeared in about forty days.

Dr. J. H. **Branth** said that the Lane plate was one of the greatest advances yet made in bone surgery. By the Lane method, the surgeon cut down to the seat of fracture, cleaned out blood clots, and removed loose splinters of bone. When tendons and muscle tissue were between fragments of bone, they were replaced in proper position for future normal function. The bone fragments were then brought into accurate apposition, which was not difficult, as the patient's muscles were relaxed by anesthesia and the parts were in view. In all fractures, whether transverse or oblique, there was a serrated condition of the fracture surfaces, and by interlocking this assisted in maintaining correct apposition. The periosteum was also drawn as far as possible over the fracture. The Lane plate was laid on parallel with the shaft of the bone, a hole drilled in one end of the fractured bone, and a screw inserted to hold the end of the plate in place. Then the plate was adjusted to overlap the other part of the fractured bone, and the limb was brought into normal position and held steady by assistants. A hole was then drilled for the second screw, and the screw brought home after which the soft parts were carefully adjusted, perhaps with the aid of sutures. All clots were removed, the wound was closed aseptically and covered with gauze, and the limb encased with plaster bandage. It was remarkable what firmness was secured by such a simple procedure. By the treatment described, the fractured surfaces were brought into and kept in accurate apposition, and nature had but little work to do in establishing repair. There was less spasm of the muscles because less irritation, the parts being all in place and no debris or tissue between the fracture surfaces. The speaker was the guest of Mr. Lane in 1905 and again in 1906, and on one occasion the London surgeon showed him a patient who had been admitted to Guy's Hospital suffering from fracture of the femur, upper third, and also from delirium tremens. This man was walking in the yard with a cane five weeks after a Lane operation. The speaker made an x ray examination, himself, which showed the plate in position. When they considered that fracture of the thigh, with complication of delirium tremens, generally meant a fatal issue, this result was remarkable.

Mr. Lane used a sterilized steel plate, two or three inches long with two holes, one on each end. He then used a carpenter's wood screw. The latter had a long neck and the screw end might reach through the bone wall into the marrow, a condition in which the screw would have no firm hold and would act like a peg or nail. Such a screw might slip and spoil the result. During that visit, the speaker saw such a case, and verified the condition then, by personal measurement and x ray examination. Then and there he suggested to Mr. Lane the use of a machine screw with the thread extending up to the head. The hole should be made by a drill to fit the screw. Mr. Lane accepted the suggestion, saying that he would discard the carpenter's screw. Such a machine screw would secure a firmer hold in the bone. They might ask, What became of the metal plate? It remained where it had been fixed; callus would surround the plate, making the union firmer.

A few points in the technic might well be mentioned: The screw should not be much larger than the thickness of the bone wall; the screw should not extend far into the marrow canal, for this would interfere with the process of repair and increase irritation. Another point: When the screw was brought home, the operator *felt* when it was tight. He then should turn it backward a sixth or a quarter turn. This would reduce the tissue's hold on the screw thread; the bone cells would swell from the presence of the foreign body. The screw might be cast off by a fully developed inflammatory condition. In any event, it seemed probable that the screw *not drawn fully tight* would soon become tight during the process of repair. Applied under proper conditions, it ought not to cause any trouble. Should an abscess and sinus form and the plate be cast off, it was owing to a defect in asepsis, or because some dead debris had been left in the wound. The Lane method of treatment therefore seemed to be ideal. Of course, low vitality, as produced by preexisting conditions, such as diabetes, Bright's disease, syphilis, etc., was a factor to be considered in the prospect of recovery. This subject was discussed in this association some five years ago, and then the speaker described the faults of the carpenter's screw and the advantages of the machine screw (see *Year Book*). The Lane plates as now made seemed faulty because the constricted parts between the screw holes was weak and might break. The first Lane plates were made of a bar of steel, two to three inches long, a half or nine sixteenths of an inch wide, and one sixteenth of an inch thick, with a counterhole sunk at each end; there was no weak spot in such a plate. Vanadium steel would, of course, be stronger. However, the plate was there only to secure immobility between the fracture ends; the plaster roller bandage also contributed to this end until nature had produced callus and a bony union.

Dr. H. M. SILVER called attention to one fact that had not been spoken of, the use of Steinman's nail in simple and compound fractures. In his service at Gouverneur's they had had very wonderful results with this nail, passing it through the malleoli, and putting over the wound a gauze pad wet with iodine. These cases were first x rayed, and then the Steinman nail was put through the condyles or through the tuberosity of the tibia in fractures of the femur; if through the tibia, it was put through the malleolus or os calcis, and then they could secure thirty or forty pounds of traction; and it was very simple, even without splints, to keep the fracture in position. He thought that if Doctor Sherman tried the Steinman pin in this way, he would be pleased with it. Doctor Lyle said that they were using it with much satisfaction in France, in bad gunshot wounds. With it they would get their traction at once and not have to wait to put on plates.

Dr. THOMAS DARLINGTON had seen something of Doctor Sherman's work, even at the beginning of his own work with a large western steel company, and any one that knew anything of a steel company knew that in a large plant there would naturally be a large number of accidents. When he first became acquainted with Doctor Sherman, there were in some parts of the steel works as high as fifty per cent. of septic cases. In the last few years, this had been reduced to one in 1,000 cases, or 0.1 of one per cent. Perhaps the most remarkable part of his work had been the lessening of the sepsis.

Doctor SHERMAN first called attention to Doctor Walker's reference as to time of operation. It had been their custom to delay operation in simple and compound fractures, never operating before the eighth or twelfth day, as an immediate operation after the receipt of fracture did much harm, as the traumatized tissue should be given time to react. Regarding the work of Doctor Herrick and Doctor Noland at the Panama Canal, referred to by Doctor Peck, Doctor Sherman cited Doctor Noland as advising him that the Lane plates and screws had been productive of much trouble, and that they had discontinued using them, adopting the Sherman vanadium plate and tap screws, which had produced very satisfactory results. As to Doctor Albee's reference to Pringle's statistics, he did not see how so many cases came to amputation; but it must be borne in mind that the charity patients seen in the services of the large city hospitals were, from the standjoint of resistance, quite different from the steelworker and coal miner, because infections from street wounds were usually virulent, while coke, coal, and iron ore were generally sterile. Regarding kangaroo tendons to hold a fracture in position, it was questionable how long they would withstand muscular spasm, and it was reasonable to assume they would not stand up when steel plates broke and screws pulled out. Doctor Albee's suggestion with reference to the cleaning of pieces of bone and placing them back in the wound, was a good one, and although he had never tried it, he would do so with the hope it would aid in osteogenesis. The "before and after" pictures illustrating the Steinman pin did not reveal a very good correction of the deformities; extension by means of the Hawley table could be applied just as effectively without the Steinman pin.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-eighth Annual Congress Held at Washington, D. C., May 9, 10, and 11, 1916.

The President, Dr. G. HUDSON-MAKUEN, in the Chair.

The Psychology of Diseases of the Respiratory Tract (President's Address).—Dr. G. HUDSON-MAKUEN, of Philadelphia, remarked that while the specialty of laryngology was dependent upon all the various specialties in medicine, its progress and development depended chiefly upon a knowledge of psychology and its related branch, neurology. Psychotherapy had been practised after a fashion since the beginning of the history of medicine, but it had not kept pace with the other forms, the chief reason for this being that the successful practice of psychotherapy required on the part of the practitioner the profoundest knowledge of both medicine and man, and especially man. Few physicians were mentally and temperamentally capable of practising psychotherapy, and the improved curricula of the schools did not supply the rising generation of specialists with the assistance which they should have.

Since many of the diseases of the respiratory tract were purely functional and of psychic origin, the laryngologist should be able to distinguish between those of his patients who were psychopaths and neuropaths and those who were suffering from actual organic diseases. He should realize that to treat a purely psychic case by physical measures was not only useless, but in many instances absolutely harmful, and to operate merely for the psychic effect of the operation was exceedingly questionable surgery.

Psychotherapy in the form of education and reeducation should always be used, in addition to the necessary medical and surgical measures, for the relief of disturbed respiratory, phonatory, and articulatory functions. It was not enough to do operations for the correction of disturbed functions without at the same time or immediately thereafter doing something in an educational way to correct the faulty habits which accompanied, either as cause or result, the conditions that they were seeking to modify or cure. An example of the psychophysical habits that arose owing to functional disturbances due to organic lesions was found in the speech of the patient having a cleft palate. When this characteristic speech had developed no amount of adequacy or efficiency of the palate brought about by operative measures could in itself appreciably change or improve the speech, because the subject accepted his old speech as normal.

This principle obtained in all their operations upon the respiratory tract, the object of which was to correct faulty function. Its value was apparent in dealing with disorders of speech, the treatment of which differed not from that of other disorders of the respiratory tract. Formerly, distinguished surgeons operated not alone upon diseased and abnormal structures, but also upon perfectly normal structures, not hesitating to remove cross sections of the tongue and epiglottis, in the hope of curing stammering. To those of the present day this was absurd, for they knew that stammering in the great majority of instances was of psychic and not of physical origin, and to cure the affection psychotherapy was quite as important as physicotherapy. What was true of stammering was also true of the other defects of speech.

As the medical profession had been slow in recognizing that stammering and other defects of speech were largely of psychopathic origin and required for their cure psychotherapeutic measures, so had they been slow in recognizing that many forms of asthma, sore throat, and difficult nasal breathing were of similar origin and required similar treatment.

In no specialty of medicine was the importance of these matters so apparent as in their own, for in no specialty was the psychic element so great a factor in the causation, not only of functional, but of organic disorders as well. It must not be overlooked that faulty methods of breathing, vocalization, and articulation, although at first of psychic origin, frequently resulted in organic diseases which could be differentiated from diseases having purely physical bases.

A study of the psychological phenomena as they appeared was merely a study of reactions to environment; or, in other words, a study of what had been called mentation, behavior, and personality. The new psychology, therefore, taught them not merely how to treat diseases of special organs, but how to treat the patient himself or the reactions of the patient to particular diseases. A knowledge of this psychology would broaden the scope of their work, and would tend to make a medical education absolutely necessary to those desiring to practise the various forms of the healing art; but so long as physicians generally disregarded this fact, so long should they have nonmedical practitioners, such as Christian scientists, hydropaths, and all the others of their kind, actually invading their field of practice.

Sore Throat Clinically Considered.—Dr. Samuel Johnston, of Baltimore, said that in the clinical study of sore throat they should scan the physiognomy of the patient, mark well any changes in the voice tones, and note the odor of the breath before entering into a more detailed examination of the case. Among the conditions causing changes of the voice might be mentioned paralysis of the soft palate, defects in the conformation of the palatine arch, swollen tonsils, benign and malignant growth in the nasopharynx, laryngeal inflammations, paralyses, etc. The odor of the breath might call attention to such conditions as uremic poisoning, pulmonary gangrene, ozena, necrosis of the nasal bones, etc. The need of careful inspection of the lips, gums, teeth, tongue, palate, pharynx, nasopharynx, lingual tonsils, epiglottis, and larynx was emphasized.

In examining the nasopharynx an ulcer, usually of an infectious nature, was found when least suspected, and in infectious diseases sore throat was by no means uncommon.

The speaker's experience had proved that diseases of these regions differed in no way from similar pathological changes in other parts of the body, and they should receive the same therapeutic and surgical treatment. Conservative and mild measures, however, should be the rule.

Diagnosis and Management of Vasomotor Disturbances of the Upper Air Passages.—Dr. J. L. Goodale, of Boston, recalled that in a large proportion of vasomotor diseases of the upper air passages the disturbances were dependent upon the entrance of a foreign proteid into the system The method of entrance might be through contact of the proteid in question with the mucous membranes of the respiratory or of the gastrointestinal tract, by inhalation or ingestion, respectively. Foreign proteins might perhaps also develop in or upon these mucous membranes through autolysis of pathogenic or saphrophytic bacteria. The application of the skin test to these conditions was of diagnostic value when employed with a recognition of the phylogenetic relationships of animals and plants as determined by studies in serobiology.

Proteid material for testing should be prepared both from the keratin and serums of domestic animals, from the pollen of the chief varieties of hay fever, and from the various articles of food which entered commonly into the diet. Bacterial proteids derived from the various invaders of the respiratory tract should be available, either in solution or in the soluble form.

When the skin reactions to the various classes of proteins had been determined, the management of cases would depend largely upon the relative preponderance of the local reactions in relation to the clinical history. If the cause was found to be seasonal, as in hay fever, immunizing treatment by injection of pollen extracts was likely to prove of service. The sensitization returned during the following winter, and treatment must probably be repeated annually. If the cause was perennial and was due to inhalation of foreign proteids, it was wiser to avoid the cause rather than seek to effect a cure by immunization. If the disturbing proteid entered into the ordinary articles of diet, a tolerance might be gradually established by feeding the substance in progressively increasing doses. Disturbances of bacterial origin had not yet been sufficiently studied to enable the formulation of a definite plan of treatment, but the results of these investigations confirmed their present methods of treatment, and emphasized the importance of draining regions which could retain the products of bacterial activity. Septic foci should be removed. Vaccine therapy was likely in such anaphylactic cases to be more accurately guided than in the ordinary patient.

Dr. JOHN F. BARNHILL, of Indianapolis, wished to ask one question with regard to whether the matter had been brought down to a working basis. For instance, if a patient came to Doctor Goodale, what plan did he adopt for determining what the sensitization might be? Had he come to any conclusions?

Dr. ROBERT LEVY, of Denver, said that they had been very much stimulated by Doctor Goodale's work last year. He would like to ask two questions. First, what was his mode of procedure when they had a multiplicity of sensitizations? He would like to have that explained more at length. And secondly, having determined for a certain subject his sensitizations to a number of proteids or inhalations (he had particular reference to inhalations), what method did he proceed with in the treatment of these patients?

Dr. HANAU W. LOEB, of St. Louis, would like to ask Doctor Goodale to tell if lactate of calcium and calcium chloride salts had, in his experience, had the effect of reducing the sensitization.

Dr. J. L. GOODALE rejoined that if he had read the whole of his paper, all of these questions would have been answered. Answering the first, as to how they proceeded, the best plan was to see whether the symptoms were present throughout the year, or whether they came at a definite time. If seasonal, they were probably due to something in the air; most commonly, pollen. If they might occur at any time during the year they inquired as to whether they stood in relation to colds or conditions of acute infection of the bronchial tubes. If they saw the patient was entirely well throughout the summer and winter, and once in the fall or spring had a severe cold and asthma developed, they could under those circumstances, rule out cases of foods, and also rule out the question of animals; consequently, it was one of these other products. On the other hand, it might not be fully a seasonal infection in that it might come in November or January, or at any time, and in that case he should proceed to investigate with special reference to bacterial proteids, and look for those organisms that they knew might invade the mucous membranes of the upper air tract. Now, if the symptoms were throughout the year, without much influence from season or travel, or various modifying circumstances, he would look for asthmatic animals—especially in the case of children—cats and dogs. Children did not know that cats or dogs troubled them, but they might have asthma entirely due to them. He had a recent letter from a man whose daughter had been the victim of asthma when four or five years old, who looked like a little old woman. It was really pathetic. He found it was due to nothing but the cat, and they kept the cat away. The child had now resumed the bloom of youth and the parents were greatly gratified. That was the manner in which they should proceed. They brought the season, the occurrence, the incidence and mode of development of the symptoms into relation with the patients, and that simplified it very much. The use of lactate of calcium and the chloride had made no material difference.

Angioma of the Larynx.—Dr. EMIL MAYER, of New York, premised that this affection was of very rare occurrence, the speaker having found only forty cases recorded in the world's literature. He presented the history of a woman, aged fifty-two years, who had a history of previous attacks of laryngitis with hemoptysis, and who had a tumor in the larynx on the left side, extending from the left false cord and covering the true cord on that side. The diagnosis of cancer of the larynx had been made by laryngologists who had seen her previously. The patient was admitted to Mount Sinai Hospital, and the speaker asked to report upon her condition, and remove a portion of the growth for diagnosis, if necessary.

(*To be continued.*)

Letters to the Editors

A CHAIR OF MEDICAL ETHICS.

PHILADELPHIA, *October 18, 1916.*

To the Editors:

I was particularly impressed with the editorial article entitled, Should There Be a Chair of Medical Ethics? which appeared in the NEW YORK MEDICAL JOURNAL for October 14, 1916.

Owing to my connection as founder and director of the scientific departments of five of the large manufacturing houses, I have been behind the scenes in matters medical ever since my graduation from Jefferson Medical College in 1879. And as chairman of important committees, such as that on patents and trademarks of national medical and pharmaceutical societies, I have been brought into personal touch with a great many leading men in both professions. With the exception of my old friend, Dr. N. S. Davis, of Chicago, with whom I was in personal conference during his life, I have yet to meet any physicians or pharmacists, with the possible exception of my old friend, Doctor Squibb, who seemed to grasp the subject from the broad point of view necessary for its true comprehension.

Medicine has been degraded in rank during the past thirty years, largely because of the ethical lapse of its membership. We preach altruism, but, unfortunately, a large proportion of the leaders in the profession practise the most intense egoism.

I hope the suggestion of your editor will bear fruit, and that in time each medical school will have a Chair of Medical Ethics. F. E. STEWART, Ph. D., M. D., Phar. D.

Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

A Manual of Otology for Students and Practitioners. By CHARLES EDWIN PERKINS, M. D., F. A. C. S., Professor of Clinical Otology in New York University and Bellevue Hospital Medical College; Associate Aural Surgeon to St. Luke's Hospital, etc. Illustrated with 120 Engravings. Philadelphia and New York: Lea & Febiger, 1916. Pp. vi-445. (Price, $3.)

Notwithstanding the number of manuals before the profession, prepared particularly for the use of students and general practitioners entering this special line of work, the one under review is especially to be commended for the study of aural conditions. The subject matter is arranged according to the following chapter headings: Anatomy and physiology of the ear, examination of the patient, diseases of the external ear, diseases of the membrana tympani, nonsuppurative diseases of the middle ear, acute inflammation of the middle ear, mastoiditis, sinus thrombosis, otitis media purulenta chronica, suppurative diseases of the labyrinth, complications of purulent otitis media, nonsuppurative diseases of the inner ear, general aural diseases, tinnitus aurium. The student or beginning specialist will find this manual helpful in obtaining the necessary groundwork for future study, and even the established specialist will discover many salient points throughout the text. The text is concise and to the point; every word seems to count. The differential diagnosis of similar conditions which might lead to confusion is clearly and succinctly explained. The illustrations are exceptionally good, clear, and instructive. In spite of the high esteem in which we hold this manual, the author's discouragement of the use of vaccine therapy in otitis media purulenta chronica is regretted, for the many successful cases reported, and the possibility of a cure in the one at hand should tend to encourage the liberal use of this method, especially since no harm seems to result from its employment. A few typographical errors are to be found in the manual, but are insignificant.

Diseases of Nutrition and Infant Feeding. By JOHN LOVETT MORSE, A. M., M. D., Professor of Pediatrics, Harvard Medical School; Visiting Physician at the Children's Hospital; Consulting Physician at the Infants' Hospital and the Floating Hospital, Boston, and FRITZ B. TALBOT, A. B., M. D., Instructor in Pediatrics, Harvard Medical School; Chief of Children's Medical Department, Massachusetts General Hospital; Physician to Children, Charitable Eye and Ear Infirmary; Consulting Physician at the Lying-In Hospital and at the Floating Hospital, Boston, etc. New York: The Macmillan Company, 1915. Pp. viii-346. (Price, $5.50.)

The purpose of this book, announced in the preface, is to meet "two distinct needs in American pediatric literature—a detailed description of the scientific basis of rational infant feeding, and a description of the method of infant feeding taught in the Harvard Medical School." The latter object, we are led to infer, is deemed almost, if not quite as important as the former. The authors are evidently not unappreciative of the excellence of the principles of infant feeding imparted in the Harvard department of pediatrics under their charge. America will doubtless feel grateful that the gap in literature referred to is now at last filled satisfactorily, and that a vivifying *ex cathedra* presentation has been formulated for the benefit of the flagging pediatric departments outside the Cambridge institution.

The first section of the work deals comprehensively with alimentary physiology and metabolism in the infant, including the bacteriology of the gastrointestinal canal and the variations in the gross and microscopic appearance of the infant's stools. In Section II, on breast feeding, the advisability of avoiding substitution of artificial for natural feeding is duly emphasized, and the fact pointed out that the reason why women do not nurse their babies is that they do not appreciate its importance, frequently because proper advice on the subject from doctors, nurses, and midwives is not received. The chemistry and biology of human milk are dealt with, and the modes of procedure in breast feeding taken up. Section III deals similarly with cow's milk and principles of milk modification for artificial feeding, while in Sections IV and V are described such abnormal states as pyloric spasm, hypertrophic stenosis, digestive disturbances due to various dietetic factors, indigestion with fermentation, infectious diarrhea, constipation, rickets, and scurvy, with their dietetic and drug treatment.

The Bacteriology of Dysentery in Malaya. By HENRY FRASER, M. D., Aberd., Director, Institute for Medical Research. Studies from The Institute for Medical Research, Federated Malay States. Singapore: Kelly & Walsh, Ltd., 1916. Pp. 44.

Fraser here presents the results of two rather extensive series of investigations of the flora of bacillary dysentery as that disease is found in Malaya. Some of the more striking results of this study deserve mention. Thus, of a total of 819 cases of dysentery, 249 were of amebic and 570 of bacillary origin. In only two amebic cases were dysentery bacilli found. Great difficulty was encountered in the isolation of dysentery organisms from the stools, and only about forty per cent. of the cases gave positive results. The Shiga type was found in only one case in nine, the remainder being due to mannite-fermenting organisms. Study of the organisms themselves showed that there were but two types: One the Shiga type which did not ferment mannite, and the other, mannite fermenters which included the organisms of Flexner, of Hiss, of Russell, and of Strong. The work is likely to be of relatively little interest to clinicians, except that suggestive therapeutic results were obtained from the use of a vaccine, but it should prove of great interest to bacteriologists, especially to those who are studying dysentery.

The Panama Canal and Commerce. By EMORY R. JOHNSON, Ph. D., Sc. D., Professor of Transportation and Commerce, University of Pennsylvania; Members Isthmian Canal Commission, 1899-1904; Special Commissioner on Panama Canal Traffic and Tolls, 1911-1913. Illustrated. New York and London: D. Appleton & Co., 1916. Pp. 296. (Price, $2.)

The facts that Doctor Johnson was a member of the Isthmian Canal Commission from 1899 to 1904, and also acted as special commissioner on Panama Canal traffic and tolls from 1911 to 1913, make him eminently qualified to write on the commercial aspects of the canal. To any one who is interested in transportation and trade, particularly in their relationship to the conditions existing prior to the opening of the canal and the changes which have taken place since it has become the great highway of commerce, the book is filled with interesting data.

Doctor Johnson gives us the reasons why the canal was built; not only because of naval considerations, but also because of the development of the Pacific Coast States and the growth of intercoastal trade by rail and water routes. To those who know the cost of transportation, the saving of 8,000 miles between New York and San Francisco, or 9,000 miles between New Orleans and San Francisco appeals most strongly.

The French Canal Company endeavored to build a canal largely for the reason that they thought it would be a good financial investment, like the Suez Canal, but they failed in their undertaking—not through lack of industry or oversight, but because of sanitary problems which were then insoluble.

After their failure the United States undertook the work for the reasons mentioned, and they were particularly stimulated thereto because of the rapid economical development of the west, which occurred about 1900. Doctor Johnson has reviewed at length the distances which are saved by the building of the canal; has given us detailed information of the comparative cost of freight by the old routes through the Straits of Magellan, the Panama route, and the Tehuantepec route, with those since the canal has been opened to commerce. He has also shown how trade routes have altered and commerce has been stimulated between the United States and the South American and Central American countries; and gives us detailed information which is very valuable to the shipping trade as to why the canal must continue to be the main avenue of traffic between the Atlantic and Pacific coasts. He discusses at length the effect which the canal will have on the development of the American marine, and Europe's interest in the canal. A chapter is devoted to the competition which undoubtedly will ensue between the Suez and Panama canals, which proves that certain trade routes will be favored by one, while others will be favored by its rivals.

In all his discussions he shows himself familiar with convincing facts and figures. It is interesting to note that one of the great determining factors in favoring the canal route over others is the cost of fuel, which can be laid down so cheaply at the Atlantic end of the canal. It is well known that coal on the Pacific Coast is almost unobtainable and consequently exceedingly expensive. The fact that vessels passing through the canal can coal so cheaply will undoubtedly determine a great deal of shipping by this route which would otherwise go via the Straits of Magellan.

One chapter is devoted to the tonnage rules governing ships passing through the Panama Canal. A knowledge of these rules seems essential to all commercial marine organizations and the shipping interests which anticipate using this international means of communication.

The last chapter is devoted to the administrative organization of the canal, and shows the efficiency and thoroughness which characterized the officials in charge of this work. To all those concerned with transportation and trade with Central and South America the book is of great interest and real value.

Interclinical Notes

Some years ago, a certain medical after dinner speaker made himself famous by stating that now there were specialists for every area of the body, "except perhaps the umbilicus; I beg pardon, my friends, I was forgetting the staffs of the naval hospitals." The reproach has been removed at last by the publication of a 690 page volume on the umbilicus by Dr. Thomas Stephen Cullen, of Johns Hopkins University.

* * *

We consider as very good news the announcement in the *Outlook* for November 1st, that beginning with the first January issue in 1917, that periodical is to be practically doubled in size; also that although illustration will be better, it will remain, as heretofore, a servant and not a master of the text. Part of the blame for our wretched mental laxity may doubtless be attributed to too many pictures. A certain amount of healthful effort is required to understand a line of text, but anybody seven Binet-Simon years of age can comprehend a picture.

* * *

That *Commerce and Finance* has found it advisable to add a literary supplement to its columns of figures and dollar marks, is, we hope, a sign of the times. If the presumably commercially minded readers of this excellent journal found it dry without a little touch of culture, it is a good sign. Part of the supplement to the issue for October 23d is devoted to an article by Simeon Strunsky, of the *Evening Post*, on Ice Cream, Cigarettes, and American Youth. We commend this essay highly to those of our own readers who may have overlooked it, with its delicate sarcasm and masked indignation.

* * *

Like other people who have given thought to the matter, we have sometimes had our doubts of the value of Latin and Greek as preliminary studies for the man who aspires to be a writer of English; then we find some ludicrous slip by a nonclassical student which recalls us to the classical ranks. The author of a new book on eugenics which ought to prove a useful addition to the average man's library, holds forth in Chapter I somewhat as follows: "The young woman, married to a man with disease in his blood, begins her wedded life, young, enthusiastic, ambitious, *virile* (our italics), etc." The author is so pleased with this adjective that he repeats it a few lines further on. After an operation, the young wife is no longer the same *virile* and ambitious woman. One year of Latin would save a writer from applying to a woman with approval an epithet which connotes about every quality which men dislike in the other sex.

Meetings of Local Medical Societies

Monday, *November 6th*.—German Medical Society of the City of New York; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League; Utica Medical Library Association; Brooklyn Hospital Club; Niagara Falls Academy of Medicine; Hornell Medical and Surgical Association.

Tuesday, *November 7th*.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburgh Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Medical Society of the County of Yates.

Wednesday, *November 8th*.—New York Pathological Society; New York Surgical Society; Alumni Association of the Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Rochester Academy of Medicine; Richmond County Medical Society.

Thursday, *November 9th*.—New York Academy of Medicine (Section in Pediatrics); Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Buffalo Ophthalmological Club; Jamestown Medical Society; Cayuga County Medical Society (annual); Society of Physicians of Village of Canandaigua.

Friday, *November 10th*.—New York Academy of Medicine (Section in Otology); Society of Ex-Internes of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

Saturday, *November 11th*.—New York Association of the Medical Reserve Corps of the United States Army (annual).

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending October 25, 1916:

Akin, C. V., Surgeon. Relieved from duty in plague eradicative measures at New Orleans, La.; will proceed to the Hygienic Laboratory, Washington, D. C.

Anderson, T. B. H., Assistant Surgeon. Relieved from duty in studies of rural sanitation; will proceed to Ellis Island Immigration Station, New York.

Applewhite, C. C., Assistant Epidemiologist. Bureau orders dated October 13, 1916, revoked.

Cumming, H. S., Surgeon. Granted five days' leave of absence from October 30, 1916.

DeSaussure, R. L., Assistant Surgeon. Relieved from duty in studies of rural sanitation; will proceed to the Hygienic Laboratory, Washington, D. C.

Foster, M. H., Surgeon. Relieved from duty at the Marine Hospital, Stapleton, N. Y.; will proceed to the Hygienic Laboratory, Washington, D. C.

Fox, W. F., Assistant Surgeon. Relieved from duty on Coast Guard cutter *Unalga;* will proceed to New Orleans Quarantine Station; granted ten days' leave of absence en route.

Freeman, A. W., Epidemiologist. Relieved from duty in investigations of poliomyelitis in New York; will return to station at Cincinnati, Ohio.

Galloway, T. C., Jr., Assistant Surgeon. Relieved from duty at the Marine Hospital, San Francisco, Cal.; will proceed to Laredo, Tex., for duty in connection with the prevention of the introduction of typhus fever from Mexico.

Gardner, C. H., Surgeon. Bureau telegram dated October 3, 1916, amended to grant nine days' leave of absence from October 8, 1916.

Hurley, J. R., Passed Assistant Surgeon. Ordered to make a sanitary inspection of the steamer *Majestic* at Washington, D. C.

Knight, C. P., Passed Assistant Surgeon. Relieved from duty at Pensacola, Fla., Quarantine Station; will proceed to the Hygienic Laboratory, Washington, D. C.

Lombard, M. S., Assistant Surgeon. Relieved from duty in plague eradicative measures at New Orleans, La.; will proceed to the Hygienic Laboratory, Washington, D. C.

Miller, K. E., Assistant Surgeon. Relieved from duty in studies of rural sanitation; will proceed to the Marine Hospital, Chicago, Ill.

Mustard, H. S., Scientific Investigator. Ordered to proceed to Jasper, Ala., for duty in a resurvey of sanitary conditions in Walker County, Ala.

Neill, M. H., Assistant Surgeon. Bureau letter dated September 21, 1916, amended to grant twenty-six days' leave of absence from September 23, 1916.

Parran, Thomas C., Scientific Assistant. Bureau orders dated October 13, 1916, revoked.

Ramus, Carl, Surgeon. Ordered to proceed to Washington, D. C., for conference; thence to proceed to Naples, Italy, via Liverpool and London, England.

Reichard, J. D., Assistant Surgeon. Relieved from duty on Coast Guard cutter *Itasca;* will proceed to Baltimore, Md., Marine Hospital.

Roberts, Norman, Surgeon. Relieved from duty at Philadelphia and Marcus Hook, Pa.; will proceed to the Immigration Station, Ellis Island, New York.

Robertson, H. McG., Surgeon. Relieved from duty at Philadelphia and Marcus Hook, Pa.; will proceed to the Hygienic Laboratory, Washington, D. C.

Robinson, D. E., Surgeon. Relieved from duty at Ellis Island Immigration Station, New York; will proceed to the Hygienic Laboratory, Washington, D. C.

Safford, M. V., Assistant Surgeon. Ordered to proceed to Worcester, Mass., for examination of an alien.

Sayers, R. R., Assistant Surgeon. Relieved from duty in studies of rural sanitation; will proceed to the Hygienic Laboratory, Washington, D. C.

Slaughter, W. H., Assistant Surgeon. Relieved from duty in studies of rural sanitation in Floyd County, Ga.; will proceed to the Marine Hospital, Stapleton, N. Y.

Spencer, H. A., Assistant Surgeon. Relieved from duty at New Orleans Quarantine Station; will proceed to Pensacola, Fla., Quarantine Station.

Stimpson, W. G., Assistant Surgeon General. Will reconvene board for the preparation of questions for examination of applicants for appointment as assistant surgeon at the Marine Hospital, Chicago, Ill., November 6, 1916.

Storrs, H. R., Acting Assistant Surgeon. Will proceed to Seattle, Wash., for instruction in the examination of cholera carriers.

Stout, J. D., Assistant Surgeon. Relieved from duty on Coast Guard cutter *Tampa;* will proceed to Arundel Cove, Md., and report to the commanding officer, Coast Guard cutter *Itasca.*

Townsend, J. G., Assistant Surgeon. Relieved from duty in studies of rural sanitation; will proceed to the Hygienic Laboratory, Washington, D. C.

Treadway, W. L., Assistant Surgeon. Will proceed to Sussex County, Del., for studies of the mental condition of school children.

White, J. H., Senior Surgeon. Ordered to attend the annual meeting of the Southern Medical Association, at Atlanta, Ga., November 13 to 17, 1916.

Williams, L. L., Assistant Surgeon. Relieved from duty at Ellis Island Immigration Station, New York; will proceed to the Hygienic Laboratory, Washington, D. C.

Wynne, R. E., Assistant Surgeon. Relieved from duty in studies of rural sanitation; will proceed to the Marine Hospital, Stapleton, N. Y.

Yarbrough, H. C., Assistant Surgeon. Relieved from duty in studies of rural sanitation; will proceed to the Marine Hospital, Chicago, Ill.

Births, Marriages, and Deaths

Born.

Tileston.—In New Haven, Conn., on Friday, October 13th, to Dr. and Mrs. Wilder Tileston, a son.

Married.

Cutter-Robinson.—In Las Cruces, New Mexico, on Friday, October 6th, Dr. Irving T. Cutter, of Winchester, Mass., and Miss Zula Robinson, of El Paso, Tex.

Flynn-Blake.—In New Haven, Conn., on Tuesday, October 24th, Dr. Charles Thomas Flynn and Miss Josephine Rose Blake.

Hallstead-Smith.—In Flushing, N. Y., on Saturday, October 21st, Dr. Walter C. Hallstead and Miss Jessie Smith.

Jantzen-Doyle.—In Brookline, Mass., on Tuesday, October 31st, Dr. Francis T. Jantzen, of Boston, and Miss Alice M. Doyle.

Kretsinger-Kelley.—In Berkeley, Cal., on Thursday, October 12th, Dr. George Kretsinger and Miss Ethel Kelley.

Oberlander-Tyrrell.—In Somerville, Mass., on Tuesday, October 17th, Dr. George James Oberlander and Miss Jennie Agnes Tyrrell.

Powers-Jordan.—In Brighton, Mass., on Wednesday, October 11th, Dr. Edward P. Powers, of Roxbury, and Miss Alice Ready Jordan.

Ragle-Williams.—In Cambridge, Mass., on Saturday, October 21st, Dr. Benjamin Harrison Ragle and Miss Marguerite O. Williams.

Sheldon-Hewey.—In Brookline, Mass., on Monday, October 9th, Dr. Russell F. Sheldon, of Lynn, and Miss Lura E. Hewey.

Died.

Barney.—In Napa, Cal., on Saturday, October 7th, Dr. Hawley N. Barney, of Richmond, Cal., aged thirty-nine years.

Bomberger.—In Harrisburg, Pa., on Friday, October 6th, Dr. Wayne E. J. Bomberger, aged thirty-five years.

Brewer.—In Salem, Ore., on Thursday, October 12th, Dr. Joseph Henry Brewer, aged sixty-nine years.

Brock.—In Richmond, Va., on Thursday, October 19th, Dr. Charles W. P. Brock, aged eighty-one years.

Burck.—In Frederick, Md., on Friday, October 13th, Dr. Lewis A. Burck, aged fifty-six years.

Coppernoll.—In Newark, N. Y., on Sunday, October 15th, Dr. William J. Coppernoll.

Davis.—In Deerfield, Mass., on Friday, October 20th, Dr. Percy G. Davis, aged forty-nine years.

Dennis.—In Hopkinsville, Ky., on Thursday, October 19th, Dr. Jacob M. Dennis, aged eighty-three years.

Dunn.—In Fresno, Cal., on Saturday, October 14th, Dr. Eugene Clarence Dunn, aged sixty-two years.

Howell.—In Indian Mound, Tenn., on Tuesday, October 17th, Dr. D. L. Howell, aged fifty-nine years.

Irving.—In Los Angeles, Cal., on Friday, October 13th, Dr. Walter William Irving, aged forty-nine years.

Kimmel.—In Fort Wayne, Ind., on Wednesday, October 18th, Dr. Cecil C. Kimmel, aged thirty-three years.

McCollum.—In Alpharetta, Ga., on Sunday, October 15th, Dr. John D. McCollum, aged fifty-five years.

O'Brien.—In Somerville, Mass., on Wednesday, October 18th, Dr. James J. O'Brien, aged forty-three years.

O'Daniel.—In Denver, Col., on Sunday, October 15th, Dr. Benjamin Franklin O'Daniel, aged sixty-six years.

Rogers.—In Cordova, Tenn., on Tuesday, October 10th, Dr. Clarence A. Rogers, aged thirty-eight years.

Sapp.—In Omaha, Neb., on Wednesday, October 11th, Dr. Clinton E. Sapp, aged sixty-four years.

Stevens.—In Defiance, Ohio, on Thursday, October 19th, Dr. Merabi B. Stevens, aged seventy-three years.

Stirling.—In Lewiston, Idaho, on Sunday, October 15th, Dr. Frank S. Stirling, aged eighty years.

Titus.—In Chicago, on Saturday, October 14th, Dr. Milton Bennett Titus, aged sixty-eight years.

Uhle.—In Philadelphia, on Saturday, October 21st, Dr. A. Alexander Uhle, aged forty-two years.

West.—In Sewanee, Tenn., on Sunday, October 8th, Dr. Hayden Austin West, aged forty-five years.

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Original Communications

THE BLOOD AND ITS VESSELS IN EPILEPSY, AND THEIR TREATMENT.

By THOMAS E. SATTERTHWAITE, M. D., Sc. D., LL. D.,

New York.

Though it has long been known that circulatory derangements are produced by epilepsy, it is only during recent years that they have been found, conversely, to produce epileptic attacks. It is the purpose of this paper to give a brief description of the conditions under which these somewhat reciprocal relationships exist, and to urge that in the treatment of epilepsy attention should more frequently be directed to affections of the blood and its vessels.

Taking up the three great divisions of epilepsy, grand mal, petit mal, and status epilepticus: There is in grand mal, as we know, the tonic spasm, marking the first stage, during which there is contraction of the chest muscles, producing difficult breathing, and consequently embarrassment of the greater and lesser circulations, the latter indicated by a cyanosis of varying degree. In the second or clonic stage, the muscular contractions intermit, and the cyanosis coincidently diminishes. In the third, or comatose stage, while the face continues to be congested, there is no marked cyanosis, but there is apt to be palpitation.

In petit mal, which, as we know, is characterized by epileptic seizure without convulsions, there is often an antecedent feeling of vertigo or faintness, indicative of vascular difficulty.

In status epilepticus, representing the closing scene of epilepsy, as convulsion follows convulsion with increasing frequency up to the end, there is an intensification of the circulatory disturbances.

I omit from consideration Jacksonian epilepsy, where the spasms are usually limited to the muscles of the arm, leg, or neck, consciousness being maintained, because circulatory anomalies are not constant features of the neurosis.

It is quite evident, therefore, that in the three principal varieties of epilepsy circulatory disturbances are among the dominating features.

About half a century ago, an inquiry was made into the cardiovascular symptoms of the seizures by Echeverria (1) of New York. He stated then that cardiac diseases might originate epileptiform convulsions from embolism of the cerebral arteries by means of "migratory clots detached from the valves or cavities of the heart"; but he added in another place: "I lack a sufficient number of facts to establish any causal relation between cardiac disease and epilepsy" (2). In fact, his table of 130 male epileptics showed that there was an associated cardiac disease in only four cases, but not one of the 130 had a normal pulse. Of his 176 female epileptics, the heart was involved in sixteen, but there again, it was not known whether the anomaly was functional or organic (3). In 172, however, the pulse was described as soft, weak, very weak, irregular, feeble, slow, or small. Accepting these figures at their face value, as I feel we should, the evidence shows that epilepsy is so generally associated with some disturbance of the circulation as to constitute a feature of it.

In the same year Hare (4) stated that disorders of nerve centres might produce both epilepsy and cardiac trouble, the latter causing epilepsy, in accordance with well known physiological laws, simply by cutting off the blood supply to the brain. This anemia, he said, might also be due to cardiac drug depressants. These statements indicate that there is a reciprocal relation between cardiovascular affections and epilepsy. It is interesting to note that in a single year two Americans made contributions to the essential character of epilepsy that will have to be recognized by future generations of physicians. In fact, our present knowledge of the affection is due mostly to Americans.

Nine years after Hare's work, Blondeau (5) published seventeen cases of epilepsy, doubtless, I think, under the inspiration of Charcot. They included those of Charcot, Holbertson, and Rosenthal, and among the characteristic features was respiratory embarrassment, usually with palpitation and hemic murmurs. The seizures were preceded by auræ, and followed by unconsciousness and coma. The supposed seat of the cerebral trouble was in the bulb. The inference in these cases was that cerebral anemia produced the seizures.

In 1887, Lemoine (6) went a step further and showed that epilepsy might be controlled to some extent by the use of digitalis and caffeine, which of course improve the cerebral circulation. Alcoholic stimulants also have a similar effect. In these instances of circulatory disturbances there has been little proof of organic heart disease, most authors having failed to find any relation between the two

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affections, except incidentally. This point was strengthened by Chadbourne (7), when he published a series of eleven cardiac cases associated with epilepsy, for in them he failed to find any proof of the causal relation between the two.

This idea was still further elaborated by Spratling (8), when he stated that though in his 1,070 cases of epilepsy there was evidence of heart disease in 238, we should not necessarily conclude that the epilepsy was due to heart disease. In many cases the converse was the fact, and he expressed wonder that more epileptics did not die during the seizures, from the forceful damming back of the blood on the heart.

There is no doubt in my mind that heart disease, whether organic or functional, is capable of producing epileptic attacks, but its incidence I believe to be extremely rare. In it the seizure is most likely to be due to cerebral anemia, and from a functional rather than an organic disease. But the anemia is far more likely to be caused by some associated constitutional disease, and such an underlying cause should be recognized and treated.

One of the latest contributions to this matter is by Pritchard (9). He has observed that in epileptic seizures the pulse may be frequent or infrequent, while it is rarely normal. There is usually, he holds, no organic heart disease. Interesting contributions to this subject have also been made by Newton (10) and L. Pearce Clark (11).

In the matter of diagnosis, we must contradistinguish these vascular disturbances from heart block, where there is no unconsciousness; from the seizures of Adams-Stokes disease, where there is the characteristic Cheyne-Stokes respiration and infrequent pulse; and from unconsciousness resulting from cerebral hemorrhage, where there may be more or less prolonged unconsciousness and always some degree of paralysis. We must also differentiate them from cardiac failure due to organic disease. It is here that mistakes are apt to be made. Indeed, I am of the opinion that many, perhaps most of the cases of petit mal, especially the very mild ones, are overlooked by physicians.

From the evidence cited, it is clear that epilepsy evokes circulatory disturbances; but does the converse obtain? Can circulatory anomalies produce epilepsy? We have less evidence on this point, but what we have should be sufficiently convincing. Sachs (12) has recently reported two cases bearing directly on this point. In one, focal epilepsy was produced by enlarged veins in the pia mater, in the other by similar conditions in the dura mater. In the discussion which followed, other prominent neurologists confirmed these views, and a case was cited where the epileptic attacks disappeared after the vascular growth at the base of the brain had been removed by operation.

Though my experience in the treatment of epilepsy has naturally been limited, I have in a long practice seen and treated many cases of petit mal, and feel competent at least to express an intelligent opinion. In reference to the general management of epilepsy, I believe that epileptics should have systematized work, congenial surroundings, and a regulated diet, while treatment by drugs should be directed rather to the underlying systemic condition. Sedatives should be avoided as far as possible. In particular, bromides should be given only to prevent attacks or modify them. According to Pritchard, they are useful in only a little over fifty per cent. Opiates should be avoided except in emergencies (Collins, 13). Rest, isolation, and change of environment I believe also to be helpful. This is prophylaxis as well as treatment. If we except the antiluetic treatment of brain syphilis, operations for depressed fractures, or the removal of such a nevus as may interfere with the cerebral circulation, we should, I hold, in view of what I have said, use more cardiac stimulants than has been the practice heretofore. This treatment is not altogether new, but it has been neglected. Gowers (14), many years ago, advocated the use of nitroglycerin, and the benefits obtained were doubtless due to its action as a heart stimulant.

In one of my cases that has already been published in brief, where there was a total cardiac and respiratory standstill, the patient was restored by alcoholic stimulants with the aid of artificial respiration. In this patient there was complete unconsciousness without spasms, and I classified it as a severe attack of petit mal, to which she had been subject, superinduced by intestinal indigestion. The patient, in convalescing from her seizures, which, by the by, are now steadily decreasing in frequency and severity, passes from her rectum vast quantities of gas. In the intervals between her attacks she has taken cardiac stimulants for years.

In another of my cases of petit mal, where there are so called "fainting spells," without unconsciousness, and lasting only a minute or so, or even less, the attacks seem to have been superinduced by an extensive herpes zoster of the neck, shoulder, and chest, which left the skin so indurated that the subcutaneous nerves became involved, making them intensely painful to the touch. While the local induration was being dissipated by the high frequency current and the therapeutic electric lamp, the use of digitalis, strophanthus, and camphor sustained the feeble pulse until convalescence was established. It may be remembered that Brown-Séquard was the first to discover the causal relation between peripheral nervous irritation and epileptic seizures. This last case was therefore one of Brown-Séquard's epilepsy.

My experiences have indicated to me that under intelligent management petit mal does not usually develop into grand mal; having once made the diagnosis and instituted proper treatment, the chances are that the "fits" will gradually diminish in intensity and become less frequent. Moreover, I believe that the recognition of the importance of treating these vascular phenomena of epilepsy will help us very materially in the treatment of epileptics, especially in cases of petit mal.

In concluding this brief survey of the relation of cardiovascular phenomena to epilepsy, I am led to the following conclusions:

1. Abnormalities of cardiovascular phenomena occur in the vast majority of epileptic seizures.

2. The grosser forms of cardiac disease rarely occur in epilepsy. In fact, they are present in so small a proportion as to indicate that they are accidental rather than determining factors of it.

3. That a cerebral disease or abnormality may produce epilepsy is well established. The evidence shows that removal of enlarged veins or nevoid growths adjacent to the base of the skull has been followed by cessation of the seizure.

4. There is therefore a *reciprocal* relation between circulatory disorders and epilepsy to this extent; that epilepsy causes circulatory disturbances and that abnormalities of blood or vessels cause epilepsy. This reciprocal relation I believe to have been hitherto overlooked.

5. In most forms of epilepsy there is cerebral anemia, and this is relieved effectively by various heart stimulants, the high frequency current, and radiant electric light. The importance of the use of cardiac stimulants in epilepsy, I believe, has not been properly appreciated by the profession.

In a certain number of cases, of course, permanent relief is obtained only by antiluetic treatment or some surgical procedure.

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7 EAST EIGHTIETH STREET.

STRYCHNINE AS A TONIC.*

By WILLIAM FORSYTH MILROY, M. D.,
Omaha.

We have a record of certain Athenians and strangers in that city who "spent their time in nothing else but either to tell or to hear some new thing." We have in our own time certain therapeutists who are like these ancient people, and I wish to record a gentle protest against this custom of theirs. It appears frequently. The mischief lies in discarding proved methods of successful treatment in dangerously severe cases, for the sake of others that are only experimental because they are new and supposedly more scientific. While the ultrascientist seeks a demonstration of truth, he must not forget that his patient is a human being with a life to be saved. In the younger generation of teachers of medicine and therefore, of necessity, in the younger practitioners, we see this spirit of egotism which assumes that the fathers in the profession were in the bonds of gross ignorance. Certainly we rejoice and are proud of recent attainments in therapeutics, but there can be no real progress without the conservation of the valuable things we already possess. I realize that in making these remarks I encounter the risk of being regarded as behind the times—emeritus perhaps—but I hold that a sane conservatism is perfectly consistent both with genuine progress and a sane freedom from accepted principles.

So much by way of preface, because this very idea is one of my two reasons for asking you to think again for a few minutes about the old time remedy, strychnine. My other reason is the fact, as I believe, that the profession as a whole only half appreciates its therapeutic value. Doctors are afraid of it. Few realize what it can accomplish when given in maximum therapeutic doses, and it is of that phase of the subject that I wish especially to speak.

I do not know who first used strychnine in maximum doses, as distinguished from the doses ordinarily employed. The idea was new to me when suggested by the late William Pepper in a paper in one of the journals, about twenty years ago. Pepper recommended it in pulmonary tuberculosis. It is in that disease that I have frequently employed it. Its action is there well illustrated and my remarks are based largely upon its use in that disease. I report the following case as bringing out many of the points I desire to emphasize:

CASE. A married woman, American, twenty-eight years old, came to the dispensary clinic in the summer of 1898 with a violent and very acute attack of pththisis. She had hemoptyses several times a day; aphonia; a violent cough with profuse and foul smelling sputum, loaded with tubercle bacilli; severe night sweats; a temperature ranging from 101° to 104° F. and higher; nausea and vomiting, with inability to digest sufficient food; great prostration and rapid loss of weight; in short, every symptom likely to be met with in a violent attack of this disease. Physical examination located the trouble in the upper part of the right lung. It was my opinion that the woman would not live two months. She lived five years and died of pneumonia. During those years she was under my observation most of the time. I was unable to secure very much modification of her mode of living, which was not favorable. She did not go to bed and continued to perform her household duties to the limit of her strength. She took strychnine and no other medicine. Within a week she showed improvement and by the end of two weeks her condition was materially improved. Soon after the limit of tolerance was reached the hemorrhage ceased, her voice cleared up, the cough greatly diminished, and the stench disappeared from the sputum, there were no more night sweats, the fever was largely gone, the appetite and digestion were restored, and she began to gain in weight. It happened repeatedly that the maximum dose being taken for from two to four weeks, she presented herself complaining of one of the symptoms which had abated. The dose of strychnine was then increased beyond the amount that had previously produced muscular spasm and was found to be well borne. On each of these occasions the recrudescent symptom, whether cough, pain, hemorrhage, or night sweat, again was relieved, thus illustrating both the establishment of tolerance of the drug and the necessity for the use of the maximum dose in order to obtain its full effect.

I have usually administered the drug by mouth, four doses daily. I begin with one thirtieth grain and add one thirtieth to the daily allowance at the end of each five day period until eight thirtieths are being given daily, then reducing the increase to one sixtieth until the limit is reached. With the patient in a hospital under careful observation, it is possible to increase the dose much more rapidly, thereby reaching the maximum earlier. It is convenient to employ a one per cent. solution, but it is not, as a rule, practicable to use hypodermic injection over a long period of time. The maximum dose is indicated by the occurrence of muscular rigidity. The first manifestation of this symptom I have observed most frequently in the posterior muscles of the neck, next in the muscles of the inferior maxilla, and sometimes they appear first in the anterior muscles of the thigh. As soon as this physiological effect of the drug appears unmistakably the dose is reduced only a little, when the muscular rigidity disappears; it is at this dose that the greatest benefit is obtained.

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*Read at the seventeenth annual meeting of the American Therapeutic Society, Detroit, Mich., June 10, 1916.

Naturally the total daily capacity for the drug will vary with individuals. For example, one woman weighing about 120 pounds took three fourths of a grain daily for many months. A man weighing 140 pounds took five sixths of a grain daily for a long period. I have given a woman weighing 110 pounds one grain daily for five days with no toxic effect.

Perhaps some of my readers have employed this remedy for tuberculosis. The results obtained are sometimes almost beyond belief. It is not simply upon my own individual experience that I base my opinion. A number of my pupils have tried it with gratifying results. In August, 1906, I published, in the NEW YORK MEDICAL JOURNAL, a short paper upon the treatment of tuberculosis by strychnine, of which *Semaine médicale*, for September 12, 1906, following, contained a translation. The following November I received from Dr. Tomaso Staphani, who was conducting a sanatorium for tuberculous patients in the Swiss Alps, a letter requesting more complete details of the treatment. He said: "I have experimented with the treatment upon a patient with far advanced cachexia with almost complete destruction of the left lung. The results are at present very remarkable, an amelioration of the general state, a diminution of the expectoration, etc." Through the same means a similar statement came to me from a physician in Havana. It is by no means proposed to supplant by strychnine the treatment of tuberculosis as now carried out, by rest, fresh air, and rich food. There is, however, a multitude of cases in which it is impossible to secure sanatorium treatment or any approach to sanatorium conditions at home. I earnestly insist that in such cases, especially of the more acute type, and in sanatoriums, when the disease does not yield promptly, strychnine should be given a trial. I also insist that it has not been properly tried unless it has been administered in maximum doses.

Certain nervous disorders also offer a fruitful field for the use of strychnine in maximum doses. So far as I have been able to discover, the French physicians chiefly have availed themselves of this treatment. P. Hartenberg, in *Presse médicale* for January 25, 1913, tells of his experience. He administers the drug hypodermically, increasing the dose precisely in the manner I have described, to as much as one sixth or one third of a grain, which, he says, may be repeated once or twice in a single day. Under this treatment in simple neurasthenia permanent recovery usually takes place in from ten days to two weeks. He further states: "Other conditions in which strychnine is valuable are spinal and neural affections leading to hypotonia and atrophy, tabes dorsalis, cachexias, convalescence, tuberculous disease, etc."

In the same periodical for March 29, 1913, P. Troisfontaines discusses the use of strychnine in large doses. He says: "The author has given daily doses of one third, one half, and two thirds grain of strychnine without witnessing any untoward effect. The larger the dose, the greater the therapeutic results. This amount may be attained in a few days and only exceptionally gives rise to a sense of mild intoxication with slight headache and muscular rigidity. These promptly disappear if the dose is only slightly diminished." He has used it successfully in syphilitic myelitis and in alcoholism, for long periods, the twenty-four hour amount being one third to five sixths grain. In acute conditions such as marked collapse and lung edema he injects one sixth to one fourth grain, repeating the dose, if required, in three to five hours.

One of the most gratifying therapeutic results I personally have ever witnessed has been in the use of strychnine in pneumonia. There is no more trustworthy sign of approaching trouble in this disease than the appearance of edema in the dependent portion of the unaffected lung. I have observed this edema disappear promptly after the injection of one sixth grain and, recurring after a few hours, again vanish with the injection of strychnine. I have observed this to happen repeatedly in the same case and believe I have seen patients by this means carried over a crisis to recovery.

We have in the college of medicine of our university the beginning of a medical library, now numbering fifteen thousand volumes. With the aid of an efficient librarian I have searched this literature for the purpose of learning what has been said within the last ten years about strychinne. There is hardly a word. Strychnine has been considered a "closed incident." Just one exception I have to mention. Strychnine has long been counted one of the most trustworthy remedies in both acute and chronic heart failure because of the opinion that it increases the work of the heart and that it retards and steadies it. Now come numerous observers to shatter this confident faith. J. H. Newbury,[1] R. C. Cabot,[2] James Mackenzie,[3] Parkinson and Rowlands,[4] and others, from a more or less extensive study, all testify that this idea is wrong. The evidence seems conclusive, and we have to admit either that the benefit we have seemed to derive from this use of the drug is imaginary or else we must account for it in some other way.

The mode of action of strychnine I must mention as concisely as possible. It acts primarily upon the nervous system, including the sympathetic system, probably most strongly upon the medulla and spinal cord. Without discussing the precise mode of action, whatever it may be, it results in a stimulation of the physiological activity of practically the whole body. Admitting that cardiac muscular power and blood pressure are not influenced by strychnine, the fact nevertheless remains that the heart action is influenced favorably in certain conditions. For instance, I know a doctor with a crippled heart which becomes irregular and intermittent, with distressing subjective symptoms, whenever he overtaxes it a little. Invariably a few doses of strychnine restore the action to normal, with disappearance of the unpleasant symptoms. It is difficult to believe that the benefit of its use, so long and by so many observed, is all imaginary. James Mackenzie, to quote his words, suggests that, "strychnine acts probably upon the nervous system and by producing some exhilaration proves useful in cases in which a temporary exhaustion causes distress."

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[1] *Am. Jour. Med. Sciences*, 1915.

[2] *Trans. Assn. Am. Phys.*, 1904.

[3] *Diseases of the Heart*, 1909.

[4] *Quart. Jour. Med.*, 1913.

As to its action in tuberculosis, my conclusions are drawn partly by inference. Pathologists now tell us that almost everybody, at some time in his life, has this disease. Few, relatively speaking, succumb. If the tubercle bacilli are able to secure a foothold in the organism, this happens during a time of lowered opsonic index, and if their growth is checked, this occurs when, through rest and fresh air and nourishing food and favorable surroundings, the opsonic index has been restored. Now, strychnine in full doses, by powerful stimulation of the functional activity of the organism, induces this improved condition. I quote the following from Luciani:[5]

> In close association with the tonic action of the spinal centres is the trophic action which they exert upon other centres and upon the peripheral tissues. We know further that in the central nervous system the normal trophic influence is exerted in the same direction as the physiological conduction of excitation. On interrupting the relations of interdependent groups of nerve cells there is arrest of development, if the growth of parts is still incomplete; secondary atrophy if development is already perfect. In this connection we must confine ourselves to the group of well known phenomena, which show that the spinal nerves and their centres, as well as the centres of the brain, are to some extent capable of profoundly modifying the nutritive condition of other tissues.

Cellular nutrition is not a process of passive absorption. It is an active, vital process which is under the direct control of the nervous system. Therefore the profound stimulation of the nervous system by full doses of strychnine, directly promotes a new and vigorous cell activity of the whole body, thus tending to restore the opsonic index. The nervous disorders to which I have referred as capable of being successfully treated by strychnine, represent conditions of depression. The nervous system still retains its ability to respond to powerful stimulation which the big doses of strychnine supply.

In reference to administration I would add that, though the drug may not be wholly eliminated from the body for as long as eight days, it is mostly gone at the end of twelve hours and therefore the doses must not be too infrequent. It is worth while to mention also that there is no tendency to habit formation, and the largest doses may be abruptly broken off with impunity. Further, I would state that this method of treatment is not dangerous. A perfectly safe margin exists between the first appearance of muscular spasm and a really poisonous dose.

I have by no means attempted to enumerate the many conditions in which ascending doses of strychnine are indicated. I am convinced that it should be given in much larger doses than is customary, and this I hope to encourage.

Standardization of Conditions Affecting Posture.—Henry Ling Taylor (*American Journal of Orthopedic Surgery*, October, 1916) reports some of the work accomplished by the American Posture League, Inc., especially as to seating and footgear.

FINAL CONTROL IN MEDICINE.

By Beverley Robinson, M. D.,

New York.

The late epidemic of infantile paralysis has brought to my mind in a very practical way the fact that today we have no authority we regard as final. To the pure scientist, the laboratory worker, it seems as though his word was law, to be listened to and obeyed first of all; yet we know his knowledge is almost wholly experimental and only some of it will endure, and may be the larger portion will later be shown to be faulty and misleading.

The health board does not lay down laws of practice, but it assumes to be, and really is the ruling power in cities and towns, governing all quarantine rules. Here, again, we know that not infrequently the orders given, if strictly followed, are very severe. Even with great severity they are impractical and in many instances are not supported by known facts.

For example, not a few local health boards have assumed that infantile paralysis was contagious, and often the carriers were young persons or adults, even though they showed no symptoms of the disease and did not subsequently acquire it. The specialist in pediatrics or nervous diseases might be appealed to, as he has been, to explain the nature of the disease and to guide and direct as to prevention and treatment. I, for one, am satisfied that it should not be he, but the wise general practitioner of large experience and well balanced views, who should finally counsel and direct, and to him and him alone, the others should be in the end subservient.

He may not—he cannot know as much in any particular line, as those we have mentioned, but he should be the presiding judge, and, after weighing all the factors involved, he has acquired the information and determined its relative value, in a way that can be done by no other physician. Therefore, in every health board, in every hospital, among the specialists of different sorts, the presiding and controlling man should be the all around physician.

Had this been the case, we should not have seen, as we have, the exaggerated terror prevalent in the late epidemic; we should not have had regulations of quarantine and care insisted upon which were illusory; we should not have had daily heralded in every newspaper the experimental doings from the latest researches of the laboratory, which may not prove ultimately of great practical value. We should have seen much greater attention paid to lifetime knowledge, acquired essentially in caring for patients. It is this bedside acquisition of a knowledge of drugs and their uses which, after all, is more important than anything else.

Further, we battle with disease successfully by doing the right thing at the right time and in the right way. It does not do to wait too long; it does not do to be a mere observer of what is being done in a few of our best equipped city hospital laboratories, and which can be accomplished only there or in connection with them, by a few very highly trained men with the very best opportunities and facilities.

Could immune blood serum be obtained from well selected donors in towns, villages, isolated country tracts? Evidently not. If obtained in very limited quantities, could it then be used in such a way as to be really beneficial? I doubt it. We must not run wild about new findings. We must not believe that analogous studies and reports of laboratory research are as valuable as the knowledge acquired after many decades of experience, observation, and untiring service.

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[5] *Human Physiology*, iii, 1915.

Firm, solid convictions, established by ourselves, but also inspired by, or proceeding directly from, the wise and broadminded physicians who preceded us and did nobly in the relief of human suffering and cure of disease, are simply invaluable.

42 WEST THIRTY-SEVENTH STREET.

EPILEPSY.

By T. E. McMURRAY, M. D.,
Wilkinsburg, Pa.

In my limited experience with epilepsy, the following facts impressed me strongly.

1. Digestive disturbances, as manifested by foul breath, coated tongue, constipation, and intestinal gases.
2. The enormous appetite, especially for bread and sweets.

I decided to try a starch and sugar free diet. These patients received pancreatin and sodium bicarbonate at meals, a dose of epsom salts every fourth day, and mineral oil daily if needed to keep the bowels active.

The diet followed was that of diabetes until attacks subsided, when the food was gradually increased in amount. In only two cases was it necessary to give bromides, and in those cases only for a short time.

The subsequent history of my cases may be due to the pancreatin and soda, to the free evacuations of the bowels, or to the diet, or perhaps to all three, but in two of my cases convulsions returned after excesses at the table and disappeared when the diet was restricted again.

The cases all showed gastric hyperacidity, acidosis, but no glucose in the urine. A blood test for sugar was not made.

The three cases reported will give an idea of the course of the disease.

CASE I. A. B., male, aged eighteen years, five feet five and a half inches in height; weight 128 pounds. Past history negative, except for convulsions, which began at five years of age. Began treatment, February 12, 1912. Had daily attacks for two weeks, when bromides forty-five grains in twenty-four hours, were given.

Attacks ceased about May 1st, when bromides were gradually decreased and diet increased until, July 1st, bromides were discontinued. No attacks until January 4, 1913, when four convulsions occurred and continued daily until January 10th. Treatment was instituted as at beginning, except the bromides. Saw patient frequently until March, 1914. Diet had been increased until he was eating anything except potatoes and bread. Patient left town March 15, 1915. No report since then.

CASE II. C. D., male, eight years of age. Convulsions began at age of four years at intervals of two or three weeks. Began diet, etc., November, 1915. Two attacks in December, 1915, one in January, 1915, and none to date, September, 1916.

CASE III. E. F., female, aged twenty-four years; attacks began at the age of eighteen years, three months after her securing a position in a bakery where she ate freely of candy and cakes. Attacks followed rapidly, four or five daily for several weeks, when they were controlled by bromides for about two months. After this they occurred two or three times weekly until January 2, 1915, when she began to diet. She was then taking ninety grains of bromide in twenty-four hours; this was cut to forty-five grains. Attacks continued at longer intervals until March, 1915, when they ceased until July 7, 1915. Had attacks July 7, 8, 13, 21, 1915. Following a picnic on July 4th, when she had eaten freely of usual picnic food, the diet was cut, but no bromides given July 7, 1915. No attacks since July 21, 1915, to date September, 1916.

It was rather hard to find a variety of food for my patients until I secured a copy of Hill's book on diabetes. I am now following his diets exactly as he advises for diabetes, and find it simplifies matters very much as I advise each patient to secure a book and to follow its instructions.

In addition to the three cases reported, there are five more who are showing marked improvement, and three in which treatment has just been started. These cases will be reported later.

553 TRENTON AVENUE.

POSTURES AND TYPES OF BREATHING EXERCISES.

With Reference to Their Effect on the Position of the Abdominal Organs; Fluoroscopic Studies.

By NATHALIE K. MANKELL, M. D.,
Buffalo.
AND EDWARD C. KOENIG, M. D.,
Buffalo.

Of late years many have recognized that ptosis of one or more of the abdominal organs may cause disturbances which sometimes disappear when the organs are corrected. Such correction of the organs has been attempted by the use of ptosis belts, fitted

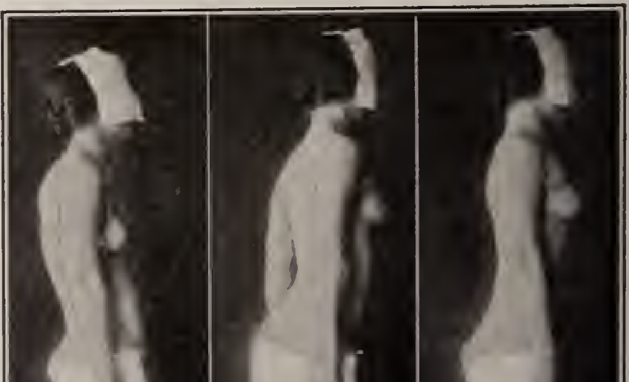

FIG. 1.—Fatigue posture, slump. FIG. 2.—Exaggerated lumbar curve posture. FIG. 3.—Correct posture.

corsets, rest by lying on the back, Trendelenburg or knee chest positions, and by exercises. Operative measures have also been tried.

The authors during their work found cases where there were doubts as to the real effects of exercise and postures upon internal organs, and were attracted by the ready means of proving their results to the Röntgen ray. In July, 1914, the attention of the American Posture League was called to the subject, and they appointed a committee of three to carry out this work in Buffalo.

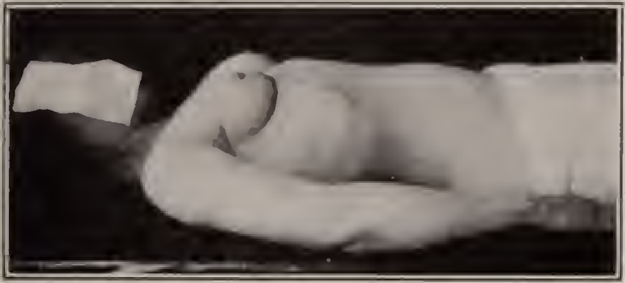

Fig. 4—First type of breathing; inspiration: chest up, abdomen out.

Our committee planned a comprehensive study, to note the relation, shape, and motility of heart, lungs, and diaphragm, in addition to detailed study of the abdominal organs by means of the x ray. Numerous difficulties, however, modified the work.

Children were found to be easily distracted, and therefore not to be depended upon to meet the many requirements; so adults were chosen and taught the desired postures and exercises. Our subjects ranged in age from eleven to fifty years, the majority being between twenty and thirty years of age. They consisted of medical students, gymnasts from accepted training schools (both men and women), and schoolboys, with or without physical training. Some were of the decided long slender type, fewer of a short stocky type; the majority approached the average height, weight, and proportions. There were no extremes as to sedentary or active habits. We studied fifty subjects, but as they were studied at different periods to observe results of treatment or more training, we have made seventy-three observations. We worked with three postures:

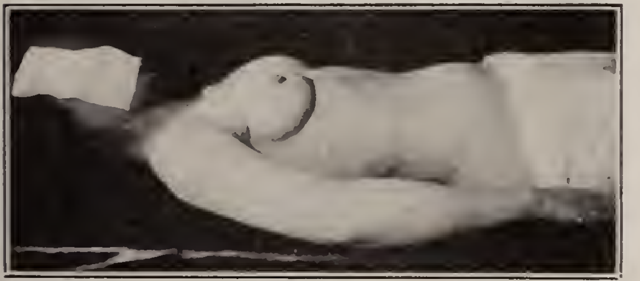

Fig. 5.—First type of breathing; expiration; chest down, abdomen in.

1. Fatigue posture or "slump" (Fig. 1).
2. Exaggerated lumbar curve posture (Fig. 2).
3. Correct posture with only slight dorsal and lumbar curves (Fig. 3).

Three types of breathing were used:

1. Complete deep breathing, costal, and diaphragmatic.

a. Inspiration, "chest up, abdomen out," filling the lungs and lowering the diaphragm (Fig. 4).

b. Expiration, "chest down, abdomen in," emptying the lungs and raising the diaphragm (Fig. 5).

2. Costal breathing with abdominal contraction:

a. Inspiration, "chest up, abdomen in," filling the upper part of the lungs mainly, but raising the diaphragm (Fig. 6).

b. Expiration, "chest down, relax abdomen."

3. Diaphragmatic:

a. Inspiration, "emphasis on lower ribs expanded, abdomen slightly out," filling the lower parts of the lungs and lowering the diaphragm (Fig. 7).

b. Expiration divided into two parts:

I. Abdominal muscle contraction first, "abdomen in" (Fig. 8).

II. Ordinary deep expiration, with ribs getting closer, and lower abdominal muscles still contracted, raising the diaphragm and emptying the lungs (Fig. 9).

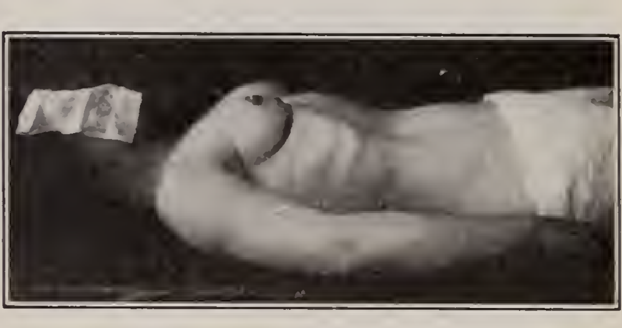

Fig. 6.—Second type of breathing; inspiration: chest up, abdomen in.

Many different ways of recording results of the change and positions of the organs were tried. The use of tracing paper over the fluoroscope screen proved to be by far the most satisfactory method.

The objection to the use of plates in recording the results was that the subject could not remain near enough to the plate while doing a given exercise, and give a signal to the operator when all was ready for the exposure. Plates were tried, but resulted mostly in failures.

We found at the first examination of our fifty cases the situation of organs in the subjects' habitual posture, as follows:

a. The greater part of the stomach and all of the colon below the crests of the ilia. All apparently in the true pelvis in five cases; complete ptosis.

b. As above, but the splenic flexure and descending colon somewhat above the crest (left side) in twelve cases.

c. Cases where the hepatic flexure was approximately an inch above the crest (right side), the transverse colon sagging below the crest of the ilium, the splenic flexure midway between the crest and the ribs (left side), stomach a little above the crest, twenty-three cases; moderate ptosis.

d. Normal in ten cases.

1. Fatigue posture, "slump," invariably lowered

organs unless it was the habitual posture, or organs were so low that they scarcely could go any lower (Fig. 10).

2. Exaggerated lumbar curve posture, in six cases lowered more than "slump," in eleven cases less, in twenty-two cases they were equally low. In two cases it raised organs even higher than the correct postures. The last mentioned subjects had very flat backs and possibly not enough lumbar curve when they attempted the correct posture.

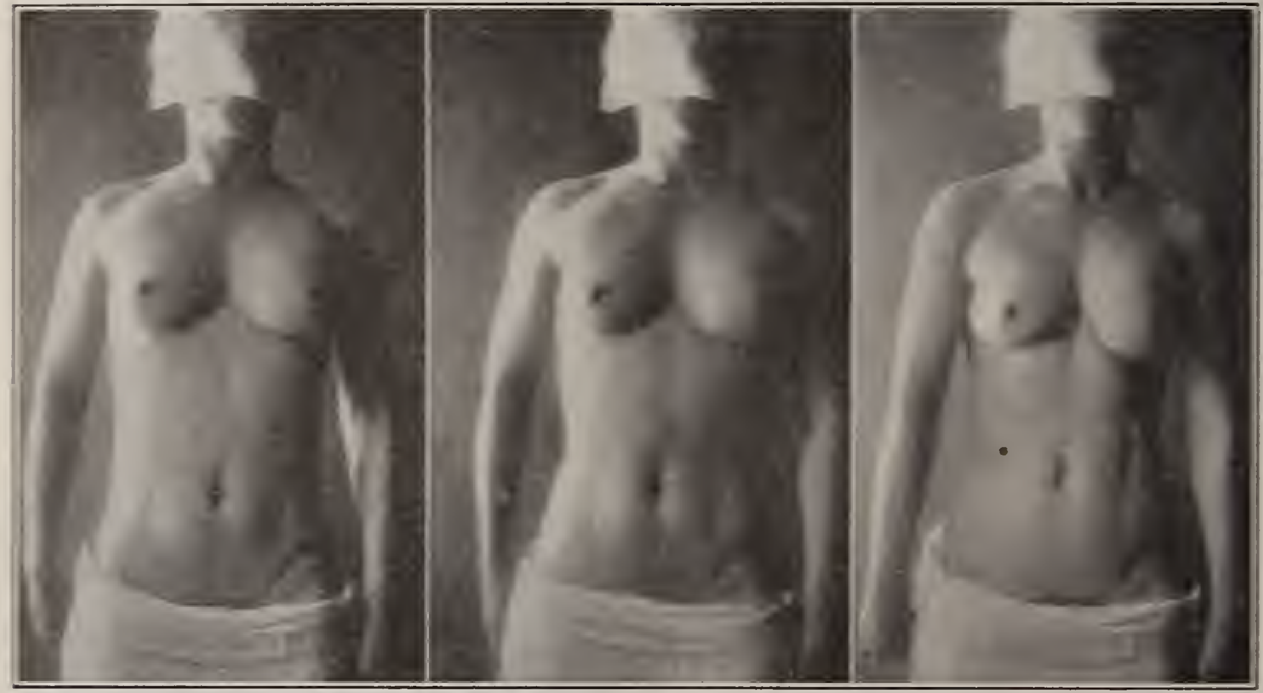

Fig. 7.—Third type of breathing: inspiration: mainly lower ribs expanded, abdomen slightly out.

Fig. 8.—Third type of breathing; expiration, a, abdomen in.

Fig. 9.—Third type of breathing; expiration; b, chest down in addition to abdomen in.

3. Correct posture (with two exceptions as stated above) raised the organs from one half inch to three inches to the highest position for that individual.

In twelve cases we tried other postures and exercises. For example, "stand tall" position, so frequently advocated. It raised organs if the abdominal muscles were contracted. If no other instruction was given but "stand tall," "grow," "make yourself as tall as possible," some would contract their abdominal muscles in the general effort to execute the order and elevate organs, others would make themselves tense all over, but would not contract the abdominal muscles enough to effect any elevation of organs. This method was seldom as effective as breathing (Fig. 11).

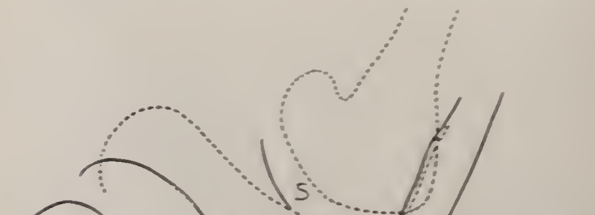

Fig. 10.—C[illegible] of [illegible] in a [illegible] with [illegible]. S, [illegible]; solid lines indicate colon and stomach during slump and exaggerated lumbar curve posture. Dotted lines indicate colon and stomach during correct posture.

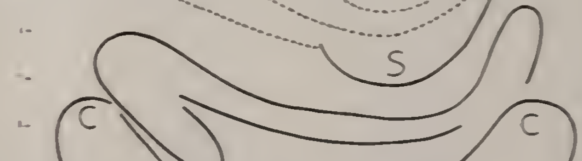

Fig. 11.—C[illegible] of [illegible] and [illegible] of the pelvis. Solid lines show colon and stomach in ordinary posture; dotted lines show colon and stomach while "stand tall" posture with strongly contracted abdominal muscles is held.

Lifting arms sidewise up or forward up, with or without ordinary deep breathing, was effective only when the exercise included abdominal muscle contraction, however high or wide the arms were stretched or whatever speed was used. It seldom was as effective as breathing (Fig. 12).

Abdominal muscle contraction alone, without any particular effort at deep breathing (done quietly and slowly) invariably raised organs from one to five inches. This was generally most effective in subjects with lax abdominal walls, i. e., protruding abdomens, and no training (Figs. 13, 14, and 15).

Studies of the breathing exercises showed:

1. Complete deep breathing, as described, invariably showed least effect, one half to one inch during expiration.

2. Costal breathing, with abdominal muscle contraction, elevated organs during inspiration from one to six inches. In nineteen cases it was the most effective elevation (Fig. 16).

3. Diaphragmatic breathing, as described, elevated organs from one to six inches during expiration. In twenty-six cases this was the most effective breathing. Since this was the most difficult type to learn, it is possible that the preponderance of success with this type might have been greater with longer practice of the breathing preceding the fluoroscopic observation. Variation of results, even with the same subject at the same session, was considerable, depending on training, flexibility, muscle control, and effort. Poor results at first trial were frequently overcome, as the subject became accustomed to surroundings. Reexamination after more training invariably showed more motility, if organs were not so low that the abdominal muscles could not affect them at all (Fig. 17).

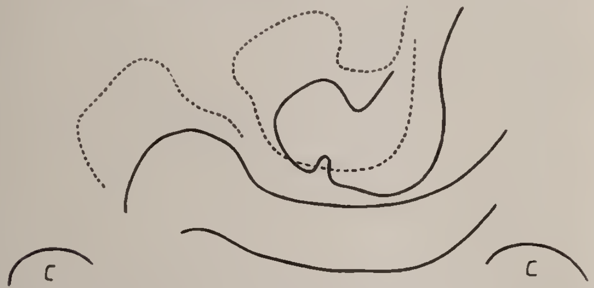

FIG. 12.—Crest of ilium. Solid lines show colon and stomach in correct posture. Dotted lines show elevation of colon and stomach, while arms are stretched upward and abdominal muscles are strongly contracted.

Elevation of organs was not uniform unless the organs were approximately in their normal positions If all the organs were in the true pelvis, no exercise whatever in standing position elevated them (Figs. 18 and 19).

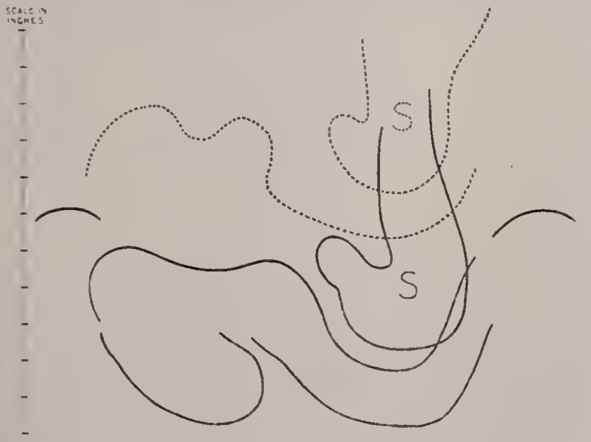

FIG. 13.—Solid lines show colon and stomach in slump posture, which was the habitual one in this subject. Dotted lines show elevation during strong abdominal muscle contraction in correct posture.

It is to be remembered that all these studies were done in the standing position.

Of particular interest to us was the fact that the second breathing (inspiration with abdominal muscle contraction) in some cases raised organs the most (chest high); whereas expiration in the third breathing, with abdominal muscle contraction held throughout (chest low) elevated organs in many more cases (Figs. 20 and 21). This is not to be confounded with the slump position, where the abdominal muscles are relaxed.

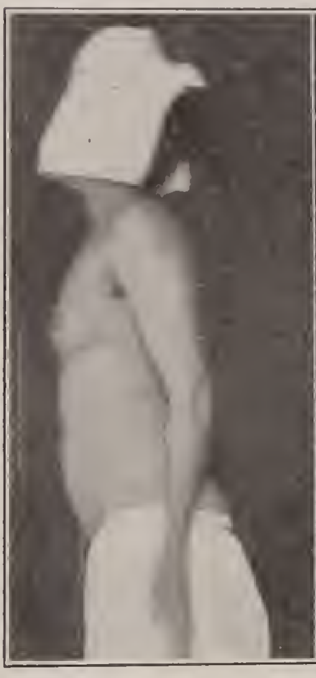

FIG. 14.—Abdominal muscle contraction.

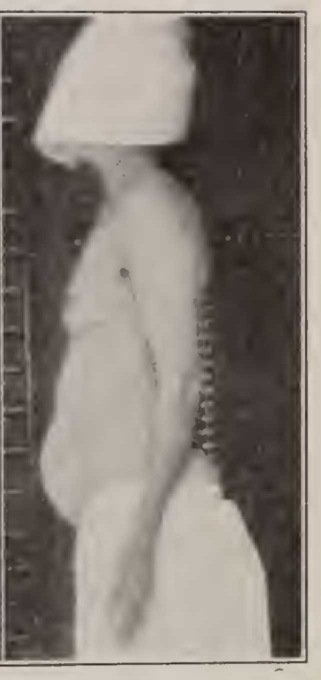

FIG. 15.—Habitual posture.

Also abdominal contraction alone invariably raised organs, whereas "elevation cures," "stand tall" position, or "arms stretch exercises," were by no means always effective. This has given us a strong conviction that the abdominal muscles and their control is the greatest single factor influencing the position of the stomach and intestines. The position of the chest is only of secondary importance.

Of interest, also, were two cases in which moderate ptosis was found in July. In September, after a vacation spent in outdoor activity, both had their organs in normal position. Two weeks later one was again fluoroscoped, and once more ptosis was found. The subject was very tired that day, and had worked intensely for a few days. Neither habitually wore

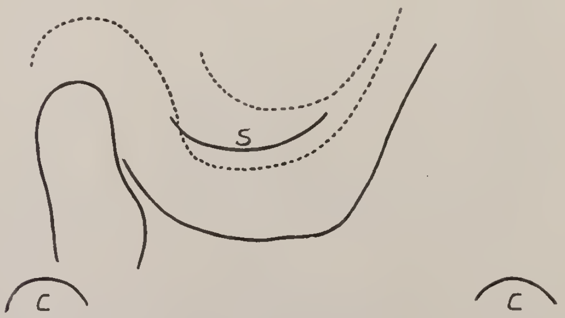

FIG. 16.—Second type of breathing. Dotted lines show elevation during inspiration. (See FIG. 6.)

corsets at any time, and both are careful that clothing does not compress or weigh down abdominal organs.

Our series embraced well trained gymnasium teachers with gymnastic or athletic training. Not a single case, with ordinary deep breathing, accomplished what deep breathing according to special instruction did. As this can be done at any time and in any good posture, providing that clothing does not restrict at the waist, it seems a valuable exercise. Corsets very loose above the umbilicus (not the patient's version of looseness) do not interfere.

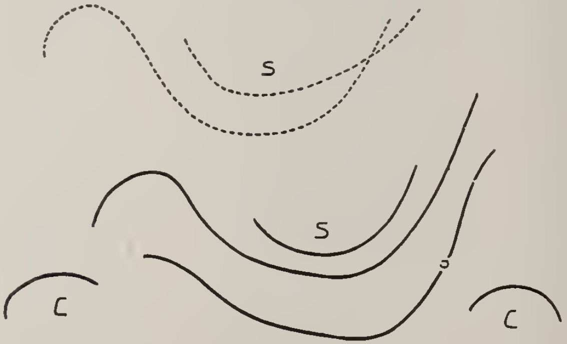

FIG. 17.—Third type of breathing. Dotted lines show elevation during expiration. (See Figs. 8 and 9.)

The fluoroscopic study of the correction and prevention of ptosis offers a large field for investigation. There is undoubted value in a more exact knowledge of the effect of exercise, clothing, posture, and appliances on the situation and function of the abdominal organs.

CONCLUSION.

We are aware that many factors influence the function of the stomach, intestines, and the other digestive organs. We are aware that many persons with pronounced ptosis may be apparently unaffected by that condition. We recognize the great tolerance and adaptability of the "human machine," so often suffering from postural defects. We also know of the great prevalence of such disturbances as constipation, low grade intestinal toxemia, atony of the intestines, retroversion of the uterus, and hernia. These certainly may be caused mechanically by constant forcing down of abdominal organs. There can be no advantage, and much disadvantage, in the low situation of these important organs.

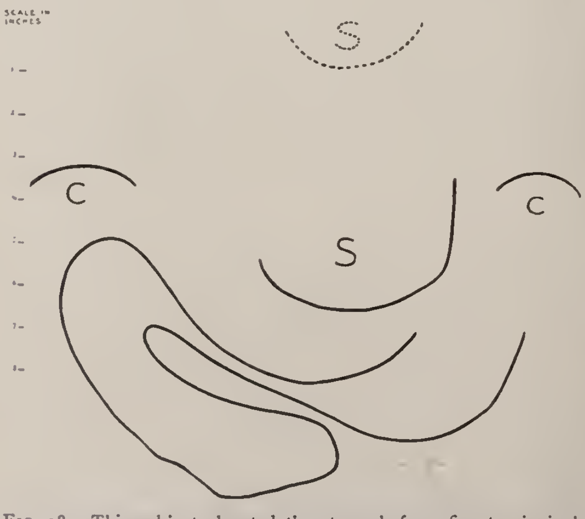

FIG. 18.—This subject elevated the stomach from five to six inches during expiration, third type of breathing, while the colon remained stationary.

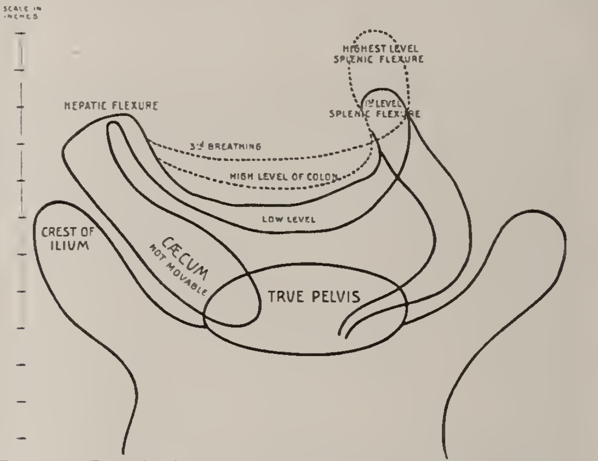

FIG. 19.—Dotted lines show elevation during expiration (see Figs. 8 and 9). The cecum and hepatic flexure were immobile while the stomach and splenic flexure could be elevated two or three inches. Later an operation was performed and a membrane was found holding the appendix down.

In standing, as well as in sitting and lying posture, abdominal contraction alone (done in a quiet, unhurried manner) elevates the organs from one to six inches. Thus we have an exercise that certainly is mild, but which when often repeated proves very effective.

The breathing exercises should be done quietly, in rhythm, somewhat like yawning. They may be repeated, if they do not cause fatigue, four to ten times; three to four times a day sometimes gives good results.

The general physical condition; muscle tone, good habitual posture, regular judicious exercises; clothing giving full freedom; these are undoubtedly large factors in the position and function of abdominal organs.

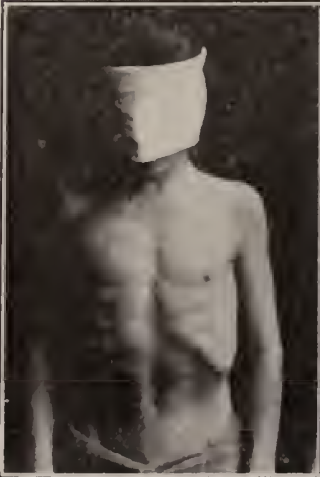
FIG. 20.—Second type of breathing; inspiration.

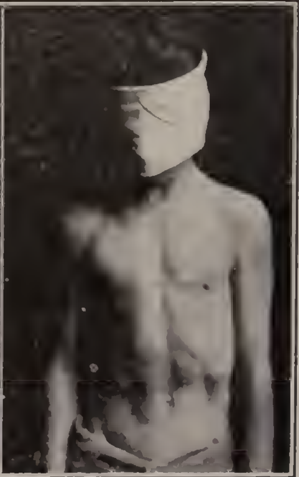
FIG. 21.—Third type of breathing; expiration completed.

63 LINWOOD AVENUE.
469 FRANKLIN STREET.

THE RELATIONSHIP BETWEEN THE NERVOUS SYSTEM AND THERAPEUTICS IN PULMONARY TUBERCULOSIS.*

By Francis M. Pottenger, A. M., M. D., LL. D.,
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Tuberculosis is an infection which may produce an inflammatory process in any organ or tissue of the body. This inflammation is chronic in nature, and, being produced by microorganisms, is accompanied by toxemia whenever activity is present. No matter what tissue is involved, other parts of the body are affected reflexly through the nerves which supply that particular organ. The disease is accompanied by a chronic toxemia, and as the toxins are elaborated, they express themselves through the nervous system, and particularly through the sympathetic nervous system, as I have shown elsewhere (1). If the organ involved is one that produces an internal secretion, this is interfered with by the inflammatory process; and, since many other organs brought indirectly into relationship with the disease process through the vegetative nervous system also produce internal secretions, there is a more or less general disturbance on the part of the internal secretions of the body; consequently there is commonly more or less disturbance in the metabolic activities that depend upon the secretions produced by the internal viscera.

The influence of acute and chronic infections upon the organism varies greatly. Acute infections may be accompanied by either slight or severe toxemia. Those which we know best, the acute infectious diseases, are accompanied, for the most part, by severe toxemia, but of short duration; consequently, the ultimate effect upon the organism is much less than that produced by such a chronic disease as tuberculosis, where the toxemia is more or less constant over a long period of time. The ill effects are due sometimes as much, and at times even more, to the results of the disease than they are to the disease process itself.

From our description it can well be understood that this infectious inflammation (through toxemia) produces disturbance in cellular activity throughout the entire body. By realizing the influence of the nervous system and the manner in which it is disturbed in tuberculosis, we are able to suggest rational measures for combating this disease, and to offer a rational explanation for the action of measures which have long been known to be of value in its treatment.

I have described many of the reflex disturbances which are noted in tuberculosis in a previous paper (2), in which I attempted to show the effects of the antagonistic action existing between the vagus and the sympathetic when both are stimulated by inflammation in the lung. I thus account for the instability of symptoms which are of reflex origin, and explain why at one time, we may have sympathetic tonus, and at another vagus tonus. This may be illustrated in the heart's action. It has long been known that the heart's action in tuberculosis is rapid. This statement must be modified. It is rapid whenever the reflex stimulation of the sympathetic nerves which supply the heart, plus the central toxic action upon the sympathetic, overbalance the reflex stimulation and overcome the slowing action of the vagus. When it does not do this the pulse rate is normal; or, if the vagus overbalances markedly, it may be even slower than under normal circumstances. Many tuberculous patients, who have a high pulse rate during the stage of increased toxemia, have a pulse rate in the sixties when this has passed by. (In order to determine this point the patient must be kept at rest.)

The same thing is true in the gastrointestinal tract. During periods of toxemia there is, as a rule, deficiency of secretion of not only the glands of the gastric and intestinal mucosa, but also of the large accessory glands, such as the liver and pancreas. There is also a decreased motility on the part of the gastrointestinal tract, leading to stasis and constipation. When the acute toxemia has passed and the patient is again clinically free from toxic symptoms, he may even have a better appetite than normally and the digestive process may be carried on more actively than under normal conditions. The explanation is that the vagus fibres which are reflexly influenced by the inflammation in the lung overcome the action of the sympathetic fibres which are likewise reflexly stimulated, causing increased secretion and increased motility. The symptoms of nausea and vomiting, which are sometimes present, are also indications of increased vagus stimulation.

Knowing that there is an antagonistic action between the vagus and sympathetic fibres wherever they meet in the internal viscera, and knowing that both are stimulated by the inflammation in the lung, we can readily understand the variability of the symptoms given below, as they manifest themselves in the various internal viscera (Group II).

Aside from a few minor changes I previously offered the following classification of the symptoms in tuberculosis (3).

Group I.	Group II.	Group III.
Symptoms Due to Toxemia.	Symptoms Due to Reflex Action.	Due to Tuberculous Involvement *per se.*
Malaise	Hoarseness	Frequent and protracted colds
Lack of endurance	Tickling in larynx	Spitting of blood
Loss of strength	Cough	Pleurisy
Nervous instability	Digestive disturbances	Sputum
Headache	Loss of weight	Fever
General aching	Circulatory dsturbances	
Lack of appetite	Chest and shoulder pains	
Digestive disturbances	Flushing of face	
Loss of weight	Apparent anemia	
Rapid heart's action		
Night sweats		
Fever		
Anemia		

When toxemia is very severe, producing collapse there results—

Vasodilatation (vasomotor paralysis), sweating, and subnormal temperature.

The most pronounced effect on the nerves is produced by toxemia, as seen from the symptoms detailed under Group I. The effect of toxemia is widespread; and, if we consider the further changes that occur in advanced tuberculosis which result in the production of neuroses and psychoses, we can see that there is a general tendency for toxemia to express itself on the central nervous system, producing cell exhaustion. We can see, further, that the syndrome of toxemia is, for the most part, that of general sympathetic stimulation, Malaise, lack of endurance, general nerve irritability may be due to general central stimulation, as well as to the action upon the sympathetics. The remaining symptoms, however, seem to be definitely those of general sympathetic irritation.

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*Read before the Seventeenth Annual Meeting of the American Therapeutic Society, Detroit, Mich., June 9 and 10, 1916.

In my previous papers I discussed the etiology of the individual symptoms in Group 1, and, with the exception of fever, accounted for them as being due to sympathetic stimulation. I could not at that time explain the action of toxins in the production of fever, yet I felt that fever was an integral part of the syndrome of toxemia. Being convinced that such was the case, and noting that fever was accompanied by the other symptoms which are definitely of toxic origin, I continued my study until I am now able to suggest a theory for its production, which is in harmony with the explanation of the other symptoms.

Fever may be due to either an increased production of heat or to a decrease in elimination of heat. An increased amount of heat is produced in the body by the consumption and oxidation of extra amounts of food, and by increased metabolic change, which is accompanied by increased chemical action. Heat is dissipated through perspiration, respiration, urination, and defecation. A certain amount of heat is also used up in warming foods and drinks which are below body temperature when consumed.

The studies of many workers, but notably Vaughan's (4) work show that the various proteins derived from bacteria when injected parenterally into experimental animals, produce toxic symptoms, including fever. With the injection of small quantities of protein, the toxemia is insignificant, and the rise of temperature slight. If the dose be larger, the toxemia is greater and the rise in temperature likewise greater. If the introduction of protein is limited to one injection, the syndrome of toxemia is of short duration. If the injection is repeated at frequent intervals, the syndrome is continuous. If large quantities of protein are injected at one time, the toxemia is very severe and collapse may result. Vaughan has shown experimentally that every type of temperature found in infections may be reproduced by varying the methods.

Let us inquire what there is about an injection of foreign protein to cause an increase in temperature? Can we imagine that the injection of infinitesimal doses of protein will cause sufficient metabolic activity and produce chemical change sufficiently marked to elaborate large quantities of heat? Does it not seem impossible that two or three mgs. of tuberculin could produce sufficient increased heat production to account for a rise in temperature to 103° F., as the writer has seen, without there being, at the same time, an interference with heat elimination? The enormous amount of heat required for such a rise in temperature, if increased production is the main factor in causing the rise, can be realized only when we call to mind that it requires about ten per cent. increase in body temperature to produce one degree of rise in temperature. In other words, a temperature of 103° F. means an increase in temperature of 5° F. or a total increase equivalent to about forty-five per cent. of the total body heat of the normal individual.

There are several facts which lead me to believe that the more important factor in the production of fever is an interference with normal heat dissipation rather than an unusually active heat production. In support of this theory I offer the following facts:

1. The experimental introduction of protein produces a general sympathetic stimulation.

2. The manifestations of clinical toxemia are those of general sympathetic stimulation.

3. It has been noted in experimental animals that when protein is injected parenterally, there is a constriction of the vasomotors of the surface, as determined by the constriction of the vessels of the ear of the rabbit (Jona).

4. A rise of temperature is accompanied by other symptoms of toxemia, and by constriction of the superficial bloodvessels which, at times, manifests itself by a sensation of chilliness.

5. The action of toxins and epinephrine is practically the same; both act chiefly upon the nervous system. The introduction of epinephrine causes a constriction of the superficial bloodvessels and a rise in body heat.

From these facts I am led to believe that the rise in temperature which occurs in infections, or whenever a foreign protein of any type is introduced parenterally into the body of either man or animal, would not occur apart from their action through the sympathetic nervous system, which produces a general vasoconstriction of the superficial bloodvessels, and interferes with the dissipation of heat. I am further convinced of this from the fact that emotional states, particularly the depressive emotions, such as those of fear, disappointment, anxiety, discontent, and worry, produce a general sympathetic stimulation; and that all of these depressive conditions are associated with a rise in temperature, at least in the tuberculous patient. Further proof is shown by the phenomena which occur when intense toxemia is present. Here, instead of a rise, we have a fall in temperature, and the patient's body is covered with perspiration, which indicates a general vasomotor relaxation, attended by perspiration and rapid loss of heat. This vasodilatation effect is due to a condition approaching vasomotor paralysis and probably results from a state of exhaustion of the nerve centres caused by the action of the toxins.

Our knowledge of the changes in internal secretions in tuberculosis is meagre. We do know, however, that there are certain definite changes upon the part of many of them; for example, there is a decreased secretion of gastric juice; a decrease in the activity of the liver and pancreas and glands of the intestinal mucosa. We also know that there is increased activity on the part of the adrenal glands whenever there is sympathetic stimulation. We also note that there is an increase in the size and activity of the thyroid gland in many infections, and that enlargements of this organ are found in quite a large proportion of early cases of clinical tuberculosis. The effect of these altered secretions cannot be dwelt upon at this time, because of our meagre knowledge.

Suffice it to say that the action of increased adrenal secretion in the blood is to produce the same phenomena as depend upon sympathetic stimulation for their existence. Physiologists have shown that the hormone in epinephrine acts peripherally, while toxins act centrally. It acts upon the myoneural junction of the sympathetics. Thus, epinephrine, acting peripherally, will cause dilatation of the pupil, relaxation of the musculature of the bronchi, decrease in the motility of the stomach and intestines, and also a decrease in the secretion of the various glands of the gastrointestinal tract.

With this discussion of the nervous system in its relationship to tuberculosis, we may ask, how can these various pathological activities be corrected therapeutically? If we are able satisfactorily to answer that question, we shall be able to offer a rational explanation of the action of measures which are of known therapeutic value in this disease.

Bearing in mind that our therapeutics of tuberculosis today is indirect, that we have no remedy which acts specifically upon the tubercle bacillus, like quinine in malaria, or salvarsan and mercury in syphilis, we are obliged to bring about favorable results by building up the natural resisting powers of the patient and by introducing measures which tend to increase fibrosis. Among important measures which act by improving the natural resisting power are those which control excessive stimulation of the sympathetic nervous system. Such measures relieve the inhibiting action upon the various structures which it controls and permit the natural functions to be carried on more advantageously.

Since sympathetic stimulation is produced by toxins, no matter what their source, we may find it in tuberculosis as a result of the absorption of protein from the bacillus itself, probably also as a result of the absorption of destroyed tissue and any other bacteria that may complicate the process. While toxemia cannot be caused by the depressive emotional states, yet these produce sympathetic stimulation and act in the same manner as toxins; consequently, they must also be relieved in the same way as toxemia, if we wish to relieve the organism from the inhibiting action of the sympathetic system.

Tuberculous toxemia is present chiefly during the stage of active tuberculosis. The body will accustom itself, apparently, to a certain amount of toxemia without producing the syndrome which usually accompanies it; consequently, if activity in the tuberculous focus is of slight degree, or if it has passed and a degree of quiescence has been attained, toxic symptoms do not appear if the patient is kept at rest. If the patient is allowed to engage in exercise, however, even at this time of quiescence, symptoms of toxemia will appear.

We shall now endeavor to point out how some of the important remedial measures in tuberculosis relieve the conditions above described.

Open air. We know that there is nothing specific in open air. It is not the increased amount of oxygen in the air that cures tuberculosis. The victim of tuberculosis can obtain all the oxygen that is required for carrying on the functions of the body in a closed room. Sufficient exchange of air will take place through the unavoidable openings to keep the air sufficiently fresh to supply all the oxygen that is necessary. Neither is it the amount of carbon dioxide in the closed, compared with the open room, that makes the open air more desirable; the percentage of carbon dioxide would remain sufficiently low to keep the air free from deleterious effects if the room were closed; and, even if it were hermetically sealed, there would still be sufficient air to maintain the patient for quite a time, depending on the size of the chamber. There is, however, a distinct stimulation of metabolism produced by the action of the circulating air upon the body surface, which relieves heat stagnation within the body, stimulates metabolic activity, and improves the general cellular tone, and this is accompanied by improved rest and sleep. As a result there is an improvement in the general tone of the patient. He becomes encouraged, and to that extent his sympathetic stimulation is decreased and his condition is improved.

Rest. Rest is essential in treating toxemia. It is valuable whenever exercise increases the sympathetic stimulation by pouring forth into the tissues an increased amount of toxins. Thus, under rest, we note that patients with rapid heart action, poor appetite, deficient digestive activity, constipation, and rise of temperature, may experience an improvement, or even lose all of these symptoms; and, as they disappear, encouragement follows and a general improvement takes place. This beneficial effect of open air and rest may be entirely counteracted by fear, discontent, anger, or worry on the part of the patient; because it continues to produce sympathetic stimulation and depressed function on the part of the important viscera, in spite of the fact that otherwise they would be relieved by rest in the open air.

Psychotherapy. Often it is impossible to relieve toxemia. The disease is in such a high state of activity that toxins are continuously thrown into the general circulation. Patients who are suffering from this greater activity are often depressed and discouraged. While we cannot immediately check the formation of toxins, or counteract their effect upon the sympathetic system, we can relieve the patient of the sympathetic stimulation which comes from his depressed mental state. If we can only encourage and give him some positive suggestion, we may often produce great improvement in his general condition. We shall at times relieve the sympathetic stimulation to such a degree that the functions of the body are carried on to advantage and the patient regains his physiological balance, in spite of toxemia. Positive suggestion is an important measure with which to treat a long drawn out chronic toxemia. The influence of friends is usually harmful, because they have so many things to suggest which lead to discouragement, discontent, and worry; and a well directed psychotherapy, replacing negative suggestion by positive suggestion, is a powerful factor in improving the patient's general condition.

Food. The influence of food may be greatly enhanced by relieving the sympathetic stimulation due to toxemia and depression. We usually note that the appetite and digestion, and therefore nutrition of the patient, improves when he is put at rest in the open air, and receives hope and encouragement.

Exercise. There is a time when exercise has an important and beneficial influence upon the patient. Exercise calls for increased metabolism. Increased metabolism is met by increased food intake; consequently, after toxemia has passed and the patient can exercise without manifesting toxic symptoms, his nutrition can be greatly improved by permitting exercise. The effect of exercise upon the nervous system may not be quite as readily grasped as that of the other measures mentioned. Every cellular activity is produced by nerve action; consequently, the increased appetite and generally improved metabolism are brought about through a stimulation of the nervous system.

Baths. The effect of baths, either air, sun, or water, is exerted through the nerve endings in the skin and extends to every cell of the body. If the activity in the skin is well cared for, as it may be through the stimulating effect of water, light, or air, the vasomotor tone is improved, the metabolic activity of the patient's cells is hastened, and the elimination of heat, moisture, and various toxic products is accelerated.

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JOINT HYPOTONIA.

With Congenital and Familial Manifestations.

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The foregoing title is best descriptive of a unique case that recently came under the observation of the author, being the first of its kind seen during ten years' service at the Hospital for Deformities and Joint Diseases.[1] The characteristic feature is a striking degree of joint mobility involving practically all the joints of the body without apparent demonstrable muscle weakness. The history is as follows:

Case. S. J., female, twenty-one months old. Family history: Grandmother, two uncles, and mother had flail joints when young, which improved with adolescence. The mother, aged thirty years, still presented a laxity of the wrist joints. (Fig. 1.) In all other respects she was normal. She had two children, the youngest, two weeks old, who at the present writing showed no joint abnormalities. Previous history: Patient was born at full term, noninstrumental delivery, weight, six and a quarter pounds. Breast fed for sixteen months. Dentition somewhat tardy; began walking at the age of nineteen months. With the exception of several minor ailments, such as abscess of neck and peritonsillar abscess, had enjoyed good health. Present history: Since birth, child had had flail joints, the upper and lower extremities being especially involved, the spine to a lesser degree. Muscular power unimpaired.

Examination showed general condition to be good. Body and limbs well developed. Length, thirty-four inches. Child sat erect. Walked with a decided waddling gait due to relaxation of the hip joints, resembling closely the double congenital hip walk. Examination of the chest and abdomen failed to reveal abnormal conditions. Thymus not enlarged; no evidences of rickets; child playful and intelligent.

Fingers soft and extremely flexible. Each individual phalangeal joint could be hyperextended to a marked degree. The back of the fingers could be brought in apposition with the dorsum of the hand. The same condition prevailed at the wrist joint, where the back of the hand could be brought in contact with the extensor surface of the lower forearm (Figs. 2 and 3). The elbows could be hyperextended, and there was a much wider range of motion in the shoulders than normal.

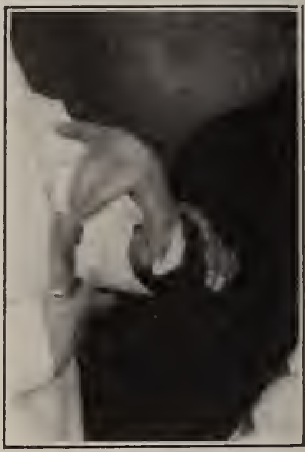

Fig. 1.—Showing laxity of wrist joint in mother.

When standing, the feet were held in marked pronation (Fig. 4), and on passive motion the feet could be inverted, everted, and dorsiflexed, to a most unusual degree. The dorsum of each foot could easily be brought in contact with the lower portion of the crest of the tibia, without producing pain or discomfort. (Fig. 5.) The knees could be hyperextended (Fig. 6), and both hips were subluxated, as shown in the radiograph; they could be dislocated and reduced without effort. The measurements of the limbs showed no dissimilarity in either length or circumference.

The report of the examination by Dr. Charles Rosenheck, attending neurologist to the hospital, was as follows:

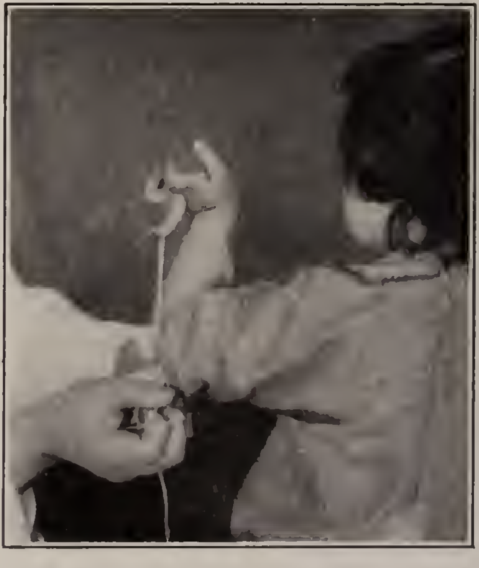

Fig. 2a.—Showing extreme mobility of phalangeal and wrist joints.

"The child uses its limbs freely, holds its head erect, walks without difficulty, and apparently presents no minor or gross motor disturbances. She performs many and varied muscular acts consistent with her age with perfect freedom and coordination. There are no gross psychic defects apparent on observation or by close questioning of the patient's mother in regard to disturbances of the intelligence. There are no cranial nerve disturbances, and the pupils react with promptness to light and accommodation. The individual muscle bundles are firm, the contour is normal, and there are no atrophies or undue enlargements of the larger muscular groups. The electrical reactions are normal, the muscles responding briskly to the interrupted and continuous currents either when individual muscles are tested or muscles *en masse*. The reflexes are prompt and equal in all the extremities. The patellar and Achilles reflexes are quite lively. There are no pathological reflexes elicited such as the Babinski or ankle clonus."

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[1] From the service of Dr. Henry W. Frauenthal, to whom I am indebted for the case.

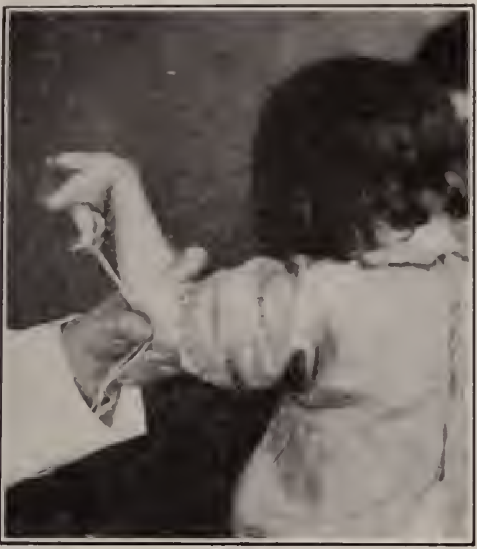
FIG. 2b.—Showing extreme mobility of phalangeal and wrist joints.

These findings were corroborated by Dr. J. Victor Haberman, who has been particularly interested in the neurological phase of this subject and who courteously examined the patient at my invitation in order to rule out the possibility of its being a case of myotonia congenita, which it apparently resembled on first impression.

Although there have been numerous instances of relaxation occurring in one or several joints, either congenital or acquired, a review of the literature failed to reveal a case similar to the one described above. The nearest approach to it is in the condition described by Oppenheim, in 1900, as myotonia congenita, of which there are at present about seventy cases on record. The characteristic features of this disease are:

1. Observed during the first two years of childhood (in most cases, apparently dating from birth, i. e., congenital).
2. Hypotony up to complete atony of muscles.
3. Partial or complete loss of tendon reflexes.
4. Impairment of active motion, in some cases, even complete cessation.
5. Electrical examination showing from a slight quantitative change to even complete disappearance of response with electrical currents; but never reaction of degeneration.
6. Flail joints, if present, are due to muscular weakness.
7. No sensory disturbances.
8. About one third of the reported cases terminated fatally from pneumonia or other intercurrent diseases; the remaining cases showing a tendency to spontaneous though slow improvement.

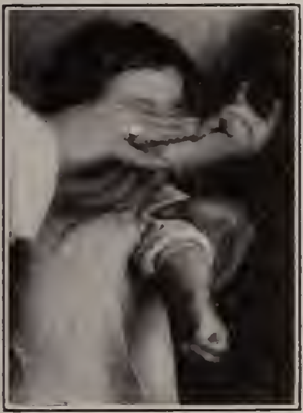
FIG. 3.—Showing extreme mobility of fingers and wrist; complete hyperextension.

Haberman has reported three cases of myotonia from the Oppenheim Polyclinic at Berlin; the first two were typical cases corresponding to the foregoing symptomatology. The third case was that of a girl eighteen months old, who was unable to stand, sit, or hold up her head. Sucking was difficult. Breathing was hoarse. When let go, the child doubled up as if made of rubber. The upper extremities were flabby, lacking all tone, though some movements were evident. When raised, they fell back on the table. No reflexes were present. The legs were absolutely atonic; patellar and Achilles reflexes were absent; passively lifted, they fell back as if lifeless. The muscles were hypotonic. There was considerable adiposis. Sensations were normal. Electrical examination showed great lessening of irritability for both currents in the lower extremities, less marked in the upper. The atony of the muscles of the back, hip, and knee was intense. Dunn states that out of forty cases of myotonia, twenty-two occurred during the first two years of life, eighteen during later childhood up to ten years. Foot described a case in which the tendon reflexes were diminished but not absent, and in which there was obesity, flaccidity of the legs, and enlarged thymus. Two other children were similarly affected in the same family. Councilman and Dunn, under the heading, Myotonia congenita, describe a condition characterized by flaccid paralysis, mostly in the legs, and difficulty in deglutition. Sensations were normal; no reaction of degentration. They state that reflexes may or may not be present.

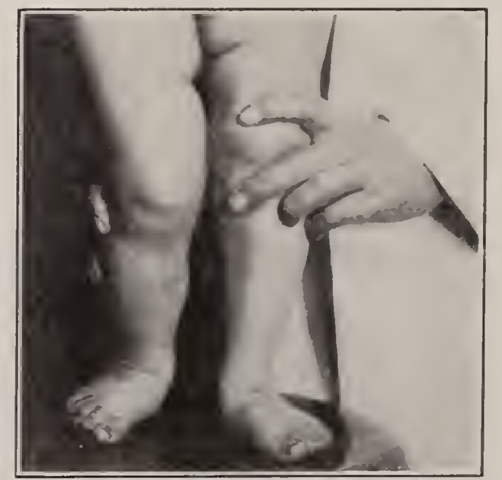
FIG. 4.—Showing pronation of feet on standing.

SUMMARY.

It is, therefore, evident that my case differs in nearly all its essentials from Oppenheim's myotonia congenita. It is not only congenital, but familial as well. There is no interference with the motor power, not even a weakening of the muscles, nor is there any loss of reflexes. The electrical reactions are normal. Nearly all the joints of the body are involved. The radiograph shows no evident lesions in the bones. The only structures affected are the capsules and ligaments of the joints. The prognosis, judging by the progressive improvement which occurred in the other affected members of the family, is favorable.

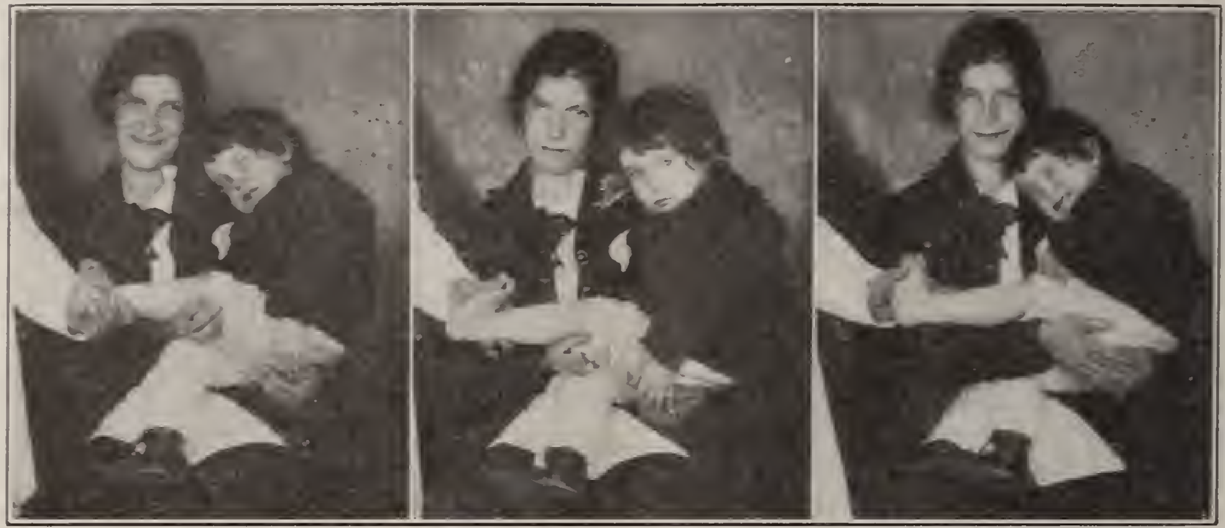
FIG. 5.—Showing mobility of feet on passive manipulation.

We frequently encounter among acrobats and circus freaks cases resembling the author's case, in that they combine both muscular strength and excessive mobility of joints, commonly designated as "double joints." They may be congenital or acquired, and often occur in several members of a family. Whether a course of physical training with the purpose of increasing the mobility of the joints, and begun during childhood, is the causal agent or whether there is some definite organic change, is unknown.[2]

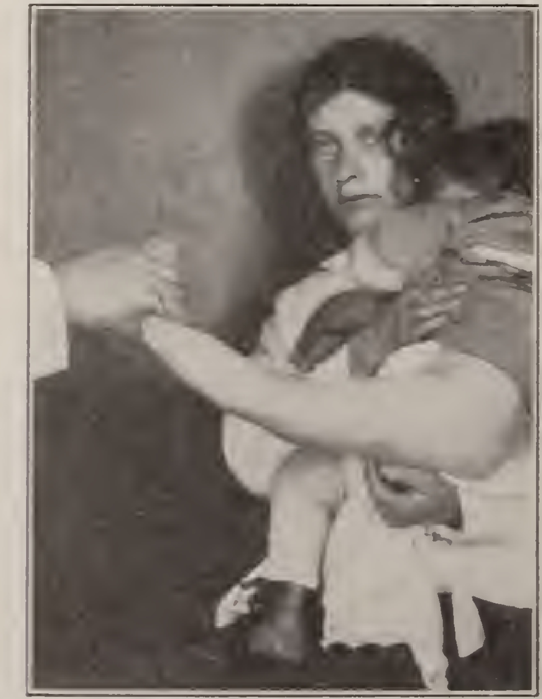
FIG. 6.—Showing hyperextension of knee.

That so extensive a case of joint hypotonia as described above is exceedingly rare, is attested by the fact that it is the only one of its kind that has come before the author's observation in a decade, and also that no similar instance has been cited in the literature.

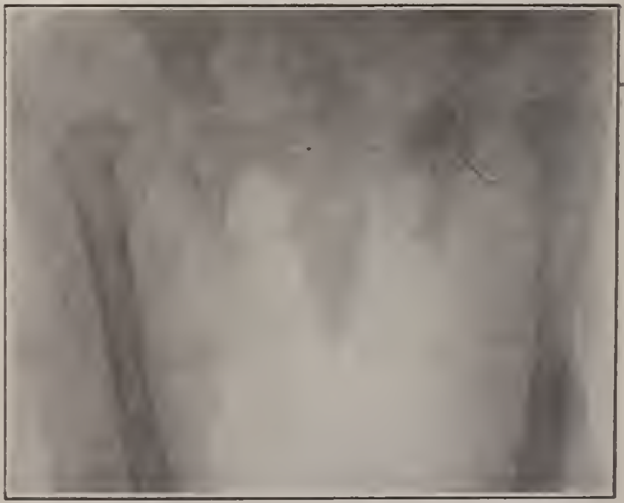
FIG. 7.—X ray of hip joints, showing subluxations.

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236 WEST SEVENTIETH STREET.

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[2] So called double joints are usually due to an unusual length of the ligaments about them.—EDS.

ACUTE MASTOIDITIS.*

By Harold Hays, M. D., F. A. C. S.,
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There is no condition which the general practitioner confronts with more alarm than acute mastoiditis. This is readily explained by the fact that few physicians have confidence in their ability to examine an ear properly. The fault is not theirs; it is inherent in the poor training in otology that is given the average man in the medical school where the specialties until recently received little consideration.

I well recall my own experience. After four years spent in one of the best medical schools, and three years spent in the surgical wards of one of the best hospitals, in which were twenty beds devoted to patients suffering from ear troubles, I went into practice with absolutely no knowledge of a proper examination of the nose, throat, or ear.

Times have changed, however. The medical schools realize the importance of a proper examination of these parts, and make use of the new inventions, particularly the electrical, which make an examination of the ear a very simple procedure. The electroscope allows us to see the ear drum so plainly that no mistake can be made in demonstrating various pathological conditions.

In an institution like the New York Eye and Ear Infirmary, we see thousands of acute ear cases a year, and between five and eight hundred patients are operated upon for acute mastoiditis. In proportion to the population of Greater New York, the number of cases of acute otitis media is very small, and the proportion of patients who suffer from acute mastoiditis, after having an acute otitis media, is only about one in fifteen. From this we can see that today the number of cases that a single practitioner sees in the course of a year is very small. We hear of mastoiditis oftener today, because it is recognized earlier.

There was a time when a running ear was considered a negligible factor in childhood; after measles or the other exanthemata it was a common occurence. Today, every physician views a discharging ear with apprehension, realizing the seriousness of complications, and tries in every way to cure the condition.

I believe that the proportion of children with discharging ears, all of whom are liable to acquire mastoiditis, is far less than formerly, chiefly because we pay more attention to prophylaxis. I need not remind my readers that every ear infection takes place through the Eustachian tube—that an infected nasopharynx is responsible for many of the troubles of childhood. The wholesale removal of tonsils and adenoids may result in certain evils, but these are discounted by the vast benefits. At the New York Eye and Ear Infirmary, we operate upon about 1,500 children for abnormal tonsils and adenoids a year, mainly with beneficial results. We frequently cure discharging ears in this way; we often prevent ear discharges.

SYMPTOMS.

The symptoms of acute mastoiditis in childhood and in adult life differ considerably. In the former case, we cannot rely on subjective symptoms; in the latter, they mean a great deal.

Children. Frequently, the infant or child suffers acute pain in the ear. Examination shows a bulging drum which either ruptures spontaneously, or preferably is incised. An incision should be performed under proper illumination and should start at the upper posterior quadrant, going downward and forward. The next thing to be noted is the discharge from the ear, which at first is serous, but within twenty-four to forty-eight hours becomes purulent. At this time the child may be showing a high temperature, which in itself is not alarming, but if fever continues after forty-eight hours, we must watch carefully.

After the initial incision, the child may no longer complain of pain. He should be put to bed, the ear irrigated, and proper attention paid to the nasopharynx. If the temperature continues high and other conditions are eliminated, we must suspect an involvement of the mastoid.

It is my custom, in observing such cases, to depend mainly on objective signs. Daily examination reveals changes in the character of the discharge. Examination of the drum shows how much tension is behind it, and whether there is any sagging of the posterosuperior wall—a pathognomonic sign. We examine for edema over the mastoid process itself, and attempt to find definite tenderness, which is frequently difficult in little children. If the discharge does not clear up at the end of a week or ten days, some otologists assert that it is best to operate upon the mastoid, rather than run the risk of a complication or a possible deafness. I believe that this is overstepping the mark and that many children recover from a mastoiditis spontaneously, even when the discharge has lasted for weeks or months. Such children are perfectly safe if they can be carefully watched day by day.

Of course, where it is possible, every aid for the determination of the severity of the infection should be employed. Examination of the blood should be made frequently to determine the total leucocytosis and the relative number of polynuclear cells. A culture of the discharge from the ear will determine the invading organism and tell whether we are safe in allowing the condition to continue. For example, Staphylococcus aureus infection gives little cause for alarm; on the contrary, an infection caused by Streptococcus mucosus capsulatus makes early operation imperative.

In infants and very young children, where the symptoms are very mild, I believe we are safe in waiting until a subperiosteal abscess forms. Fortunately the mastoid process is not well developed early in life, and the bone separating an infected area is thicker around vital parts than it is near the cortex. The result is that as the infection extends, the first destruction of surrounding bone is in the cortex. The pus ruptures through and forms an abscess underneath the periosteum. To illustrate how little danger there is in waiting in such cases, let me cite the following example:

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*Read before the Dutchess-Putnam County Medical Society, at Lake Mahopac, N. Y., July 12, 1916.

Case I. About two months ago I was called in consultation to see a boy of twelve years who had a severe pain in the right ear. A year before he had had a mastoidectomy performed on the left side.

Examination showed a bulging drum, which was incised. A profuse discharge of seropus began immediately. In view of the fact that the mastoiditis had developed rapidly when he had had trouble with the other ear, my prognosis was guarded. The following night, the temperature still remaining high, I was asked to see him. Tenderness had developed over the mastoid. I requested the pediatrist on the case to let me know how the boy got along, and definitely stated that I expected the case to come to operation. For two weeks I heard nothing. Then I was called upon to see another member of the family. I noticed the boy's ear sticking out from his head. Definite edema was present. Before arrangements could be made for the operation, the abscess had perforated behind the steromastoid muscle into the neck. A simple mastoidectomy was performed with counterdrainage into the neck. At the end of two weeks the wound had healed, and the boy made an uninterrupted recovery.

In some instances children present practically no symptoms. Where persistent discharge continues over weeks, we must depend on objective findings. These are the cases that lead to sinus thrombosis, brain abscess, or meningitis. What is of equal importance in the long run is loss of hearing that results from continuous discharge, a loss due to adhesions in the middle ear and destruction of the drum. If it is possible to ascertain that the child is losing his hearing, I believe that surgical procedure is more sensible than conservatism. We must examine the drum daily, noting the amount of discharge, the pulsation of the drum, the amount of bulging, and evidences of narrowing of the canal. In order to show how obscure the symptoms may be in a definite case of mastoiditis, let me cite the following case:

Case II. A boy of five years was referred to me in December. He complained to me of a pain in his ear, and had a slight fever. Examination showed a bulging drum, which I incised that evening. A discharge of serum occurred, changing to pus within twenty-four hours. For two weeks, the child seemed perfectly well, except that the discharge continued, and he had fever up to 100° F. every night. There was slight tenderness over the antrum, but nothing of a definite nature to worry over. After these indefinite symptoms had continued for about four weeks, I was convinced that a mastoid operation was necessary because the hearing was getting worse day by day. I insisted on a consultation with another otologist, who firmly declared that we were perfectly safe in waiting. Today we have the x ray at our command, and if a picture can be taken properly, we are able to compare the pictures of the two mastoids, and in many instances can state definitely whether a diseased process is present. Such pictures are hard to take in children, but, in this case, we were able to get an excellent picture. I asked the consultant if he would not operate if the x ray showed a pathological condition. He agreed that he would. The x ray picture showed a total destruction of the mastoid. I operated immediately, finding exactly the condition I suspected—total destruction of the mastoid. The boy made an uneventful recovery.

Symptoms in adults.—The symptoms of acute mastoiditis often differ materially in adults from those in childhood. There are two classes of cases —the acute fulminating type, and the latent type.

Fulminating cases.—It is impossible to tell in any given case how rapidly symptoms may occur, or how rapidly they may subside. The average practitioner is not in a position to take advantage of all the new tests we have in large hospitals devoted to this special work. He will have to depend mainly on the symptoms the patient complains of, and the signs elicited by proper examination. We shall outline the main symptoms briefly:

Pain. There is usually a deep seated pain in the ear due to the inflammation in the tympanic cavity. As the invasion of the mastoid continues, pain is often complained of over the mastoid itself, first in the region of the antrum, and then over the tip. Many patients complain of radiating headache, which extends from the supraorbital region to the occiput—a hemicrania.

Discharge. The discharge, purulent or mucopurulent, is very profuse. A piece of cotton placed in the ear canal, will become saturated in from five to ten minutes. The character of the discharge, particularly the determination of the invading organism, will often aid in determining the severity of the infection. Discovery of Streptococcus mucosus capsulatus, an organism that destroys bone rapidly, an organism which is responsible for many mastoid complications, makes immediate operation imperative. Next in order of importance are Streptococcus pyogenes aureus, the pneumococcus, and the staphylococcus. The latter is seldom responsible for the fulminating type of mastoiditis.

Tenderness. Although tenderness is nearly always present in cases where the mastoid is infected, we must remember that tenderness is frequently present over this region in cases of acute otitis media with an inflammatory condition of the mastoid mucosa. I have seen many cases end in recovery without operation, where the tenderness over the mastoid was extreme. A number of years ago I had six members of one family with acute otitis media. Three of them had extreme tenderness over the mastoid, and I insisted upon operation. Two of them refused operation, and got well without surgical interference. The other also recovered after operation, but had a prolonged convalescence due to a complicating erysipelas.

There are two kinds of tenderness—superficial and deep. The former is ascertained by light pressure with the thumb over the mastoid. Deep tenderness is determined by deep pressure, particularly over the antrum or tip. The chief point to be considered is whether the tenderness spreads day by day. If it is apparent that tenderness is present over the antrum and tip, and then spreads posteriorly, we must suspect a gradually invading process which can be cured only by operation.

High temperature. This symptom means little in adults. As a rule, in the fulminating types, the temperature may rise to 103° F. or higher, but lack of fever is no indication of a recovering process. Some of the worst cases I have seen have been those with no fever at all, or with a rectal temperature remaining well under 101° F. Fever associated with chill makes us suspect a complicating lesion, i. e., infection of the sigmoid sinus.

Deafness. On account of the profuse discharge and inflammation, deafness is a frequent symptom. In itself, it means nothing, for if the ear is properly attended to the deafness is seldom permanent. However, taken in conjunction with other symptoms, it may indicate the extent of the inflammation in the middle ear.

Objective findings. The examination of the membrana tympani and surrounding parts is of the greatest importance. After wiping the canal clean we note the amount of pulsation of the drum, the quantity of discharge, the size of the opening in the drum, the rapidity with which the discharge comes through the incision, and particularly if there is any sagging of the posterior wall and Schrapnell's membrane. The sagging of the posterior wall indicates that there is pus in the antrum and mastoid which is trying to escape. We err on the side of safety, if we operate early in fulminating cases. Wherever possible, I take such patients to the hospital and have an x ray picture taken. In fact the x ray picture is the best consultant we can have in such cases.

I hesitate to operate before the fourth day in any case of mastoiditis, unless the indications are clearly outlined. We may carry out conservatism too far, as will be noted in the following case:

Case III. In January, I was asked to see a doctor's wife, sixty-three years old, who had had grippe for two weeks. The ear drum was bulging. I opened it up immediately. I watched her for two days, during which time she complained of pain in the ear, headache, and had a temperature as high as 103° F. On the third day, a culture of the discharge showed a capsulatus infection. The blood count was 17,500, with eighty-five per cent. polynuclear cells. I advised a consultation. Immediate operation was decided upon, although such early operation was contrary to my usual custom. On opening up the mastoid, the cells were found full of pus, although there was no breaking down of the interstices between the cells. A complete exenteration was done.

The following day the temperature rose to 105° F. and remained there for two days. The presence of meningitis was eliminated, pneumonia and pyelitis were ruled out. Then the wound was reopened. On exposing the dura, a latent brain abscess was discovered, which apparently had ruptured at the time of operation. The patient died three days after operation.

In another case presenting similar symptoms, I watched carefully for three days, at the end of which time I had an x ray picture taken, which showed cloudiness of the mastoid. I informed the patient that within the next twenty-four hours he would have to be operated upon. Before this time had elapsed his temperature began to come down, and two days later he left the hospital perfectly well.

Latent mastoiditis. A few years ago I described in the *American Journal of Surgery* a series of cases under the caption Latent Mastoiditis, in which the symptoms passed from the acute to the quiescent stage. The temperature had returned to normal, the general feeling of malaise had disappeared, there was no longer any headache, and there was no pain. Sometimes pressure over the mastoid would elicit tenderness, at other times not. All that the patient complained of was the continuous profuse discharge from the ear, and almost total deafness.

I consider these cases among the most difficult and dangerous with which we have to deal. For the subsidence of symptoms frequently means that the trabeculæ between the mastoid cells have broken down and that a large abscess cavity is present which is draining through incision in the ear drum. In a minority of cases Nature performs a mastoid exenteration without outside interference. But the process may extend through the protective barriers, which separate the mastod cavity from vital parts, with the result that a sinus thrombosis, or brain abscess, develops. Because the disease is working insidiously, we should be on the lookout.

The careful otologist observes in these cases that the canal is very much narrowed, the drum extremely thickened, and that the discharge of pus is very thick and creamy. I have watched such cases for four to six weeks, realizing that the patient stood little chance of getting well without operation, yet hoping that the patient's natural resistance would be stronger than the local infection. At last the time comes, however, when conservatism has been given a fair test, and when the patient is up against the alternative of having a simple mastoid exenteration performed, or else taking the responsibility of waiting into his own hands. We must realize that these patients are not very ill. It is hard for them to understand that after having gone through much suffering, and after having overcome the severe symptoms, they should have to undergo a severe operation when they are feeling much better.

During the past year I had a number of such cases. In one instance, a young girl had had a discharge from her ear for six weeks. When operated upon a perisinus abscess had formed, which at any moment might have invaded the jugular vein, resulting in a streptococcemia. In another case, the patient presented absolutely no symptoms, yet, at the end of four weeks, when an x ray picture was taken, the whole mastoid was found destroyed. In two cases in which I took x ray pictures, the mastoiditis had continued for six weeks, after the acute symptoms had disappeared. We can readily see the impossibility of either of these cases proceeding to recovery without operation.

DIAGNOSIS.

If we take into consideration the symptoms enumerated above, there is little difficulty in making a diagnosis of mastoiditis. In fact, there is seldom as much difficulty in making the diagnosis as in determining the proper time to operate. We ought to be conservative in all ear cases, but we must not carry our conservatism to the danger point. The character and amount of discharge, the general symptoms of the patient, such as fever, malaise, headache, etc., the amount and character of the pain, the site of the tenderness, the blood examination, the objective signs to be noted in the ear—all are factors of importance. A proper x ray picture, the importance of which I brought out in a paper on that subject in the New York Medical Journal for June 10, 1916, gives an exact idea of the amount of invasion of the mastoid cavity.

PROGNOSIS.

In all cases that are properly operated in, we should have little fear of ultimate disaster. I believe that our mortality at the New York Eye and Ear Infirmary is less than one per cent.—a mortality little more than that from appendicitis. Of course, we must realize that in such an institution, devoted to such special work, the results are better than in general hospitals where but few cases are seen. But this again is negatived by the fact that we get the severe cases here as well as the simple ones.

No one fears mastoiditis, but we do fear the complications. Yet it is surprising that in many cases where the dura is exposed, or the sinus is uncapped, there are very few complications in proportion to the number of cases seen. Among the complications which make the prognosis bad are:

1. *Sinus thrombosis.* This is due to an invasion of the sigmoid sinus by the infecting organism. A high intermittent temperature, associated with chill, with a positive blood culture, clinches the diagnosis. The complication is relieved by resecting the jugular vein and clearing out the sinus. I have had two patients who had this complication, both of whom recovered after jugular resection.

2. *Brain abscess.* Such an infection may occur by direct infection of the dura, through the diploic veins or through the lymphatics. The symptoms are often obscure and the prognosis bad. I will cite one example:

CASE IV. About two years ago, a young woman was admitted to our service at the City Hospital on Blackwell's Island, suffering from acute mastoiditis, with an associated abscess of the scalp extending to the median line, and forward to the supraorbital region. The infection was an unusual one, due to Bacillus coli communis. On operation, a perforation of the posterior canal wall was found, leading into the mastoid bone. The middle ear cavity was not infected. Operation was performed immediately. During the following days, the patient had little fever, but complained of extreme headache and was delirious much of the time. Blood examination revealed nothing. Examination of the spinal fluid was negative. The ophthalmologist pronounced the eye grounds negative and found no choked disc. The neurologist went over the patient and pronounced the case one of hysteria. The following day the patient died. Post mortem examination showed a temporosphenoidal abscess as large as a walnut, which could be traced directly to the original mastoid infection.

3. *Meningitis.* This is a rare complication. It is usually due to a direct extension of a virulent organism.

4. *Facial paralysis.* The facial nerve runs an irregular course through the mastoid bone. Unfortunately, it may be injured at the time of operation.

5. *Erysipelas.* This winter I was unfortunate enough to have three of my patients acquire erysipelas, after being operated upon for mastoiditis. This disease spreads very rapidly in an ear hospital, for what reason we do not know. The complication is alarming to the patient, but is seldom serious, particularly now that we can depend upon the Hiss leucocyte extract. This extract is obtained from rabbits and may be injected in the gluteal region in ten c. c. doses, once or twice a day until fifty to sixty c. c. are given. It is almost a specific in erysipelas. I am at present working on a new treatment for erysipelas at Bellevue Hospital, which I will report at a later date.

TREATMENT.

I shall spend little space on the treatment of mastoiditis. It is mainly operative. The operation is extremely technical, and should be undertaken only by the trained otologist. Some years ago, I described a primary suture of the mastoid wound, which facilitates healing remarkably. I believe Nature can help the surgeon a great deal, if the surgeon is willing to let Nature cooperate. There is no longer any need for painful packings and a wide open wound. After we are assured that the operation has removed all infected bone, a wick of gauze is placed in the antrum and allowed to come out of the lower end of the wound. The wound is closed. At the end of thirty-six hours, the gauze is removed. The lowest portion of the incision is kept open for ten to twelve days by daily probing. The wound is massaged daily. At the end of twelve days to two weeks, as a rule, my patients are completely cured.

Let me hope that this little résumé will give my readers some practical points which will help them to take proper care of patients who suffer from acute mastoiditis.

11 WEST EIGHTY-FIRST STREET.

SHALL WE GET RID OF TUBERCULOSIS AT LAST?

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The so called pretuberculous stage, according to our present information, is a misnomer. It is now acknowledged that the dyspepsia, the nervousness, the palpitation of the heart, the pallor, the emaciation, the want of appetite, the subnormal temperature, the broken and unrefreshing sleep, the lack of energy, and the depression of spirits which precede the distinct manifestation of the disease, are not signs of oncoming tuberculosis, but are due to the disease itself, already present and active in the body.

We can never hope to conquer any disease until we know its life history, as well as its cause. Our present comparative helplessness in the matter of cancer is presumably because we do not yet know its real cause; whereas, having found the cause of typhoid fever, and having known its mode of action for years, we have in vaccination an efficient preventive against the infection. In tuberculosis we have been acquainted with the infecting agent since Koch's great discovery of the tubercle bacillus in 1882, and we formerly believed that this great man had also discovered the remedy when, in 1890, he announced that hypodermic injections of tuberculin would cure tuberculosis.

The whole world went tuberculin mad. Every one hastened to do honor to Koch and to employ his remedy; only to find that there had been a great mistake made somewhere and that the results of the disease had not been greatly improved by the new treatment, although its exciting cause had been demonstrated, and Professor Koch, who possessed one of the few really great medical minds known to history, had declared that he had found the remedy. Men not yet old can recall the all but universal prevalence of the "tuberculin delirium" that followed the announcement of the new remedy. High and low, rich and poor, learned and ignorant, lay and professional, all united in the joyful belief that at last the "great white plague" had been conquered. Koch and his followers, however, made the mistake of assuming that a few injections of tuberculin would cure the disease, and they gave far too large doses and at too short intervals, so that the orderly working of the forces of the body, which were doing everything that they could to repel the invading army of tubercle bacilli, were thrown into disorder and, instead of fighting the invader, began fighting among themselves.

It was in 1890 that Koch announced the discovery of a cure for tuberculosis, which an encyclopædia informs us, "has not been supported by further experience." There was then living one of the world's greatest scientists, to whom we owe a debt for the advancement of medical knowledge that can never be repaid. His name was Virchow. He died in 1892. One of the last acts of his long and busy life was to lead a crusade against the new remedy for tuberculosis. He alleged that it "mobilized" the tubercle bacilli already present in the patient's system, and drove them all over his body to carry on their work of destruction.

It was not generally known then, but we know now, that in scientific matters Professor Virchow had become a reactionary. He never accepted the Darwinian theory. In short, his mind had crystallized. No sudden recoveries, however, from tuberculosis had followed Koch's treatment, like those which had followed von Behring's antitoxin in diphtheria. Inasmuch as from the overdosing of the tuberculous patients with tuberculin, already alluded to, the condition of the latter had apparently, if not actually, been made worse, most physicians were quite ready to accept Virchow's dictum and condemn tuberculin out of hand. They vilified the remedy and its inventor with almost as much vigor as they had extolled them at first. The disappointment was bitter and lasting.

Now, after nearly thirty years, we are about to see a tuberculin renascence. It is to be most devoutly hoped that we shall see no return of the "tuberculin delirium." Most probably we shall not. For where it has taken nearly a generation to try out and prove carefully the effects of a remedy, its unreflecting, uproarious adoption is quite unlikely.

It has fought its way back into favor in spite of the antagonism or at least the indifference of the profession and the laity. Doctor Baas, in his celebrated *History of Medicine,* has repeatedly warned us that whatever has been quickly and universally adopted in medicine has almost universally turned out to be valueless; and this is easily explained, at least so far as tuberculosis is concerned, because it is an exceedingly difficult remedy to use correctly, and its results are, generally speaking, only gradually and slowly achieved. There is nothing pyrotechnical or cyclonic in its action. Properly administered it is a reinforcement of the natural forces of the body at the proper time and in the proper manner, so that the *vis medicatrix naturæ* may conquer and drive out the invading forces of the disease.

As we now know, tuberculosis is usually a lifelong disease. It is acquired in most cases before puberty, in many instances in infancy, so much so that seven young people out of ten have been infected with the tubercle bacilli before they are seventeen years old. Fortunately, out of this number, probably seven eighths are strong enough to conquer the disease without treatment, so that it will never become really active in their systems. This slow development of the infection, and the great resisting power of our bodies, show conclusively that a little help at just the right time will enable practically everybody to rid himself of tuberculosis.

A teacher in the Polyclinic Medical School and Hospital of New York[1] has solved the problem which baffled the great Professor Koch and many of his followers, namely, how to administer tuberculin safely, easily, and effectively. This expert does not put his patients to bed. He does not send them to sanatoriums. He does not stop their ordinary occupations or mode of life. He just has them come to him twice a week and injects a little, a very little bit of Koch's tuberculin under the skin of their arms, and increases his dose very, very slowly, so that he finally produces a state of immunity in their bodies against the infection of the tubercle bacilli, and the patients are well almost without realizing in what desperate danger they have been.

You may ask how does the doctor find out that these people have tuberculosis in the very early stages of the disease? The answer is, that he tests them with doses of the tuberculin, just as cattle are tested, to find out if they "react," that is, have a certain rise of temperature at a certain time after the injection of the tuberculin. If they react, treatment is instituted promptly, but with great caution and careful observation, so that no unnecessary inconvenience results. The patients keep right on at their work. Their families, if they have any, are not deprived of their support. There is no going away from home to spend long, desolate hours in a sanatorium.

Naturally thousands of people can be treated by this method where only dozens can go to sanatoriums, and verily that golden moment is in sight which was predicted by Professor Koch when he said, in referring to the early treatment of all cases of tuberculosis, "only then will the new method have become a genuine blessing for suffering mankind, when it will have come to pass that all cases of tuberculosis are taken early under treatment and the occurrence prevented of advanced, neglected cases which up to the present have formed the inexhaustible source of ever recurring infection."

42 CHURCH STREET.

THE STRUGGLE FOR BINOCULAR SINGLE VISION.

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By binocular single vision we understand that visual phenomenon that enables us to see objects single, although both eyes take part in the visual act. It is not uncommon to hear patients complaining of double vision. Of course this is observed only in abnormal cases, where there is a disturbance in the equilibrium of the external muscles of the eyes, but it suffices to lead us to the conclusion that there must be some essential factors in normal eyes that prevent this annoying condition. If we had only one eye, double vision would practically be impossible, except perhaps in hysteria and in cases with a double pupillary opening. But the visual organ in man is a highly complex apparatus, in which two eyes perform the same function simultaneously, each eye perceiving the same impression of the same image. This would give rise to double images, were it not for a special mechanism, whose object it is to fuse the two images into one percept, that is constantly at work in the effort to maintain binocular single vision. Binocular single vision is determined by a process of fusion. In normal eyes this fusion is accomplished without much difficulty, but in abnormal eyes this effort to fuse two images into one distinct percept is accomplished only by a very hard struggle of the mechanism, and often in this struggle the mechanism is unable to overcome the obstacle and double vision is the result.

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[1] Bonime. See this JOURNAL for April 15 and May 13, 1916.

Absence of double vision does not necessarily mean binocular single vision. We may have only monocular vision, one eye being entirely blind or amblyopic. We may be dealing with a case of binocular vision where each eye sees separately, as in strabismus, but the two eyes do not work together because of the psychic suppression of the image in the deviating eye in order to prevent double vision. In either case, there is no double vision, still the patient has not binocular single vision. In order to have binocular single vision both eyes must simultaneously take part in the visual act, both eyes must fix the object, and an image must be formed in each eye, but the two images are fused together into one visual percept by the fusion mechanism.

MECHANISM OF BINOCULAR SINGLE VISION.

Binocular single vision is determined by the prompt action of the external ocular muscles. So long as these muscles or group of muscles act in harmony in otherwise healthy eyes, binocular single vision is present, and is obtained without special effort or expenditure of nerve force. The visual lines in these cases are parallel, and, in fixing an object the visual lines intersect at the point of fixation. The ocular movements are executed with ease in all directions; there is no lagging behind in the action of any muscle. Under such circumstances rays of light entering the eye after being refracted by the various media of the eye, form images upon a corresponding point of the retina (the refracting status of the eye being normal). The important part in the physiological mechanism of binocular single vision is that the images formed upon the retina shall be formed upon corresponding points, namely, the fovea, where as a result of the fusion power of the visual apparatus the two images are united into one definite visual percept. Such eyes are perfectly normal and no asthenopic symptoms result from the fusion of the two images. Not all eyes are so placed, however, by nature as to have their visual lines intersect at the point of fixation, and consequently images are not always formed on corresponding retinal areas, and double images under such circumstances would be observed, were it not for the fact that the muscular mechanism controlling binocular single vision can execute movements of adjustment to facilitate fusion of the two images. There is, undoubtedly, a fusion centre high up in the cerebral cortex that is stimulated by the retinal images to blend the two images into one definite percept. This fusion centre accomplishes its purpose by the aid of the external ocular muscles. Whenever images are formed on dissimilar points of the retina, these muscles bring about an adjustment by making the visual lines intersect at the point of fixation and bring the images on corresponding points of the retinæ ready to be blended by the fusion centre. This is the physiological effect of the fusion mechanism. It is well to bear in mind that there is an apparent muscular equilibrium; no deviation is manifest, but there is a constant nerve and muscle tension to hold the eyes in perfect parallel lines to prevent diplopia. It is in this nerve and muscle tension that the struggle for binocular single vision takes place. Up to a certain point the muscle, in response to a demand by the fusion centre, may be able to cope with the situation and to hold the eyes in such position as to enable them to bring about fusion, but it is done with the expenditure of extra nerve force which gives rise to symptoms of strain.

LATENT DISTURBANCE OF MUSCULAR EQUILIBRIUM.

Whenever we have a deficient muscular tone that is compensated by an extra effort of the fusion mechanism, so that there is no manifest deviation, we have a latent disturbance in the ocular motility. In all these latent disturbances we have an overwork of the ocular muscles and an extra expenditure of nerve energy that stimulates the muscles to overactivity. The heterophoric patient must either overwork his muscles and see clear, or allow a relaxation of his muscles and see either double or indistinctly. He chooses the former alternative and struggles for clear binocular single vision against an annoying double vision. He overworks his muscles. But this overwork of the external ocular muscles is productive of a chain of symptoms grouped under the title of muscular asthenopia. There comes, however, a time when the muscle is no longer able to respond to the extra nerve stimulus and can no longer continue the struggle for binocular single vision, consequently the muscle relaxes, and one eye no longer takes part in the visual act, the symptoms of course subside, but the eye is no longer held in a straight position, but deviates inward or outward and we have manifest deviation or strabismus. We may still have binocular vision; each eye may still retain its visual acuity when used separately, but the two eyes no longer work together, as the image in one eye is psychically suppressed in order to avoid double vision. Occasionally it happens that one of the eyes becomes amblyopic from nonuse; usually, however, the deviated eye is subnormal in its visual function. Not infrequently we see cases in which the deviation is manifest and yet binocular single vision is still present. These are cases of latent diplopia which can be elicited by placing a red glass in front of one eye, then the fusion apparatus is not able to blend the images. These patients are great sufferers and very difficult to cure. It is in these cases that the struggle for binocular single vision is productive of most serious results in giving rise to muscular asthenopia which lasts until the eye becomes strabismic. With the establishment of squint the symptoms usually subside, the struggle for binocular single vision is over, the deviating eye no longer takes part in the visual act.

SYMPTOMS OF MUSCULAR ASTHENOPIA.

The symptoms of muscular asthenopia are both local and general. The local symptoms manifest themselves in pain in the eyeball or in the superciliary region, especially after close application of the eyes to reading, sewing, or other work requiring good sight and attention, but this pain may be there regardless of close work. The conjunctiva as well as the eyelid may be hyperemic. There may be some twitching of the lid, and on lateral movement some ataxia of the ocular muscles. Headache is a common symptom. These patients suffer from headache which is not always localized, and not infrequently is felt in the morning. It is often occipital and radiates down the neck and the shoulder blades. In contradistinction to headaches caused by errors of refraction, the headache caused by disturbances in the balance of the external ocular muscles very often is more marked in the morning and may even grow less in intensity as the day progressess. This is somewhat analogous to the various muscular pains in the arms and shoulders that are more painful in the morning. The headache is often accompanied by dizziness, nausea, and not infrequently by vomiting. When the muscular imbalance is not corrected for any length of time other reflex symptoms may set in, such as nervous irritability, insomnia, general weakness, which ultimately culminate in neurasthenia. The vertical deviations are especially prone to give rise to asthenopic symptoms, while next in order of causation are the exophorias. The severity of the symptoms is not always, however, in proportion to the degree of the muscular deviation. Vertigo as a result of some muscular deviation is not infrequent and is usually caused by a latent or manifest diplopia which may also give rise to attacks of vomiting.

TREATMENT.

Asthenopic symptoms resulting from the struggle and effort to maintain binocular single vision, require relief, and in the majority of cases this may be obtained by optical adjustment. All muscular deviations giving rise to asthenopic symptoms should be corrected, no matter how low the degree. In fact, we are not to be guided by the degree of the latent muscular deviation, but rather by the symptoms produced. In those cases where the muscular imbalance is secondary to some complicated error of refraction, the correction of such error at once also remedies the muscular deviation and no further attention is necessary. Where the muscular disturbance is not dependent upon an existing error of refraction, then it must be remedied, if we are to relieve the symptoms. Our aim in the treatment of these cases is to provide binocular single vision without the necessary extra expense of nervous energy.

There is practically only one course open to us as far as therapeutic measures are concerned, namely, to prescribe prism glasses to aid the inefficient muscle in its struggle for binocular single vision. Where the disturbance is an exophoria resulting from a weak internal rectus muscle, we give prisms, base in, to relieve the strain from this weak muscle and thus enable it to enter into the visual act without producing reflex symptoms. When the external rectus muscle is weak and we have an esophoria, we place the prism base out. In vertical deviations we place the prism base up or down as the case requires. There are several forms of exercises for the purpose of strengthening the weak muscle without having recourse to prisms. All are based upon the same principle and all are practically of little use. Prism exercises, rarely if ever, produce a readjustment of equilibrium in the tone of the ocular muscles. The weak muscle may, as a result of prolonged exercise, succeed in overcoming some artificially induced deviation by means of prisms, but it rarely if ever brings the two muscles that are associated in lateral movements of the eye into a straight harmonious equality with the ordinary nerve impulse. It should also be remembered that prismatic exercises may be employed only in the so called exophoric type of deviation when there is an insufficiency of the internal rectus muscles. In all other forms of deviation prism exercises are practically of no avail. Even the exophoric type, where the muscle has been reeducated to overcome a prism of 25 △ the muscle becomes again weaker as soon as the exercises are discontinued. It is practically impossible to continue these exercises forever or even for any length of time for economic reasons. Patients are not often willing to come to the physician's office often enough, and home exercises are not productive of the desired result. It is interesting to note that in hospital practice this therapeutic measure is not employed at all and is made use of only in office practice. This therapeutic measure may be considered a negligible quantity not deserving consideration. That leaves us only one remedy in the treatment of muscular imbalance, namely, prisms for steady wear. If we cannot make a weak muscle stronger so as to enable it to fix the object and fuse the images without special expenditure of nerve force and its subsequent unpleasant strain, we may still so alter the rays of light by means of prisms as to make them fall upon corresponding areas of the retina and thus give us binocular single vision, not as a result of overwork of the muscle, but as a result of the aid given by the prisms, the glass doing the work that otherwise would have to be done by the weak muscles.

When should muscular deviations be corrected by prisms? As soon as they give rise to asthenopic symptoms. In fact, some of the deviations should be corrected when detected without waiting for asthenopic symptoms to develop. All cases of hyperphoria or vertical deviation should be corrected at once without waiting for symptoms of muscular strain and a prism should be added to the corrected error of refraction. It is my practice fully to correct these deviations as long as the total deviation does not exceed six degrees when I place prisms of three degrees before each eye, one base up the other base down, depending upon whether we have a right or left hyperphoria. Prisms of a higher degree placed vertically cannot be tolerated by patients. But I have seen prisms of six degrees relieve symptoms where the deviation was eight or nine degrees. When the deviations reach a higher degree surgical means have to be employed to give relief. I always correct a one degree deviation, even when there are no symptoms of asthenopia. To correct the error of refraction and leave the muscular imbalance uncorrected is not a good practice, as one degree of vertical deviation may be a potent factor in the production of muscular asthenopia, for the fusion mechanism is not well developed to blend vertical images with as much ease as lateral double images, and it is therefore essential to correct all these deviations and prevent rather than cure the symptoms of asthenopia and its possible aftereffects.

Low degrees of esophoria may not require correction so far as the muscular imbalance is concerned. Esophoria is often the result of an overactive accommodation impulse which stimulates the internal rectus muscles toward convergence, and with the correction of the existing error of refraction which lessens the accommodation impulse, it simultaneously lessens the actual amount of the esophoric tendency.

Higher degrees of esophoria I usually correct with prism glasses base out. I am in the habit of correcting carefully all cases of exophoria that present asthenopic symptoms, even though the deviation is only one degree. When the deviation is four degrees I correct them even though there are no symptoms. Only in selected cases do I use prism exercises. Surgical means for the relief of muscular asthenopia, while occasionally necessary, are usually not needed unless the latent divergence reaches at least twelve degrees. It is well to call attention to the fact that of many of these cases that come under our care require in addition to optical aid internal medication which will correct the result of the previous struggle for the supremacy of binocular single vision.

This short outline should give the general practitioner some idea of the problems the ophthalmologist has to meet. To give the general practitioner a fair outline of the scope of the work we are called upon to do and convince him not only of the necessity of ocular examinations and optical corrections in various cases, but also that these cases should not be intrusted to opticians and optometrists, is the aim of this paper.

917 Spruce Street.

ONE THOUSAND WASSERMANN REACTIONS.

From the George Washington University Laboratory, Washington, D. C.

By John M. Ladd, M. D.,
Indianapolis.

For the past four years or more medical literature has abounded in articles relating to Wassermann's reaction, and it is not my intention to add to this literature, but to present the percentages of the reactions we have found to prevail in dispensary, hospital, and private practice, basing them upon a thousand cases in the three services. While I was connected with the laboratories of the Casualty and Washington Asylum Hospitals, I was quite frequently asked: "In what percentage of cases do you find double plus (++) reactions in the patients of the hospital wards?" and: "What is the difference in percentage of double plus reactions in the white and colored races?" It is in answer to these questions that I tabulate as follows:

1. The dispensary patients comprised 42.50 per cent. of the 1,000 cases.

	Per Cent.
Reaction negative (—), in	52.80
“ plus minus (+—), in	11.00
“ plus (+), in	10.70
“ double plus (++), in	25.50
	100.00 of 425 patients.

Of this number of patients, 68.80 per cent. were white and 31.20 per cent. were colored.

In the 25.50 per cent. of double plus reactions, 14.60 per cent. were of the colored race and 10.90 per cent. of the white race.

In the 52.80 per cent. of negative reactions, 29.80 per cent. were of the white race and twenty-three per cent. were of the colored race.

In the remaining 21.70 per cent. of plus and plus minus reactions, we find 13.90 per cent. to be of the white race and 7.80 per cent. of the colored.

In those patients in whom a diagnosis of lues had been made, I find that 43.70 per cent. gave a plus plus reaction, which, in my opinion, weakens statements made about dispensaries, that lues is present in nearly seventy-five per cent. of the cases.

2. Patients in the wards of George Washington University Hospital, comprising 44.90 per cent of 1,000 cases.

	Per Cent.
Reaction negative (—), in	71.20
“ plus minus (+—), in	12.00
“ plus (+), in	6.40
“ double plus (++), in	10.40
	100.00 of 449 patients.

Of the 449 patients, forty-three per cent were female white and fifty-seven per cent. male white.

I find that 3.60 per cent. of the positive results were in the female white and 6.80 per cent. in the male white.

3. In the private cases of the hospital and in outside practice (12.60 per cent. of the total), I find the following percentages:

	Per Cent.
Reaction negative (—), in	62.50
“ plus minus (+—), in	19.27
“ plus (+), in	4.13
“ double plus (++), in	14.10
	100.00 of 126 patients.

Of the 62.50 per cent. of negative reactions, I find that thirty-seven per cent. are in white females and thirty-three per cent. white males.

Of the plus and plus minus reactions, there are 48.20 per cent. under treatment.

From the foregoing figures, I think we can answer questions as to prevailing percentages in any of our services, and *en masse* we have the ratio per mille of population (all stations of life included) of either group of reactions, thus:

	Per Cent.
Reactions plus plus are found in	17.38
“ minus are found in	62.09
“ plus or plus minus are found in	20.53
	100.00

In making a comparative study of the two races I was astonished to find that the percentage of plus and plus minus reactions in our dispensary practice was 6.10 per cent. greater in the white population than in the colored, and in seeking a reason for the proportional increase, I have finally come to the conclusion that the white race has more faithfully taken the advice of our clinicians, and pursued continuous treatment at the dispensary, thanks to the continued effort in this work.

Central Indiana Hospital for the Insane.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD AND EFFICIENCY.

By Martha Tracy, M. D.,
Philadelphia,
Professor of Physiological Chemistry, Woman's Medical College, Pennsylvania.

III.

VITAMINES.

(*Continued from page 853.*)

There are other substances among our food stuffs that are not fats, or carbohydrates, or proteins; substances which are of little or no value as fuel, but are of vast importance in building tissues, and in promoting the normal running of the body machinery.

These are compounds of whose chemical nature we are not certain, and to which the general name of vitamines has been given. Some of these so called vitamines contain nitrogen, but we know little of their chemical nature. They are found in the husks or bran of cereals, in milk and meat, in butter and codliver oil, in the fat of egg yolk, and in fresh vegetables, though always in minute amounts. Yet this very small amount of these mysterious compounds is absolutely necessary to the proper activity of the cell machinery. Without these substances in the food supply, though proteins, fats, and carbohydrates are adequate in quality and quantity, the young animal will not grow and the adult will fail to maintain a normal state of nutrition.

The curious disease called beriberi is rarely seen in America, but frequently in the Philippine Islands, Japan, China, and other eastern countries, and was long thought to be an infectious disease due to an unknown microorganism. In this disease of the nervous system numbness and stiffness are followed by gradual paralysis of the limbs due to a polyneuritis or inflammation of the nerves. We have discovered that this condition is due to a lack in the diet of these peculiar vitamines. The peoples in whom beriberi develops are accustomed to live largely upon polished or white milled rice, rice from which the husk has been removed and with it these mysterious life giving substances. If unpolished rice is eaten, or sufficient fresh vegetables of other sorts, or meat, or if some of the rice bran is taken with the food, either the disease does not develop or the person suffering from it will recover promptly.

There is a disease of nutrition called scurvy, which we do not often see today, especially in this country. It was common when fresh vegetables and fruits were less available to every one, and salted meats were largely used, as in the long voyages of sailing ships, or in prisons. We have learned that fresh foods, especially vegetables and fruits, orange and lemon juice, supply some not understood, and perhaps vitamine need of the body and thus prevent development of the disease.

Bones constitute a tissue which is composed largely of calcium phosphate, and we must have food which contains phosphorus and calcium in order to build this tissue. Thus inorganic salts are indispensable in our dietary. A certain amount of sodium chloride or table salt is present in the body fluids; iron is essential for building hemoglobin, the characteristic protein of the blood; calcium and potassium salts are also needed in the blood and cells.

A disease called rickets occurs in undernourished children. Here we have as the most conspicuous symptom the imperfect bone development with consequent deformity of skull and limbs. The disease appears to be related to some lack in the diet, which in some unknown way influences conspicuously the proper use of inorganic salts, and there results deficient ossification.

The inorganic salts play a significant part in the nutrition of the body in quite another way. The normal body tissues and fluids are neutral or slightly alkaline in reaction. This appears to be necessary for solution of materials, and for maintenance of the conditions best suited to tissue combustions. The salts are of first importance in maintaining this neutral or alkaline condition.

If acids or acid forming substances are taken in the food, or if acids are produced in the body by cellular activities, salts of potassium and sodium and ammonium will react to neutralize the acids and thus save the tissues from their deleterious effects. If too much acid is ingested or formed within the body, however, such neutralization may be inadequate, and abnormal states included under the term acidosis may result. The food must therefore be chosen with some regard to its content of acid forming and base forming substances.

From what has been said, then, we are in a position to appreciate the definition of nutrition given by Professor Lusk: "Nutrition is the sum of the processes concerned in the growth, maintenance, and repair of the living body as a whole, or of its constituent organs."

We see that the normal continuance of these processes involves transformations of energy, latent in foodstuffs, into heat and work and chemical reconstruction in the animal body. The activities of the cells by which the building of tissue is accomplished, are best carried on at a temperature of about 98.6° F., which must be maintained by oxidations in the cells, the burning of fuel.

The internal work of the animal engine, which is manifested in the movements of the digestive tract, of the chest wall in respiration, and in the never ceasing activity of the heart muscle, is all essential to the growth, maintenance, and repair of cells, and this work all represents energy liberated by these same oxidations in the cells.

Normal nutrition, then, involves the adequate supply of tissue building foods; proteins, inorganic salts, water, a little carbohydrate and fat, and very minute quantities of unknown vitamines; also a sufficient amount of fuel food, chiefly carbohydrate and fat, to keep the machinery in motion.

Malnutrition means the unsatisfactory working of the machinery because of inadequate or excessive supply of some one or more of these foods. We cannot leave this phase of the subject, however, without brief reference to certain regulating influences within the body itself, which effect the distribution and use of foodstuffs in a manner quite beyond our dietetic control.

There are in the body certain so called ductless glands, groups of cells which produce chemical substances that are not poured out through a duct, but which diffuse from the cells into the lymph and blood streams in such minute amounts as to be almost if not quite beyond our power to detect them, and yet are of such significance that if these glands are removed or diseased, the whole machinery of the body is disturbed.

There is the thyroid gland lying in the neck, the adrenal glands lying just above the kidneys, the pituitary body lying at the base of the brain within the skull, and the pancreas, which, in addition to the juice which it pours through a duct into the intestine to play a part in digestion, produces also one of the internal secretions which diffuse into the blood.

In the normal subject these ductless glands are performing their physiological duties smoothly and uninterruptedly, and if we do our part in providing proper food supply, the engine runs satisfactorily and nutrition is normal. If these glands are not functioning normally it is because there is a diseased condition or has been an error in development of the gland which no dietetic regimen can repair. That side of the control of nutrition is not a part of our study, but must be left to a discussion of the treatment of disease.

Granting that we have a normal body engine, it is our province to keep it normal by providing the materials required for the daily needs.

(*To be continued.*)

Discrepancies in Current Systems of Dietetics.—Axel Emil Gibson (*Medical Standard*, October, 1916) says that in the complexity of modern life, thumbscrew standardization of individual diet is unsafe and unreliable. Moral disposition, nervous intensity, nationality, preceding habits of life, diet, etc., must be accepted as indispensable factors, necessary for a scientific determination of the specific needs in individual dietetics. As digestion depends for its efficacy on the nervous disposition of the individual, so a fruit diet may mean added health and power to the well nourished, self possessed, equipoised type, but disastrous to the neurasthenic highly strung, and eccentric. Milk may paint the pink of health on the cheeks in one case, the yellow of jaundice on those of another. Sour pickles, sauerkraut, vinegar, and beer may go well with a diet of salami, pork, frankfurter sausage, and Roquefort cheese, while for a person living on grains, fruits, and vegetables they lead to digestive disaster. A poisoned system requires antidotal poisons for its neutralization, and physiological or digestive tolerance is a matter of metabolic power of neutralization. The rudimentary principles of a hygienic diet may be summed up in the avoidance of physiologically intolerable combinations, such as acids with starches, milk with proteids, meat and carbohydrates—or, in other words, fruit with any form of food; meat with milk, fruit, or cereals; free sugar in any man made combination, and acids with meals. In general avoid any product not grown on a tree or attached to a root. He maintains that to most dietitians the main object is to prepare food mixtures with a view to moving the bowels, and that this is a misconception of the real value of diet. The bowels should not be irritated, but nutrition should constitute the basic factor in curing constipation. He holds that bread should be made up of no other ingredients than those present in the complete grain, unsifted, unbleached, unmixed, but ground sufficiently fine to avoid the irritation that may follow the passage of coarse, indigestible grain kernels. The baking of the bread should be thorough and with the end in view of dextrinating its starch and destroying its yeast spores. While a piece of good bread may be sufficient to sustain routine animal existence, it is not sufficient adequately to sustain the high tensioned cellular energies, so it is better to add three or four black figs or prunes, and a similar amount of walnuts to a breakfast of whole wheat bread. Another meal of physiological sufficiency may be found in a single dish of cottage cheese, if to it is added a teaspoonful of ground brazil nuts, a tablespoonful of chopped green onions, lightly dusted with powdered chili pepper as an aid to the digestion of the cold mass, enjoyed with a slice of whole wheat, well toasted bread, and unsalted butter. Then there is a meal of an Irish potato with a soft, poached egg, a boiled or steamed onion, and an ounce of unsalted butter. Then at the time of retiring, when the stomach has had time to empty itself, a bunch of sweet grapes, or a ripe, fresh apple rounds up the dietetic program of the day. Thus, he avers, the three cardinal virtues of a rational diet are achieved—digestive facility, nonfermentative absorption, and an *n*th power of efficiency. Without the attainment of these three objects, diet remains a mere vegetative act, a haphazard feeding, gauged either by an overwrought asceticism of elimination, or the insane promptings of an overstimulated, unreliable, despotic appetite. A vital balance must be maintained in the diet, and the fact must be constantly kept in mind that man is an individual *per se*, and refuses constitutionally to be standardized or generalized into any fixed system of diet.

Raw Starch in the Treatment of Diabetes.—E. B. Knerr (*Journal of Missouri State Medical Association*, September, 1916) describes his treatment of diabetes as consisting of placing the patient in a hospital or sanatorium and putting him on raw starch and water until all the sugar had been burned out of his system and circulation. This may take from one to four days, though glycosuria usually disappeared in from twenty-four to thirty-six hours. A dram of starch in a glass of water every two hours is all the nourishment allowed until the urine is sugar free. No preliminary days of reduced diet are necessary as in the Allen treatment, and therefore the excessive hunger, thirst, and polyuria are unknown under the use of raw starch, which satisfies the patient's craving for carbohydrates. As soon as the urine is sugar free the patient may be allowed green vegetables, such as lettuce or celery, with salt and a soft egg; the allowance is gradually increased by the addition of meats and boiled vegetables. The dram of raw starch, however, should be taken three times daily for months, for a year or more. Citric fruit juices should be used to control acidity of the secretions, except where they aggravate the glycosuria.

Butter Not Adulterated.—During the summer of 1915, an investigation was made by the Board of Health of New York City, directed especially to ascertain whether oleomargarine was to any appreciable extent served in place of butter by restaurants and hotels; 123 samples were procured from various sources.

The chemical examination included the tests for oleomargarine and excessive moisture; 121 samples were passed. Two samples showed excessive moisture. Hearings were held in these two cases; it was shown that the butter had been purchased in good faith. Therefore, it is evident that the substitution of oleomargarine for butter must be rare. Even "washing of butter," as indicated by abnormal water content, is not generally practised.

Sale of Milk from Unregistered Dairy.—According to *Public Health Reports* for September 15, 1916, after a dispute between a California cheese manufacturer and a dairyman who had supplied him with milk, the cheese manufacturer refused to pay for milk which he had used, on the ground that the dairy from which the milk was delivered was not registered with the State authorities as required by law. The purity of the milk was not questioned, and it complied with the standards established by the State law. The California Court of Appeals decided that the law requiring registration of dairies did not provide any penalty for failure to register other than a fine or imprisonment; that the sale of the milk was not unlawful; and that it must be paid for. The opinion is published in the same issue of *Reports*, page 2523.

Treatment of Rickets.—Eric Pritchard (*Pediatrics*, September, 1916) bases his treatment upon a new conception of the pathogenesis of the disease which attributes it to the results of the stimulation of protective mechanisms controlling the disposal of excess of nutritive material. These mechanisms are three: 1, The storing of the excess as food reserves. 2. The complete oxidation of the excess and the excretion of the end products. 3. Incomplete oxidation of the excess with the production of acid bodies and a resulting acidosis. The last is the most important in the production of rickets, for it leads to the exhaustion of the alkali mineral reserves and sets up a compensatory hyperactivity of the blood forming organs. The excess in diet may not be actual in the ordinary conception of an infant's diet, but still may be present as a relative excess. It is further fostered by conditions of excessive heat, deficient ventilation, and restricted exercises—all common in the families with rhachitic children. On the basis of these facts the treatment consists in: 1. The creation of a demand for food by massage, passive and resistance movements, cold douches, and open air living. 2. Neutralization of the acid bodies by administration of alkalies. 3. Relief of anemia by the administration of the carbonate of iron. 4. Building up the nervous system by giving phosphorized cod-liver oil (one in 10,000). 5. Restriction of excess of nutriment by a diet of milk alone in limited quantity. The strikingly beneficial results of such a plan of treatment are shown by the record of a typical case.

Milk Diet Prior to Use of Salvarsan.—A casual observation by Lionel L. Westrope (*Brit. Med. Jour.*, September 30, 1916), pointed to the fact that patients who for one reason or another had been receiving an exclusive milk diet did not manifest symptoms after doses of salvarsan or kharsivan. This observation was followed up and 100 injections of the drug were given to patients after a twenty-four hour period during which the diet was limited to two litres of milk. After the injections the patients were allowed to return to full diet. In seventy-seven of these cases there were no toxic symptoms whatever and in the others the symptoms were unusually mild and consisted of headache, vomiting, and diarrhea. No patient treated thus had rigors and only one showed albumin in his urine after the injection. Without the milk diet the patients always complained of severe headache and vomiting, and the tendency to other unfavorable side actions was marked.

Danger of a One Sided Diet.—Unless care is exercised in selecting food a diet may result which is one sided or badly balanced—that is, one in which either protein or fuel ingredients are provided in excess, says W. O. Atwater, Ph. D., in *Farmers' Bulletin* No. 142, United States Department of Agriculture. If a person consumes large amounts of meat and little vegetable food, the diet will be too rich in protein and may be harmful. On the other hand, if pastry, butter, and such foods are eaten in preference to a more varied diet, the food will furnish too much energy and too little building material.

Extreme illustrations of such a one sided diet are found in the food of persons who live largely on bread and tea, or others who live on corn meal, fat pork, and molasses. The "hog and hominy" diet supplies liberal quantities of energy, but is very deficient in protein, as illustrated by the diet of negroes in the "black belt," with sixty-two grams of protein and 3,270 calories of energy a day for each man.

It should be said that most of our dietary standards have been deduced from food investigations conducted with persons living in temperate climates. It is not improbable that those living in arctic regions and in the tropics require nutrients in different proportions. It is a matter of common observation that in arctic regions much larger amounts of energy yielding material, principally fat, are consumed than in warmer climates. Less definite information is available regarding food requirements in the tropics; but it seems probable that when proper dietary conditions are followed, somewhat less food is consumed than in temperate regions, and that the nutrients are in somewhat different proportion. It is certain that a diet which would be entirely satisfactory in frigid regions would be one sided in the tropics, and vice versa. This subject is one which needs further investigation before definite conclusions can be drawn regarding the foods best fitted for extremes of heat or cold.

Contemporary Comment

No Goods on Approval.—The supervisors of San Francisco county, according to the *Southern California Practitioner* for October, 1916, recently passed an ordinance that only wants the mayor's signature to become a law, forbidding the taking of wearing apparel, household goods, etc., home on approval. This ordinance, backed by the merchants, puts the burden on them by prohibiting them from taking back goods of varieties likely to suffer by contact with the person, or the household and its furnishings.

After all, it is an unwelcome thought to think of trying on socks, shirts, and underwear that may have been through the same process on the person of one suffering with syphilis, gonorrhea, skin disease, tuberculosis, or even lice. Los Angeles would do well to pass a similar law, as it would do a whole lot to stop the spread of contagious disease.

Infant Mortality and Social Welfare.—What connection is there between infant mortality and social welfare, and if there is such a connection is it a close one? This question is asked by *Pediatrics* for October, 1916. The editor goes on to say: The first part of the question is somewhat absurd, for it is obvious to any thinking individual that there is a relationship between infant mortality and social welfare, but how intimate this relationship is, is "another story" as Kipling might say. Newsholme, the British public health authority, lays much stress on the closeness of this connection, and goes so far as to say that infant mortality is the most sensitive index we possess of social welfare and then adds: "If babies were still well born and well cared for, their mortality would be negligible. The infant death rate measures the intelligence, health, and right living of fathers and mothers, the standards of mortality and sanitation of communities and governments, the efficiency of physicians, nurses, health officers, and educators." Which means to say that the country in which the infant mortality is lowest, not only contains the most intelligent and healthy fathers and mothers, but the most moral, hygienic and efficient population. This is true to a very large extent, for countries in which infant mortality is lowest, are distinguished by the intelligence and morality of its inhabitants, for after all, morality is a question of public health; where morals are lax, diseases flourish, and vice versa. The Scandinavian countries are excellent examples of the truth of these dicta, for by wise and far seeing methods they have so largely decreased their infantile mortality that at the present time Sweden, for instance, is in the first rank regarded from the baby saving standpoint. Up to the present time this country compares unfavorably with many European countries so far as a low infant mortality is concerned. We are as lavish of life as we are of our material products and the day is fast approaching, if it has not come already, when we must take steps to conserve our resources, and especially our human resources. If Newsholme's dictum be applied to us, we have been weighed in the balance and found wanting. There are signs everywhere, however, that in America earnest men and women are awaking to the menace of infant waste and are putting and preparing to put efforts into force to diminish infant mortality and to rear children that will be of use to the nation mentally and physically.

The Medical Reserve.—There are 300 vacancies in the U. S. Navy for physicians, observes the *New Orleans Medical and Surgical Journal* for November, 1916; in the Army nearly 100, and in the Public Health Service about fifty. These are tempting opportunities for medical graduates under thirty-two years of age. Moreover, the projects under way promise more rapid promotion than formerly, and while waiting for promotion the medical officer is much better paid than the majority of men in the first five years of the practice of medicine.

Meanwhile there is a large activity in developing the Medical Reserve Corps in groups in the various states, so that every available man who wills is to be invited to join the Medical Reserve Corps. Many young men are fearful of contracting such a relation with the government, because of the likelihood of being deprived of their growing practice and of being sent into mobilization upon unlimited terms. The willingness to serve in case of real emergency, however, is the first step toward a proper organization, and if the profession generally were assured that the aim of all present effort is toward a general plan of preparedness, through the expansion of the reserve corps, the number of applications might be larger. In case of actual war probably very few medical men would refuse to serve, but if war came tomorrow they would not be particularly useful if they had no conception of the place in which they might be needed.

Already there is a good number of physicians in the list of the Medical Reserve Corps of the army, and for two years they have had the opportunity of camp experience under government instruction. With several thousand the instruction could be more widely distributed and, in the end, there would be ready for emergency enough men to satisfy a large army need. In the past the young, or older medical graduate has had to drift into the army, navy, or Public Health Service, and because of the limited number of positions in these government services there was naturally no encouragement, but the way was always made hard with the idea of both limiting the number of applicants and of selecting the best of them.

As the need of more medical officers has come about, there should be a general consideration on the part of the profession of the larger opportunities for the young medical graduates and they should be encouraged to go into the Medical Reserve Corps as a way toward the regular services or to active usefulness in preparedness should the occasion arise.

Editorial Notes and Comments

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HEREDITARY SYPHILIS.

The development of the present conception of syphilis and the abrupt changes which have established themselves in its treatment, illustrate well the advance of medical science in the past decade. The unusual attention and interest which recently have attended the progress of our knowledge of cerebrospinal syphilis, has served perhaps to obscure another aspect of this protean disease which is likewise of no small importance. We refer to hereditary syphilis; its recognition, treatment, prevalence, and importance have never received the attention they deserve. Because of these facts, timely interest attaches to a group of papers presented in a symposium on syphilis before the section in diseases of children at the Detroit meeting of the American Medical Association (*American Journal of Diseases of Children,* October, 1916).

In this symposium, Churchill and Austin discuss the prevalence of hereditary syphilis. In the literature they found an incidence varying from two to fourteen per cent. in Europe and America. Their own clinical and laboratory series of 695 patients in the Children's Memorial Hospital in Chicago showed an incidence of 3.3 per cent. of hereditary syphilis. According to their data, in hospital infants, and children in New York, Chicago, St. Louis, and San Francisco, the incidence ranges from two to six per cent.

Abner Post reviews the clinical picture of well marked hereditary syphilis in infants and small children, and points out diagnostic aids in mild and atypical cases hard to recognize. A marasmic condition may be the chief clinical evidence of the disease. Snuffles are not always due to adenoids, and syphilitic narrowing of the nasal fossæ gives the same symptoms as adenoid obstruction. Proper emphasis is laid on bony changes, especially cranial exostoses, which favor the frontal and parietal regions. Such exostoses, especially when symmetrical, must not be ascribed to rickets. Retarded ossification in the long bones and extreme separation of epiphysis and diaphysis often going on to displacement of the former, are revealed by the x ray, as is also the frequent accompaniment of periostitis. As a result of these bony changes the child is prone to cry excessively at night. Post urges the value of careful radiological study. Other less distinctive signs are alopecia, onychia, the various skin manifestations, a distinctive cry, enlarged lymphatic glands, and loss of weight with no evident cause.

P. C. Jeans states that the Wassermann reaction is "positive in practically 100 per cent. of the late cases in childhood." The absence of a history of syphilis in the parents, even when both parents have a negative Wassermann reaction, he considers of no importance in the diagnosis of the hereditary disease, as he found that in less than fifty per cent. of his cases the father gave a positive Wassermann. Radial linear scars about the mouth, he states, are caused by nothing else. The same is true of mucous membrane perforations, and of immobile pupils, while irregular pupils and synechiæ are very suspicious. Jeans notes the peculiar difficulty in many cases of distinguishing between syphilis and tuberculosis.

In summing up a review of recent work on syphilis, H. P. Towle concludes that the new arsenical preparations have proved their worth, while in no wise has the value of mercury and iodides been decreased. Similarly the Wassermann and other serum reactions have proved of definite worth, but have not decreased the value or importance of careful clinical observation and diagnosis. Thus the newer procedures in diagnosis and treatment have not supplanted the old, but have been added to them, to the great advantage of the physician's control of the disease.

Sylvester, in a contribution to the treatment of hereditary syphilis, urges vigorous treatment of the pregnant syphilitic mother, and a general employment of neosalvarsan and mercury as in acquired syphilis. He finds neosalvarsan the best arsenical preparation. After treatment has continued for at least two years, and has been followed at an interval of six months by a negative Wassermann reaction, the case may be considered cured. Central nervous lesions do not yield readily, but even here the outlook is not discouraging. Sylvester advocates treatment of latent cases. DeBuys and Sanford consider the luetin reaction more valuable than the Wassermann in hereditary syphilis, but maintain that both should be obtained.

IGNIS FATUUS.

The will o' the wisp, *Ignis fatuus,* has never been explained, though much thought has been expended upon it; neither has the source of discomfort and depression in badly ventilated rooms been cleared up, the great amount of time, work, and money that has been spent over the question, notwithstanding.

Some well planned and painstaking work on the subject of ventilation has been recently carried out, in which valuable findings have been made concerning the influence of temperature and moisture and motion of the air upon those whom it surrounds. While those who have carried out these experiments, however, are convinced of the effect of these physical states of the atmosphere, they do not go so far as to say that they have solved the problem of ventilation. Even those who seem most assured that there is nothing more to "bad air" than high temperature, moisture, and lack of motion, still show a quaver in the tone with which they make the announcement.

If this is all there is to the problem of ventilation, why was it not solved long ago? Rooms have not always been kept superheated nor overmoist, and in many modes of ventilation there has been motion of the air. Again, if these simple faults in its atmosphere are corrected, the horrid smell of a badly ventilated room still remains, an odor that is often overpowering to one who coming from pure air suddenly makes its acquaintance. Foul smelling air means air containing foul material from the respiratory passages, skin, clothing, or alimentary tract of the occupants of the room. It will have to be proved that these exhalations, these "dead breaths of men," as Henry Ward Beecher so well called them, are not harmful, before it is accepted that ventilation is purely a matter of temperature, moisture, and motion.

There can be no question of the good effect on general metabolism of sufficiently low temperature, of moderate moisture, and sufficient agitation of the air in a room, but until it is proved beyond question that the foul materials which are undeniably present in "bad air" are harmless, the old carbon dioxide test remains the best. To do away with the limit, set by this test, for good ventilation is just what is desired by owners of public halls and school buildings. They would delight to save expense, by closing all ventilators, by keeping the temperature of the air at a minimum, by extracting a little moisture if necessary, and by running a few fans to agitate the air. But no self respecting person would care to encounter the odor of such a room, and we doubt if the results of its occupancy would be wholly healthful. Besides, the public would not stand for abnormally low temperatures. Good sense is often better than half baked science. Good practice is better than bad theory.

Practical study of ventilation seems to have been begun by Stephen Hales less than two hundred years ago; by changing the air in the Savoy prisons he is said to have reduced the mortality greatly, and his apparatus proved so valuable that it was introduced into France. Two hundred years may be too brief a time to solve the problem of ventilation; science is yet exceedingly young and all physiological problems are extremely complicated. Moreover, we do not as yet know all about the chemistry of the air; there are at least four of its elements about which the pages of chemistry so far are blank.

THE SYNDROME OF SO CALLED CONCEALED TUBERCULOSIS.

In a paper on this subject, Head (*Journal A. M. A.*, LXIII, 1914, page 996) of Minneapolis, ably discussed the problem of the relationship of concealed tuberculosis to many cases of so called tuberculosis; in a second paper (*American Journal of Medical Sciences*, October, 1916, page 582) he presents the gist of his argument.

He makes a plea for the recognition of a clinical picture or symptom complex which he calls concealed tuberculosis. It occurs usually in persons under twenty-five years of age. A history of exposure to tuberculosis, even as far back as childhood, may be present. The symptoms consist of mainfold manifestations of nervous and physical exhaustion, most patients presenting several of the following: Indigestion, headache, constipation, mental depression, cold hands and feet, backache, neckache, asthenopia, voice tire, clearing of throat, crying spells, chilliness, loss of weight. As a rule these symptoms continue for a number of years, at times with periods of improvement, succeeded by relapses under unusual nervous and physical strain, frequently with partial or complete breakdown. The physician usually finds a poorly nourished and highly strung patient, whose features are angular, cheek bones high, chest and abdomen long, arms and legs slender, and reflexes active.

Carefully made and often repeated physical examinations will not disclose evidence of organic disease. Usually enteroptosis can be detected. The findings in the lungs are doubtful or negative. The rate of the pulse is generally increased, while the temperature is normal or shows an afternoon rise to 99.2° or 99.4° F. or higher. The laboratory findings, including the Wassermann test, are negative for organic disease, and the Röntgen ray studies of the lungs for tuberculosis are doubtful or negative.

It is not astonishing, therefore, that a diagnosis of so called neurasthenia is made; but make a von Pirquet skin test and it will be promptly positive, and give a subcutaneous injection of tuberculin and it will always react positively. For this reason, Head argues, this symptom complex may be regarded as a special type of tuberculosis, without focal evidence, but discovered by a specific test. Head contends that most subjects who give the picture of nervous or physical exhaustion have physical disease of some sort, and that this will be unearthed if the examination is thorough; it may be tuberculosis, syphilis, ductless gland disorder, nephritis, or sepsis. In some of these patients, labelled neurasthenic, in whom examination fails to detect organic disease other than tuberculosis, the number of times in which a positive reaction to a maximum dose of tuberculin given subcutaneously will be obtained is astonishing and instructive. Head asserts that the number of negative reactions is small if the examination is careful and thorough and a large series is studied.

These cases are quite common and can be recognized by the specific tuberculin test. When properly diagnosed, they will be treated as tuberculous, which they are, and not as some form of nervous exhaustion, which they are not.

As to the exact site of the tuberculosis in the cases discussed here, no positive and final statement can be made. Sometimes the lesion is in the bronchial glands, sometimes at the hilum of the lungs, and in other cases in the mesenteric glands. In some there may even be some slight pulmonary involvement, either not sufficiently extensive or else too deeply placed to permit of detection by physical examination.

AN EXPLANATION OF BABINSKI'S SIGN.

One of the first tests learned by the aspiring neurological student is that for Babinski's reflex. He is told that its presence suggests organic brain disease or paresis. He learns that it is a comparatively slow dorsal extension of the great toe when the plantar reflex is tested, together with the slight spreading apart of the other toes. If the patient is in bed, as obviously he should be, there is also a slight rotation of the thigh on the hip and a contraction of the fascia lata. The student is also taught to distinguish the true Babinski from the Strümpell, the Oppenheim, the paradoxical, the Mendel Bechterew, and the Chaddock. With all this he does not learn the cause of the phenomenon, for the good reason that it is not known. It is in fact a unique thing, it is not the exaggeration, diminution, or abolition of a reflex, but the complete inversion of it—as if the gastric glands should secrete an alkali.

Theories have been offered in explanation of this sign, but the most plausible are those which take into account the significant fact that it occurs in young infants, but disappears when they have learned to walk. This would suggest that it represents some faculty which has been lost in the course of phylogenesis, appears in ontogenesis for a short time, and then is lost, never to reappear except when in the course of a disease the communication between the spinal cord and the cerebrum is interrupted. We would then appeal to comparative anatomy for some confirmation of this theory.

This is what has been done by a Russian neurologist, M. Astwazaturof (*British Medical Journal*, August 12, 1916), in a series of papers. In man the foot performs a purely static function, but in the lower animals it is prehensile. In the act of grasping, the great toe opposes the others. In man the opponens hallucis is absent and the first metatarsal bone is parallel to the others instead of making an angle with them.

It is possible that in a certain stage of evolution of the grasping function into the purely static one, there was a period when the flexor act was limited to the second, third, fourth, and fifth toes, the great toe being extended. Babinski's sign is probably a vestige of this condition. The great toe of the Hapalidæ has a nail instead of a claw, and is not prehensile, which fact seems to bear out this theory.

SO CALLED CLERGYMAN'S SORE THROAT.

George Steele-Perkins communicates to the *Lancet* for October 21, 1916, his views on the pharyngitis and laryngitis of public speakers. He states that it is now over thirty years since he first asked himself why we speak of the condition as clergymen's sore throat and not as lawyers' sore throat. Why is this condition so rarely seen in lawyers who use their voices more than clergymen, and in stuffier atmospheres? On thinking over the matter the only difference the writer could perceive between a clergyman's and a lawyer's speaking was that a clergyman spoke *down* to his congregation, and a lawyer spoke *up* to the judge, the former thus pressing on his larynx and causing congestion, whereas the lawyer had his larynx and throat in a normal position, or rather in a hypernormal position. From that time he has always advised such patients to speak looking *up* to their audience and never *down*. He has used no local applications or treatment except to rectify a condition such as granular pharyngitis, but where necessary he has suggested a rest of voice for two or three months. In all cases this plan has been successful.

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News Items

Northwestern Ohio Medical Society.—At the annual meeting of this society, held in Toledo on October 21st, the following officers were elected: President, Dr. J. R. Tillotson, of Delphine; vice-president, Dr. F. S. Replogel, of Bryan; secretary, Dr. A. S. McKetrick, of Kenton. Next year's meeting will be held in Lima.

Tuberculosis Preventorium in Poughkeepsie.—A new preventorium that will accommodate sixty children is to be erected at the Samuel W. Bowne Memorial Tuberculosis Hospital in Poughkeepsie, N. Y. Mrs. Bowne contributed $25,761 toward the fund and the city of Poughkeepsie gave $8,872 for plumbing, heating, lighting, water, and sewage systems.

The New York Neurological Society.—At a meeting of this society, which will be held at the New York Academy of Medicine, Tuesday evening, November 14th, at 8:30, the subject for discussion will be Poliomyelitis; Its Diagnosis and Treatment and the Management of the Recent Epidemic. Papers will be read by Dr. William M. Leszynsky, Dr. Frederick Tilney, Dr. B. Sachs, and Dr. C. L. Dana.

Eastern Medical Society.—At a stated meeting of this society, held Friday evening, November 10th, in the Hotel Brevoort, Dr. George W. Crile, of Cleveland, read, by invitation, a paper on Clinical Considerations of the Cancer Problem. The subject was discussed by Dr. Francis Carter Wood, Dr. Robert T. Morris, Dr. Willy Meyer, Dr. Israel Strauss, and others. Dr. Samuel J. Kopetzky exhibited a case of traumatic labyrinthitis followed by cerebellar abscess, in which operation was followed by recovery.

American Public Health Association.—At the annual meeting of this association, held in Cincinnati, October 24th, 25th, and 26th, Dr. William A. Evans, of Chicago, was elected president, and other officers were elected as follows: Dr. John H. Landis, of Cincinnati, first vice-president; Dr. Maurice McD. Seymour, of Regina, Sask., second vice-president; Dr. Manuel Iglesias, of Vera Cruz, Mexico, third vice-president; Dr. S. N. Gunn, of Boston, reelected secretary; Dr. Lee K. Frankel, of New York, reelected treasurer.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, November 13th, Samaritan Hospital Medical Society, Aid Association of the County Medical Society (annual); Tuesday, November 14th, Pediatric Society, Wills Hospital Ophthalmic Society, Medical Examiners' Association; Wednesday, November 15th, Section in Otology and Laryngology of the College of Physicians; Thursday, November 16th, Section in Ophthalmology of the College of Physicians, Northeast and Southeast Branches of the County Medical Society; Friday, November 17th, Jefferson Hospital Clinical Society.

The National Committee for the Prevention of Blindness, in its *News Letter* for October, cites a case of blindness from wood alcohol poisoning after drinking liquors secured at a Brooklyn wholesale grocery. Investigation showed that the bottles, bearing counterfeit labels, contained from forty to fifty per cent. of wood alcohol.

Memorial Library at the Woman's Medical College.—As a memorial to his son, Dr. George Carlton Dominick, who died at sea recently, Mr. M. W. Dominick has arranged to equip and endow the new medical library at the New York Medical College and Hospital for Women, in West 101st Street. Doctor Dominick was an instructor at the college for a number of years.

A New Medical Society Organized in the South.—The West Florida and South Alabama Medical Society was organized at a meeting of physicians held in Pensacola, Fla., on October 27th, with the following officers to serve for the first year: Dr. Louis de M. Blocker, of Pensacola, president; Dr. M. S. Davie, of Dothan, Ala., first vice-president; Dr. E. Porter Webb, of Laurel Hill, Fla., second vice-president; Dr. F. A. Brink, of Pensacola, secretary and treasurer. The association will embrace all of West Florida and all adjoining counties of Alabama as far as Mobile.

Bronx County Medical Society.—The following program has been arranged for a regular meeting of this society, which will be held at Ebling's Casino, Wednesday evening, November 15th, at 8:30 o'clock: Dr. I. M. Heller will present the report of a case of radical treatment of peritonsillar abscess; Dr. Parker Syms will read a paper on Cancer of the Breast, which will be illustrated by lantern slides and discussed by Dr. Willy Meyer, Dr. Henry Roth, and others. Dr. Edward R. Cunniffe will read a paper on Intestinal Obstruction which will be followed by a general discussion.

Dr. George Wythe Cook Honored.—Dr. George Wythe Cook, of Washington, D. C., former president of the Medical Society of the District of Columbia, was the guest of honor at a banquet given on the evening of October 28th, on the occasion of his seventieth birthday. Dr. Frank Leech was toastmaster, and among the speakers were Dr. E. V. Davidson, Dr. S. S. Adams, Dr. E. A. Balloch, Dr. P. S. Roy, and Dr. W. M. Barton. Arrangements for the banquet were in the hands of Dr. Charles W. Richardson, Dr. T. N. McLaughlin, Dr. A. W. Boswell, Dr. S. S. Adams, Dr. J. R. Wellington, and Dr. H. C. Macatee. At the close of the banquet a silver loving cup was presented to Doctor Cook by the members of the society.

Personal.—Dr. C. Lincoln Furbush, of Philadelphia, has been appointed special assistant to the American Embassy in Berlin and medical inspector of the prison camps of the Allies in Germany.

Dr. Elbert M. Somers, formerly superintendent of the Long Island State Hospital and medical inspector for the State Hospital Commission, announces that he has opened an office for the practice of neurology and psychiatry at 33 Lefferts Place, Brooklyn.

Dr. Le Grand Kerr, of Brooklyn, was the guest of honor at a dinner given by the parents of the children he had treated for poliomyelitis during the recent epidemic. Doctor Kerr was presented with a bronze statue of the Winged Victory by Barrias, to symbolize his success in fighting against the disease.

Dr. R. Tait MacKenzie, of Philadelphia, who returned home recently after serving a year in the Medical Corps of the British Army, delivered an address on How Disabled Soldiers Are Reconstructed in an English Convalescent Camp, before the Philadelphia Clinical Society, Monday evening, November 6th. The lecture was illustrated by lantern slides.

Dr. William Gilman Thompson has resigned as professor of medicine at Cornell University Medical College, and Dr. Lewis A. Conner, professor of clinical medicine, has been appointed to succeed him.

Dr. Frank Maltauer, of Cincinnati, has been appointed associate professor of bacteriology and public health at the University of Tennessee.

The Tri-State Medical Society, of Illinois, Missouri, and Iowa, met in annual session at Kansas City, Mo., on October 26th and 27th, and elected the following officers: Dr. G. Wilse Robinson, of Kansas City, president; Dr. C. B. Francisco, of Kansas City, vice-president for Missouri; Dr. Charles M. Dargan, of Pontiac, vice-president for Illinois; Dr. C. S. Chase, of Iowa City, vice-president for Iowa; Dr. Charles H. Parkes, of Chicago, secretary and treasurer. Next year's meeting will be held in Iowa City.

Kentucky State Medical Association.—Dr. P. H. Stewart, of Paducah, was elected president of this association, at the annual meeting held in Hopkinsville, October 26th and 27th, and other officers were elected as follows: Dr. L. P. Earle, of Charleston, first vice-president; Dr. A. S. Brady, of Greenup, second vice-president; Dr. J. G. Gaither, of Hopkinsville, third vice-president; councillors, Dr. J. W. Kinkead, of Catlettsburg; Dr. J. N. McCormack, of Bowling Green; Dr. R. C. McChord, of Lebanon; orator in medicine, Dr. Sidney J. Meyers, of Louisville; orator in surgery, Dr. Fred L. Koontz, of Louisville. Next year's meeting will be held in Ashland. Important features of the scientific program were papers by Dr. Joseph C. Bloodgood, of Johns Hopkins University, and Dr. C. C. Bass, of Tulane University.

The Abolition of Heroine.—A meeting of the Committee on Drug Addiction of the National Committee on Prisons was held at the Hotel Vanderbilt last week, with Dr. Simon Baruch in the chair. Among those present were Dr. Samuel W. Lambert, Dr. Frederick Peterson, Dr. Charles F. Stokes, formerly surgeon general of the United States Navy; Mrs. Helen Hartlet Jenkins, Mr. Frederick Tilney, chairman of the Committee on Social Hygiene, and Mr. Joseph D. Sears, secretary ex officio. Discussion of the subject of drug addiction showed the consensus to be that among drug addicts the heroine habit was most prevalent among boys and in the early decades of adult life, and therefore the chief promoter of vice and crime. In view of this fact resolutions were adopted stating that since heroine was not so indispensable a drug that its place could not be easily filled by other drugs and measures that did not menace public welfare, it was recommended that Federal legislation be enacted to prevent the importation, manufacture, and sale of heroine.

Southern Medical Association.—The tenth annual meeting of this association will be held in Atlanta, Ga., November 13th to 16th, under the presidency of Dr. Robert Wilson, Jr., of Charleston, S. C. Dr. Holman Taylor, of Fort Worth, Texas, and Dr. Guy L. Hunner, of Baltimore, are vice-presidents of the association, and Dr. Seale Harris, of Birmingham, Ala., is secretary-treasurer. An excellent program has been prepared, and the meeting gives promise of being unusually interesting. On Monday, November 13th, the Southern States Association of Railway Surgeons, which is an auxiliary of the Southern Medical Association, will hold its fourth annual meeting under the presidency of Dr. Southgate Leigh, of Norfolk, Va. On Monday evening there will be a public meeting, at which Dr. W. A. Evans, of Chicago, will deliver an address on Infantile Paralysis, which will be followde by a concert. On Tuesday morning, at a general session, the annual presidential address will be delivered by Doctor Wilson, his subject being Opportunities and Responsibilities. Other addresses to be delivered at this session are the Oration in Medicine, by Dr. M. L. Graves, of Galveston, Texas, Cui Bono; the Oration in Surgery, by Dr. W. D. Haggard, of Nashville, Tenn., on Surgery of the Stomach; Medical Preparedness in the Army, by Major Robert E. Noble, U. S. Army; The Doctor's Work for National Defense, by Dr. Cary T. Grayson, of Washington, D. C. Surgeon General Rupert Blue, United States Public Health Service, is expected to deliver an address at this session. An attractive program of entertainments has been arranged by the local committee, which includes alumni reunions, receptions, automobile rides, etc. On Tuesday evening, the annual banquet of the Southern Medical Women will be held at the Hotel Piedmont, to be followed by a business meeting.

Combating Insects Which Affect the Health of Man.—Continued advances in the work of combating the activities of insects which affect the health of man are reported by the chief of the Bureau of Entomology of the United States Department of Agriculture in his annual report recently issued. In mosquito investigations in Louisiana a species hitherto considered a noncarrier of malarial infection was proved to be a carrier. Studies have been made of malaria, and measures are being evolved to meet plantation conditions. The "starvation" plan, aimed at exterminating the spotted fever tick of the Bitter Root Valley, Montana, was followed. The bureau also conducted a campaign of extermination against ground squirrels and other rodent hosts of the immature ticks. Examination of the rodents killed showed forty per cent. lower infestation by the tick than during the preceding year. The report directs attention to the demonstrations of the bureau specialists that the breeding of flies in manure can be prevented by treating the substance with calcium cyanamide and acid phosphate.

Prevention and Relief of Heart Disease.—At the last meeting of the Board of Governors of the Committee for the Prevention and Relief of Heart Disease, plans were developed for an active campaign to arouse public interest in the important problems of heart disease. The work was placed in the hands of special committees dealing with various phases of the problem, and the following program has been outlined by the Committee on Relief:

First: Occupation for Cardiacs—the Main Problem in Relief: (a) School children; vocational guidance, early selection of suitable occupations, etc. (b) Adults; under supervision of Social Service, mainly: 1. Adapting present occupation to the physical requirements of the patient. 2. Changing occupation. 3. Teaching a new occupation. 4. Establishing of the patient in a small self supporting business.

Second Cardiac: Classes: To be established in connection with hospitals when possible with duties divided into medical and social work.

Medical Service to cover: 1. Constant supervision of the patients. 2. Diagnosis of heart disease. 3. Estimation of cardiac efficiency. 4. Examination of applicants for convalescent homes. 5. Assistance in the selection of suitable occupations

Cardiac social service includes: 1. Referring patient to the clinic. 2. Follow-up of hospital, dispensary and convalescent cases. 3. Study of occupations, and placing therein. 4. Home convalescence and betterment of home hygiene and conditions. 5. Temporary financial aid

Third: More Opportunity for Cardiacs in Convalescent Institutions: Fourth: Permanent Institutional Care: Large numbers of cardiacs, known as third stage cases, have repeated breaks in compensation and possess little or no economic value to the community. About fifty per cent. of their time is spent in hospitals and the remainder in losing the slight gains thus made. They are too chronic for the hospital, too serious for ambulatory treatment in cardiac classes or dispensary, too uncertain for the convalescent home. They are fit only for permanent institutional care.

Some economic values are often latent in these persons if suitable occupations are provided within the institution, with sales outlet for the produce arranged. Such institution could never be more than partially self supporting.

Dr. Frederic Brush is chairman of the Committee on Relief and the other members are Dr. Hubert W. Guile, Mr. Morris Waldman, and Mr. Charles Burlingham.

In addition to the foregoing, it is hoped that a way may be found to keep all the public playgrounds opened the year around. Heretofore some of these playgrounds have been closed during the winter.

The committee's program is of special interest now that public attention is focused on the aftercare of poliomyelitis. For the latter, as our readers know, funds have been forthcoming from many different sources. As a matter of fact, the problem presented by the proper care of cardiac cases is the most important of the two. It is estimated that there are about 20.000 children alone suffering from heart disease and requiring systematic care. In a number of ways the two groups need similar provision for relief. Thus both groups should be under constant social and medical supervision; the members of both groups should be fitted for occupations suited to their infirmity; some of the children in both groups need to be taken to school in conveyances. Altogether, it would seem likely that a similar plan of procedure would be developed, especially that a way be found to coordinate the work of existing agencies to the fullest extent.

The committee is appealing for funds to carry on its work. Those interested can obtain further information by writing to the Executive Secretary, Miss H. L. Woughter, 340 East Twenty-sixth street, Manhattan.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-third Communication.

TONSILLITIS.

When those outposts of the body, the tonsils, become invaded by the enemy, there is great danger of distant trouble sooner or later. The avenues from the tonsils to remote areas seem especially open to some bacteria, particularly to those of the streptococcic family; so it behooves the attending physician to take unusually active measures, particularly so now that the streptococcic variety of tonsillitis seems to be spreading rapidly.

A prime essential is not to borrow unnecessarily of nature's reserve combative power; to this end the patient is put to bed and kept as quiet as possible. Because of the abnormal susceptibility of the lithemic to tonsillitis and pharyngitis, it is well to make tentative use of the salicylates in suspected cases of rheumatic predisposition. We may freely acknowledge ignorance of how the salicylates may be of value in rheumatism, contenting ourselves for the present with the clinician's assurance of demonstrated utility.

For local application no one thing is so generally sedative as a mildly alkaline solution, such as normal saline with borax or soda, frequently applied by spray or gargle; beside being cleansing, the alkalinity seems to soothe and favor resistance. Not infrequently the immediate relief is accentuated by using the gargle as hot as can be borne, the heat producing a relaxing effect, tending to favor resolution. A somewhat opposite method of attack is the application of astringent solutions, such as tincture of iron perchloride, and weak solutions of silver nitrate. Beside constringing the superficial tissues and thereby exerting some pressure on the deeper structures, these solutions enter the crypts and follicles to some extent and serve as deterrants to bacterial activity. Both of these preparations are best administered by swabbing applications; great care must be exercised that no liquid trickles down into the larynx, as the nitrate solution, especially, will produce glottic spasm of a very distressing character. Probably antiseptic applications have very little local effect, as the invading organisms are too deeply lodged to be thus affected, but it is not impossible that the contiguous mucosa is partially protected by these means.

Many physicians lay claim to good results from the internal administration of full doses of iron, especially the citrate of iron and quinine, but it does not appear pharmacologically wherein this treatment would exert any beneficial influence. If it helps to restore the disturbed organism to a normal state, it is a reasonable procedure, but has it been proved that the hemin content of the blood is reduced or that the plasmodia of malaria are present in tonsillitis? If not, then some other reason must be assigned for the alleged value of these substances; and while they may act favorably in some as yet undetermined manner, we must be sure that such is the case, before trusting our deductions.

Perhaps the most rational line of treatment is the prompt preparation of an opsonic autoserum and the administration of this to the patient, thereby assisting nature to a more efficient manufacture of those antibodies without which no cure is possible. Too often we are prone to forget that the development of antitoxins is nature's method of effecting cures; that drugs are but accessories, and care must be taken that they do not become impediments.

MERCURY PROTIODIDE.

One Half Grain, Four Times Daily.

By Charles C. Miller, M. D.,
Chicago.

Most syphilitics treated with mercury in this country receive the drug in the form of the protiodide by the mouth. I shall not enter into the discussion of the value of mercury in the treatment of specific disease, yet few physicians are entirely satisfied with its action in the alimentary canal.

Take a syphilitic, give him mercury protiodide and almost certainly he will become constipated. Sooner or later he has a foul breath, more or less gastric disturbance, and anemia. Sometimes too there is considerable acneform eruption.

To avoid these disadvantages, and secure a more pronounced effect, the writer has for years used the following method with distinct success: Once I am sure of the diagnosis, the patient is put upon one half grain protiodide of mercury tablets *before* meals and at bedtime. Just as soon as the protiodide tablets are started, laxatives are given.

Ordinarily a syphilitic taking this dose will require one half grain of podophyllin every night at bedtime. This is given in the form of one quarter grain tablets. A few patients require only one and others as many as three. If Hinkle's formula is used, one, two, or three must be given every night. This is not to purge; the patient should not be purged. The laxative is regulated to assure one or two stools daily. Without the laxatives the patients will quickly become constipated and then salivated.

Observing these rules, giving the protiodide before meals, and keeping the bowels open, the writer has, during the past fifteen years, treated many syphilitics, keeping them continuously upon two grains of protiodide each day for periods ranging from six months to a year; this, too, without unpleasant symptoms.

The effectiveness of protiodide given in this way will, I believe, astonish many physicians who have failed to get results in syphilitic infections.

32 North State Street.

A New Alcohol Tooth Paste.—Theodor Sachs (*Medizinische Klinik,* Sept. 17, 1916) states that in the treatment of mercurial stomatitis the desideratum is to employ a preparation which will act chiefly upon the gums. For this purpose the author has elaborated a tooth paste which consists essentially of an alcohol soap to which are added the usual bleaching and flavoring agents of tooth pastes. This new preparation brings the alcohol into direct contact with the gums where it can exert its mildly tanning and astringent powers. The preparation can be employed in the same way as the ordinary tooth pastes and produces an effective cleansing lather.

Fecal Stasis and Eczema madidans.—W. H. Axtell (*Northwest Medicine.* October, 1916) states that among the many distressing conditions secondary to fecal stasis and angulation of the sigmoid is chronic, weeping eczema. From an experience of eight cases of this obstinate skin lesion the author finds that it can be cured promptly by treatment directed to the relief of the intestinal disturbance. This treatment consists in the use of daily enemas, mild laxatives, and a regulated diet. Through the sigmoidoscope the sigmoid should be inflated and elevated, and any ulcerations of its mucosa treated by direct applications. Under such treatment the "weeping" will stop within two days and the eczema will be completely cured in two weeks. All local treatment of the eczema should be stopped except hot water fomentations where there is skin infection.

Treatment of Goitre with Quinine and Urea Injections.—L. F. Watson (*Texas Medical Journal,* October, 1916) uses the injections merely to relieve the symptoms of hyperthyroidism and they are not recommended to remove the tumor in simple goitre. The injections should always be made within the thyroid so that there will be no adhesions around the gland and operation will not be made more difficult because of previous treatment. Small infiltrations, often repeated, are to be preferred to massive ones. The injection of a weak solution of quinine and urea has little effect and the injection of concentrated solutions always gives rise to necrosis and connective tissue formation. The injections of iodine, carbolic acid, alcohol, arsenic, iodoform, and chromic acid are to be condemned because of their poisonous and corrosive properties, and the danger of producing a thrombus if accidentally injected directly into the vein. In treating toxic goitre it is necessary to prevent the pain due to injection by local anesthesia. If acute attacks of hyperthyroidism are to be prevented preliminary injections into the most prominent portion of the goitre of a few minims of sterile salt solution, given at one to three day intervals, followed by injections of sterile water, will be found indispensable. The result of quinine and urea injections depends on the amount of tissue destroyed. The cases that respond best to quinine and urea injections are those of beginning hyperthyroidism not severe enough to justify operative treatment, and as a preparatory measure to partial thyroidectomy in chronic cases of goitre too severe to warrant any immediate operative procedure.

Fissure of the Anus.—Charles J. Drueck (*International Journal of Surgery,* October, 1916) states that there are two principles governing the treatment of fissure: Rest and drainage. The bowels should be kept open—if possible by dieting or with enemas of olive oil or glycerin suppositories. Laxatives are contraindicated. In recent fissures, before the wound edges are thickened, the anus, and, if possible, the ulcer, is sprayed with a four per cent. solution of cocaine in one to 1,000 adrenaline chloride solution allowed to remain five minutes. A conical fenestrated speculum is now inserted with a shutter over the fissure. The shutter is withdrawn and the speculum opened, bringing the fissure into view. It is sprayed with cocaine if not previously reached, and painted with silver nitrate solution. twenty grains to the ounce, or with pure ichthyol. A cure should be effected in from two to four weeks If not obtained within this time surgical treatment should be tried. Divulsion of the sphincter is an old method which gives good results at times. Incision with drainage produces better results and may be performed under local anesthesia unless the patient is very nervous or the sphincter particularly irritable.

Preoperative Considerations in Exophthalmic Goitre.—D. M. Berkman (*St. Paul Medical Journal,* October, 1916) asserts that of the medical measures other than rest applied in exophthalmic goitre, e. g., bromides, phosphorus preparations, belladonna, and quinine, serum of thyroidectomized animals, Beebe's cytolytic serum, x ray exposures with the Coolidge tube, etc., the x ray probably produces the most decided results. Practically no benefit is obtained from it, however, in less than a month, and in the severe cases, the attendant excitement and mobilization usually offset the benefit. Digitalis is of value in the cases in which prostration is due to secondary cardiac deficiency. Porter's hot water injection entails practically no risk and often yields immediate improvement. One death has followed such an injection at the Mayo clinic, but the case was one of extreme intoxication, recovery from which seemed impossible. The hot water injection is a fairly accurate indication of the ability of the patient to undergo surgical treatment of the thyroid. In the occasional cases in which but little improvement results from a period of rest in bed, the patients are sometimes sent home from the Mayo clinic to continue the rest treatment; these patients usually return after several months in a condition permitting the operation of ligation with safety. The operative mortality at the Mayo clinic for the successive years, 1910 to 1915, was 4.8, 3.18, 2.6, 3, 2.89, and 2.63 per cent., respectively. The cases included were all instances of unmistakable hyperthyroidism. In the twenty-four fatal cases recorded in 1914 and 1915 the duration of previous definite history of the disorder was observed to have little bearing on the operative risk, though according to Mayo, it is in the rather acute cases, with special lethal tendency in the latter half of the first year, when the most marked effects are shown in the heart, liver, kidneys, and nervous system, that the operative mortality is highest.

Treatment of Graves's Disease by the Röntgen Ray.—Malcolm Seymour (*Boston Medical and Surgical Journal,* October 26, 1916) says that all writers on the subject of x ray treatment of hyperthyroidism have come to the following conclusions: The pulse rate is nearly always reduced, and this almost at once. The tremor and nervous symptoms improve from the start. The gland rapidly diminishes in size in some cases, remains unaffected in others, but if hard, tense, and throbbing, the throbbing diminishes and the gland becomes softer. The body weight practically always immediately increases. The advantages alleged for this treatment are: 1, There are no fatalities. 2, There is no resulting scar, as after operation. 3, It does not interfere with the patient's occupation. 4, It is painless and causes very little inconvenience to the patient. 5, If unsuccessful, an operation may be done with less risk, because of the favorable action of the x ray on the thymus gland. The x ray treatment of Graves's disease should not be undertaken except by those who are thoroughly experienced in Röntgen therapy. The dose must be accurately measured, for if the rays are applied in a haphazard manner without knowledge of the total dose, the result may be unsatisfactory, resulting in serious burns, or in total destruction of the gland, causing myxedema. The diagnosis of hyperthyroidism is frequently overlooked, and is mistaken for socalled neurasthenia, and is especially confounded with early pulmonary tuberculosis.

Mineral Water Injections in the Treatment of Boardlike Edema.—Denis (*Presse médicale,* September 7, 1916), having personally been relieved of annoying local sequelæ of acute rheumatism by Breuil mineral water, conceived the idea of applying the same water, chiefly by subcutaneous injection and in some cases by mouth, in the treatment of similar conditions of the tissues following wounds. The method was applied in nearly one hundred cases, a total of over two thousand injections being administered. The mineral water in question is classed with the sodium bicarbonate ferruginous waters, and is obtained commercially in 125 gram bottles. The dose for subcutaneous use was two small hypodermic syringefuls, taken directly from the bottle without previous sterilization of the water, which seems to be free of bacteria, no abscess ever resulting. The patient then was sometimes given the remainder of the bottle by mouth on an empty stomach, and another bottle later in the day. No other treatment was employed. The results were in most instances unexpectedly excellent. Obstinate, hard edema of the leg or arm following fractures, with trophoneurotic changes, or following phlebitis of the phlegmasia alba type, disappeared with surprising rapidity under the treatment. Superficial circulatory disturbances, when present, were first to disappear. Removal of hard periarticular edema permitted of more accurate x ray work, early mobilization, and electrotherapy, thus preventing stiffness or ankylosis, nerve degeneration, and muscular atrophy. Care was taken in the use of the water in patients with high blood pressure or fatigued circulation, on account of the pronounced action of the water on the latter. It is possible that other similar mineral waters may yield like results.

Röntgen Ray Treatment of Exophthalmic Goitre.—C. Augustus Simpson (*Southern Medical Journal,* October, 1916) concludes that x raying the thyroid gland alone will sometimes relieve the symptoms of Graves's disease. The blood count, fluoroscopic, and x ray picture examinations are often misleading and should not have too much effect on prognosticating the favorable and unfavorable cases. A large percentage of cases of exophthalmic goitre is associated with enlarged thymus, which many surgeons, to avoid dangerous postoperative symptoms and even death, advise resecting at the same time the thyroid is removed. This must greatly prolong and complicate the difficult operation of thyroidectomy in patients whom we have always regarded as bad operative risks. The Röntgen ray will quickly and painlessly atrophy the thymus gland, and for this reason should be the method of choice in all cases of exophthalmic goitre where enlarged thymus is suspected.

Treatment of Intestinal Stasis.—Fred M. Hodges (*Charlotte Medical Journal,* October, 1916) says that in the dietetic treatment the patient should be advised to drink plenty of water and eat bulky foods, especially cereals containing a great deal of organic acid and cellulose. Two important hygienic measures are the habit of going to stool at a certain time every day, and physical exercise. Massage is of value in a few cases and in a few electricity may be helpful. Medicinally, alkalies should be given where it is known that hyperacidosis exists. For marked constipation a mercurial, preferably blue mass in five to eight grain doses should be given every week or ten days. Agar, combined with cascara or phenolphthalein given twice daily in one to two dram doses is the best treatment if a laxative is to be used for a prolonged period. In some cases an insufficiency of the ileocecal valve is shown by the x ray and occasionally tenderness will be found during the examination when the ordinary examination was negative. Removal of the appendix has helped the treatment for stasis in these cases.

Resistance of Bacteria and Human Tissues to Germicides.—Robert A. Lambert (*Journal A. M. A.,* Oct. 28, 1916) reports the comparative resistance of living human cells and ~~of~~ Staphylococcus aureus to several germicidal substances determined by means of an improved technic for the artificial cultivation of living tissues. The germicides used were mercuric chloride, potassiomercuric iodide, potassium cyanide, sodium hypochlorite, iodine, phenol, tricresol, argyrol, hydrogen peroxide, and alcohol. Iodine alone proved relatively more destructive to the bacteria than to the tissue cells. The difference in destructive effects upon the bacteria and tissue cells was not great in the case of several other germicides, but they were all relatively more destructive to the tissue cells than to the bacteria. No ideal germicide in the sense of their relative differences was found among those employed, for iodine had the disadvantage of dissolving fibrin, which forms the scaffolding in wounds along which new cells grow. A striking fact was also shown, namely that hydrogen peroxide was an extremely feeble germicide although it was relatively very destructive to the tissue cells.

Treatment of Wounds with Possible Injury of Large Vessels.—E. Potherat (*Presse médicale,* September 7, 1916) comments on the frequency with which unsuspected wounds of large vessels in the neck and extremities are found, in spite of previous absence of hemorrhage, when dressings are being applied, or suppuration or absorption of a clot occurs. Fatal hemorrhage may occur in this way in a few hours, days, or weeks after the injury. Such cases are so numerous that Potherat is led to recommend, in all wounds in which, from the point of entrance or course of the missile, the latter must plainly have passed through a group of vessels and nerves or near a large vascular trunk, that we assume that vascular injury has taken place, even if hemorrhage is slight or absent. The vessel should be plainly exposed and if necessary ligated.

Thrombosis of the Brachial Artery.—John A. Caldwell (*Journal A. M. A.,* Oct. 28, 1916) reports a patient who sustained an injury to his brachial artery which produced thrombosis almost at once. Within a few hours after the accident the artery was exposed through an incision and traced downward to the point at which expansile pulsation disappeared. From this point down it was gently massaged with stroking made from below upward. After a few strokes pulsation appeared in the radial. After waiting for several hours, at the end of which time the radial pulse was still vigorous, the wound was closed and the patient made a complete recovery. This treatment apparently broke up the thrombus or caused its solution. Such treatment is applicable only where the thrombus is situated above a region in which there is an abundant collateral circulation, where there is little danger of an embolus being carried to the vital organs, where it can be carried out very promptly after the injury, and where the injury to the intima of the vessel is not very great. Under other conditions the best treatment is incision and thrombectomy with suture of the vessel.

Causes and Prevention of Untoward Results Following Use of Arsenobenzol Compounds.—J. Danysz (*Presse médicale,* September 14, 1916) states, as a result of experimental investigations, that thrombosis and phlebitis at the point of injection may occur, not only from faulty technic, but from excessive alkalinity of the solution used. Vomiting, diarrhea, chills, headache, and temporary fever occur within a few minutes or hours after an injection. Milan's "nitritoid attacks," are due to vasodilatation and also to the formation of a precipitate which is arrested temporarily in the capillaries. The promptness and severity of these effects depend upon the amount and concentration of drug given. A sufficiency of alkali with the drug will prevent them in persons with normal blood composition. Formation of precipitates is favored by presence in the menstruum of sodium chloride and especially of phosphates, carbonates, sulphates, oxalates, and magnesium chloride; on the other hand, it is lessened, thus diminishing the severity of nitritoid or anaphylactic aftereffects, by slow administration of very dilute solutions, by preparing these diluted solutions with isotonic sugar or glycerin solution, and by simultaneously injecting anesthetics or vasoconstrictors. The neutral drugs of this group, such as neoarsenobenzol, do not precipitate in the presence of chlorides, sulphates, or carbonates, and thus only exceptionally cause early untoward effects; more serious late results, however, are produced oftener than with the alkalinized compounds, such as arsenobenzol. With the whole group of these drugs, formation of a nonnoxious or slightly noxious precipitate is an essential condition for therapeutic efficiency. The sodium combined products are thus more active than the neutral (neo) ones, and when well prepared and injected with the required precautions, they are less dangerous than the latter.

Syphilis of the Central Nervous System.—A. Rocke Robertson (*Brit. Med. Jour.,* October 7, 1916) emphasises the fact that the spirochetes enter the meninges and nervous tissues early in the disease, there to produce lesions which are chiefly vascular and meningeal at first, later becoming largely avascular and degenerative. Since the cerebrospinal fluid is a true secretion into which few drugs pass it is necessary to introduce antisyphilitic agents directly into the fluid. This is best accomplished by the method of Swift and Ellis or by the use of serum to which definite small quantities of neosalvarsan have been added *in vitro.* The latter is the preferable method. Even in early syphilitic infection it is usually not enough to apply systemic treatment alone, for many such cases will later show manifestations of syphilis of the central nervous system. Robertson has secured very satisfactory results, both clinically and as judged by the Wassermann and other tests applied to the blood and spinal fluid, by the use of combined treatment in cases with early symptoms of involvement of the central nervous system. Early tabetic symptoms, headaches, and ocular changes were totally checked or largely removed. His plan was to give repeated intravenous doses of neosalvarsan and repeated intraspinal injections of autosalvarsanized serum. The repeated practice of combined injections gave better results than the use of either method alone.

Treatment of Grippe in Children.—Lawrence T. Royster (*Journal A. M. A.,* Oct. 28, 1916) states that prophylaxis is the most important of all the features of treatment, especially in infants and young children. Any member of the household who has grippe should be kept from the younger members, and this is true even in the case of "colds" which may be grippe in mild form. Nursing mothers with grippe should keep their mouths and noses covered with handkerchiefs when nursing or attending their babies, and other attendants who come into close contact with infants should adopt the same practice. Crowded places should be avoided and the children kept in the open air except when there is very much dust. When the child has grippe the main reliance should be placed upon sodium salicylate after an initial purgative and an initial dose of Dover's powder. The child should be kept in bed no matter how mild the attack; and symptomatic remedies exhibited as needed, chiefly opium for severe pains and aching. Nasal drops of menthol and camphor in petrolatum are useful in the catarrhal forms. For cough wine of ipecac is useful in the tight stage followed by ammonium chloride and the adoption of general treatment suitable for pneumonia. Opium may be necessary for very severe racking cough. In the gastric type with vomiting the child must be kept absolutely quiet, allowed nothing by month, and the bowels kept open by enemas. Where there is diarrhea the colon should be irrigated, small doses of salines given, and a carbohydrate diet prescribed. Cardiac arrhythmia demands absolute and prolonged rest and occasionally digitalis. Otitis calls for the usual treatment with early incision of the drum membrane. Where there is persistent cough the child should be kept in the fresh air, prescribed regular and frequent periods of rest, and given tonics such as codliver oil. The disease should be quarantined.

Picric Acid in the Treatment of Erysipelas.—D. Critzman (*Presse médicale,* September 11, 1916) reports excellent results from applications of picric acid solution in both facial erysipelas and in erysipelas complicating wounds. The solution used is one in 1,000, with twelve grams of alcohol added to a litre of solution. As soon as the diagnosis is made, the affected area and zone surrounding it are painted with the solution, and a dry cotton dressing is applied. This is repeated every twelve hours thereafter. In three days, as a rule, the eruption is checked and the general condition improved, with a rapid drop in temperature. In cases treated less early benefit is likewise obtained, a prompt detergent action being exerted on the phlyctenular eruption, the duration of which is shortened. In no case was there noted a recrudescence of the local infection prolonging the disease more than twenty days. In surgical erysipelas, often migrating to the trunk or limbs, whatever the point of origin of infection, Critzman was always able to prevent extensions of the diseased area. Among weakened and cachectic patients, in whom erysipelas is often fatal, he had no deaths. He warns against the use of phenol sprays in erysipelas, considerable absorption taking place from the affected surface.

Autogenous Bacterial Vaccines in the Treatment of Bronchitis.—J. E. Robinson and D. W. Queen (*Southern Medical Journal,* October, 1916) speak highly of the effects produced by autogenous vaccines in simple bronchial catarrh and are inclined to believe that they are beneficial also in pulmonary tuberculosis, where the condition is not acute and where symptoms due to a secondary infection are pronounced. A stopping or diminution of the cough and expectoration, and the controlling of the temperature, if only for a few months, would be a material factor in the ultimate cure of the patient, and during the few months of an active immunity the general health of the patient may be brought to a high standard by rest, dietetic, and hygienic means. The vaccine is made to contain one thousand millions of bacteria per c. c., so each 0.1 c. c. represents one hundred millions of bacteria. Roughly speaking, 0.1 c. c. equals two minims. The first dose is generally 0.2 to 0.3 c. c., and may be repeated in from five to ten days, increasing 0.1 to 0.2 c. c. each dose, depending on the reaction secured from the previous one. Reactions are of two kinds, local and general. The local reaction consists of a redness and swelling at the point of inoculation, which should be about two or two and a half inches in diameter and should last two or three days, with some tenderness. The general reaction is a feeling of malaise with an increased cough and expectoration with a rise of temperature. If fever is produced, or if the local reaction is greater than two and a half inches, the dose is excessive, and should not be increased, but may need to be reduced.

Cranial Decompression in Spastic Cerebral Paralysis.—William Sharpe (*N. Y. State Jour. Med.,* October, 1916) classifies cases of cerebral spastic paralysis into the group without evidences of increased intracranial pressure and that in which there are evidences of such a condition. The latter type is the one which is amenable to operation with some hope of benefit. An experience of 219 cases falling in the second category has shown that decided benefit may be expected from a decompression operation. The improvement is manifest in diminution of the paralysis and spasticity, in the associated symptoms of convulsions and epileptiform seizures and in the improved mental development of the children. The operation consists in trephining and making a fairly large opening through the skull beneath one or both temporal muscles, combined with stellate incision of the dura. If there is a blood clot or if cysts are present these should be drained away, but scar tissue should be left undisturbed. The operation is simple for one experienced in brain surgery and is not fraught with danger to life. The technic is fully described. After the operation the usual orthopedic measures and proper muscle training should be instituted. The earlier in the course of the condition the operation is performed the better will be the results. and in a few cases operation has been performed with perfect results shortly after birth in cases in which traumatic hemorrhage was suspected.

Amputation Through Infected Tissues.—Chaput (*Presse médicale,* September 21, 1916) calls attention to the advantages of "lamellar" drainage in dealing with stumps resulting from amputation through infected tissues. This procedure consists in the use of sheets of rubber for drainage so arranged as to insure free vertical outflow of the wound secretions. Two conditions, however, are essential, viz., that in amputating, the flaps should be made of equal length and long enough to be easily sutured, and that they should not bear any gangrenous lesions. The flaps should, if possible, be lateral ones, as with anteroposterior flaps we cannot secure vertical drainage with the patient recumbent—unless he lies on the side, which is not always convenient or possible. At the inferior margin of each flap three pieces of silkworm gut are tied, one at each angle and a third at the centre of the free margin. With forceps one or more sterile sheets of rubber, one to three fingerbreadths wide, are next introduced so as to separate completely the internal surfaces of the two flaps from each other. The rubber should project two fingerbreadths beyond the wound margins, and a safety pin passed through the end.

Miscellany from Home and Foreign Journals

Shell Shock.—Arthur v. Sarbo (*Medizinische Klinik*, September 17, 1916) states that in a proportion of cases of shell shock there is actual damage to the medullary centres and specially to those of the eighth, ninth, tenth and twelfth nerves, leading to deafness and loss of the power of speech. The damage is believed to be due to the driving of the medulla into the foramen magnum, and of the cerebrospinal fluid into the fourth ventricle. In addition the shock may cause a disturbance of the circulation through the medulla. In certain other cases there is fracture of the base of the skull which is the cause of the symptoms. In a large proportion of the cases recovery is complete and in some the return of speech is sudden, though this is not the rule.

Breathlessness in Cases with Irritable Heart.—Thomas Lewis (*Brit. Med. Jour.*, October 14, 1916) states that from a study of a large group, several cases were found in which the breathlessness could not be attributed to the usual factors such as acidosis and respiratory or circulatory embarrassment. In these cases there was found to be a relative deficiency in the "buffer" salts of the blood so that when all of the contained carbon dioxide was shaken out the blood was more alkaline than normal blood. In the presence of the normal content of carbon dioxide the blood was just on the acid side of normal and an additional amount of carbon dioxide produced an abnormal increase in the blood's acidity. These results were confirmed by the electrometric determination of the hydrogen ion concentration and the relative absence of the "buffer" salts was proved by the addition of very small amounts of them to samples of the blood. and retesting the reactions.

Value of the Widal Test in Typhoid and Paratyphoid Fevers among the Vaccinated and Unvaccinated.—C. Gautier and R. J. Weissenbach (*Presse médicale*, September 21, 1916) refer to the fact that the value of the Widal agglutination test has been called into question owing to the frequency with which agglutinins for not only the typhoid but also the paratyphoid organisms are found in the blood in typhoid fever and the further complication entailed through previous protective inoculation. They report clinical laboratory work in 226 cases, including sixty-six controls and 160 cases of typhoid or paratyphoid infections confirmed by blood culture. Certain precautions in the test must be taken, if its diagnostic value is to be retained. The strains of organisms used must always be the same, and should possess an elective, high, and fixed aptitude for agglutination. A saline emulsion of a twenty-four hour agar culture is used, with 0.1 c. c. of commercial formaldehyde solution added to every fifteen c. c., and a constant titre of 350 million bacilli per c. c. The highest dilution yielding agglutination is that in which small flakes are visible with the naked eye after four hours' incubation. This highest dilution should always be ascertained, not only for the typhoid but also the A and B paratyphoid bacilli. If two or all three of these germs are agglutinated, and the ratio of their highest dilutions is one to six, seven, or more, that agglutinating in the higher dilution may be considered the infecting germ in the particular case. If the ratio is one to five, four, or less, the agglutinin saturation test must in addition be resorted to, i. e., each organism must be added in turn to a separate sample of the serum until that one is found which, upon such addition, causes agglutinating power to disappear, not only for its own species, but also for the other bacterial species in question. This organism is the one responsible in the given case. Furthermore, in unvaccinated subjects, the agglutination test, before the fifteenth, and especially before the eighth day of the disease, when the highest dilution is at least one in thirty for the typhoid and A paratyphoid organisms, or one in fifty for the B paratyphoid; after the fifteenth day these ratios are changed to one in fifty and one in 100, respectively. In subjects vaccinated against typhoid alone at least two months before, the test is available and positive at similar limits, specified in the article. In subjects vaccinated less than two months before, the test is valueless from the typhoid standpoint, though available for the other two organisms, against which the patient has not been protected.

Epidemiological and Clinical Considerations on Typhus Fever in Serbia.—Pétrovitch (*Bulletin de l'Académie de médecine*, September 19, 1916) points out that, in September, 1914, the typhus epidemic in Serbia was an obscure one, the early cases often being those of subjects already suffering from other infections and usually discovered in typhoid wards in hospitals. During this latent period the typhus infection was evidently being gradually distributed among the lice, the latter finally giving rise, from December, 1914, to July, 1915, to the gravest typhus epidemic ever known in Europe. By March, 1915, no hamlet in the entire region was free of the disease. Only 350 physicians and surgeons being at hand for a civil and military population of four millions, sanitary measures could not be adequately carried out. Foreign medical missions, however, aiming exclusively at destruction of lice, greatly reduced the epidemic in a short time. Later, during the retreat to Albania, it returned, but both morbidity and mortality were lower than in the earlier outburst. Pétrovitch comments on the necessity for early detection of the disease by closely watching among the typhoid patients for photophobia; facial turgescence; a diffuse, sombre redness, with rose colored points of the velum palati and uvula, and a coated, red margined tongue, followed by extreme dryness and tumefaction of this organ. Cleansing the arms with soap and water facilitates early detection of the eruption. These suspicious symptoms begin on the second day and indicate immediate isolation, before the eruption has become characteristic. A pulse rate of 100 to 120 from the outset, with marked softness and compressibility and obscurity of the heart sounds, portends early collapse, with death from circulatory failure.

Death Rate in Acute Infections.—Edwin E. Graham (*Journal A. M. A.*, October 28, 1916) reports that the deaths in Philadelphia from the acute infections occurring during the last five years have been analyzed and showed that of the five diseases, scarlet fever, measles, diphtheria, whooping cough, and typhoid fever, diphtheria caused the largest total number of deaths with typhoid, measles, pertussis, and scarlet following in the order given. The figures included all ages up to twenty years. In regard to prevalence measles led with a great majority and was followed in order by diphtheria, scarlet, whooping cough, and typhoid. Typhoid showed the highest death rate and measles the lowest with the others falling between. Whooping cough caused the largest number of deaths in infants less than one year old with measles second. Diphtheria caused the largest number during the second year, and this was also the period of highest death rate from measles. Diphtheria led in total number of deaths in the age periods from two to five and five to ten years with scarlet fever second for both periods. Typhoid fever was lowest up to five years and then rose with each five year period to the highest death rate for all periods over ten years. From ten to fifteen years diphtheria was the second most fatal of these diseases, scarlet third, and pertussis practically without fatality. The mortality from scarlet, however, was extremely low during and after this age period. For the total period of five years and including all ages up to twenty years scarlet fever caused the fewest total number of deaths, with pertussis second.

Differential Diagnosis of Exophthalmic Goitre.—A. W. Plummer (*St. Paul Medical Journal*, October, 1916) discusses in particular the differentiation of exophthalmic goitre from neurasthenia, the condition with which it is oftenest confounded. The picture of exophthalmic goitre is so definite a one that where the symptom group does not closely correspond, suspicion of another condition is warranted. A pulse rate of 120 associated with cold dry hands at once practically excludes hyperthyroidism. Marked fluctuations in the severity of the symptoms are typical of this condition, but they differ from those of neurasthenia in that their wave length as a whole is measured in weeks or months instead of in hours or days. The wave is often topped by a crisis of aggravation in all the nervous symptoms, together with anorexia, diarrhea, and painless vomiting. Too much stress is often laid on nervousness, palpitation, and tachycardia as diagnostic features, as they occur in many other conditions. An increased appetite, though it may be lost for short periods and often goes unnoticed, is the most reliable single symptom, in particular when it is associated with loss of weight. Polydipsia may also be present. A sensation of heat, usually with hyperhidrosis, is characteristic, but must not be confounded with the transitory hot flushes and cold sweats of neurasthenia. Thinning of the hair, general pruritus, and periods of scanty menstruation are also significant. A tight or choking sensation at the throat, without sufficient obstruction from the goitre, suggests neurosis. The nervously stimulated type of neurasthenia may simulate exophthalmic goitre, but the facies of the patient is missing, and one misses the frightened stare or rapidly winking, shifting gaze. The goitre patient talks rapidly and underestimates the seriousness of the situation. The pulse fluctuations of goitre cases are not as rapid nor as great as in neurasthenics. Thrills and bruits are present over the superior thyroid vessels in nearly eighty per cent. of cases. In many cases, moreover, we hear over the pulmonic area a systolic murmur, short and distinctly hard in quality, though often faint.

Lung Stones.—L. G. Heyn (*Lancet-Clinic*, October 7, 1916) asserts that the presence of one or more lung stones leads to a definite, distinctive clinical picture resembling, on the one hand, that of enlarged bronchial glands and, on the other, that of pulmonary hemorrhage due to erosion of lung parenchyma or a bronchus. His patient, a man of thirty-four years, suffered from harassing cough, increasing in recumbency, except when lying on the left side. There was inspiratory dyspnea, with some stridor, localized pain beneath the fourth left costosternal junction, and a sensation as if "something wanted to come up." There was no fever or loss of weight. The chest showed some hyperresonance, with harsh, puerile breath sounds throughout and a few scattered dry rales. X ray and repeated examinations for tubercle bacilli were negative. While in Colorado, during a fit of coughing, the patient brought up an irregularly shaped stone measuring 1.1 by 0.9 by 0.6 cm. This was followed by prompt return to complete health. Heyn cites seventeen cases of pneumoliths from the literature; in eight of these the lung stones were discovered only at autopsy.

Significance of the Ammonia Coefficient in Obstetrical Work.—James R. Garber (*Southern Medical Journal*, October, 1916) comes to the following conclusions: 1, The imperfect reaction of the maternal organism to the growing ovum is the usual predisposing factor in all cases of vomiting in pregnancy. 2, Reflex or neurotic influences are usually the exciting factor. 3, True toxemic vomiting is accompanied by serious changes in metabolism. 4, A high ammonia coefficient is not specific. It may indicate toxic vomiting or starvation following neurotic vomiting, or an acidosis due to various causes. 5, The ammonia coefficient is merely a danger signal and is always to be considered in connection with the clinical symptoms. This is especially applicable to a high coefficient. 6, A low ammonia coefficient indicates neurotic vomiting and is readily treated by suggestion. 7, When there are slight variations of and a persistently high ammonia coefficient, a positive diagnosis of toxic vomiting is indicated. When the ammonia coefficient curve has wide variations, sometimes falling to a low percentage, and is associated with pronounced nervous influences, there is little doubt that one is dealing with neurotic vomiting. 8, Chloroform produces characteristic lesions of the liver, and therefore should not be used as the anesthetic. The best anesthetic is nitrous oxide-oxygen. 9, The determination of the noncoagulable nitrogen coefficient assists in differentiating renal from hepatic conditions. Its chief use is to indicate the extent of the renal involvement.

Pyocyaneus Disease.—P. L. Bosellin (*Giornale italiano delle malattie veneree e della pelle,* September 20, 1916) reports a case of pyocyaneus infection with destruction of tissue on the anterior aspect of the left wrist in a woman of forty-six years. This disease in the newborn and adult is a definite morbid entity with multiform clinical aspects, and the diagnosis should be aided or cleared up by laboratory examination when the clinical evidence is insufficient.

Fatal Hemorrhage in Bone Tuberculosis.—Robert C. Patterson (*American Journal of Orthopedic Surgery,* October, 1916) reports a case of tuberculous involvement of the lungs and many bones and joints and glands in various parts of the body. Uncontrollable hemorrhage developed from a draining sinus in the sternum. After a post mortem study it was thought that the tuberculous process had extended into the internal mammary vessels.

Syphilitic Superinfection and Reinfection.—Ettore Mariotti (*Giornale italicno delle malattie veneree e della pelle,* September 20, 1916), in reporting two cases, gives an exhaustive review of the literature and concludes that it is not impossible for a syphilitic patient to sustain a new infection during any stage of the disease. During or after energetic antisyphilitic treatment the patient may acquire an exogenous reinfection. Energetic mercurial treatments, especially injections of calomel, greatly attenuate the infection and impede the corrosive action of the specific toxin.

Estimation of Myocardial Efficiency. — J. Strickland Goodall (*Brit. Med. Jour.,* October 14, 1916) asserts that the only satisfactory method for such an estimation is one which actually tests the cardiac and circulatory response to known amounts of work. The simplest test consists in weighing the patient in pounds and giving him various measured amounts of work in specified periods of time by making him run up steps of measured height. Before the test his pulse rate, respiration rate, and systolic brachial blood pressure should be read, and these observations should be taken at once and for several minutes after the end of the exercise. If the heart is in good condition all three of these factors rise with exercise and fall to normal within three minutes thereafter. A fair reaction shows the same phenomena with a less rapid return to the normal. Poor reactions are indicated by rises in pulse and respiratory rates without a rise in the systolic blood pressure. Finally, very bad reactions show an actual fall in the systolic blood pressure. For less vigorous persons the tests may be applied with exercisers and graded weights to lift, or with an inclined plane of a grade of one to eight. The total reserve capacity of the heart may also be determined by these tests by the repetition of the work in increasing amounts until the systolic blood pressure ceases to rise. The total power having thus been determined, if it is below normal the tests may be converted into therapeutic exercises by reducing them to amounts of work less than the limit and having them carried out daily for periods of one week, with a total work test at the end of each week and an appropriate increase in exercise prescribed on the basis of results.

The Influence of War on Diabetes mellitus.—C. con Noorden (*Medizinische Klinik,* September 17, 1916) in a study of over 100 cases reveals the fact that only one occurred in a member of the reserves, the rest being found among those actively engaged at the front. It was determined that the elements of nervous strain and bodily fear played minor roles in provoking the condition. The chief causes seemed to be increased physical efforts combined with poor living conditions and an improper diet. About sixty-five per cent. of the cases occurred in men who had not previously shown signs of diabetes, the remainder either having had the disease in mild form or having shown some tendency to it. The latter group provided the majority of the severe cases. In most instances from both groups, however, proper medical care and diet removed the glycosuria and a considerable proportion of the men were sufficiently restored to be available for military service of a less active form than that at the front. The most important index of the condition of the men was found to be the state of the blood sugar—not the degree of glycosuria. If the blood sugar remained high after treatment the prognosis was not so favorable as if it fell fairly promptly to normal. Even after the greatest improvement possible the severer cases were deemed no longer capable of military service of any type.

Fractional Gastric Analysis.—Ernest C. Fishbaugh (*Journal A. M. A.,* October 28, 1916) reports the futility of the ordinary single withdrawal of a test meal as an index of the gastric function, and emphasizes this by a record of the results obtained by the fractional method and the Rehfuss tube. Using a breakfast of forty grams of water crackers and 300 mils of water and withdrawing samples of the gastric contents at twenty minute intervals, it was possible to classify the results in three divisions. The first included those cases in which the gastric secretion of acid and ferments fell toward the end of gastric digestion. The acidity varied from very low to decidedly high and the pepsin followed the curve of the acid. In this group there were all grades from hypacidity to hyperacidity and hyposecretion to hypersecretion. The maximum acidity was reached in times varying from one to two and a half hours after the meal, with an average of one and a half hour. The second group showed a continual rise in gastric secretions to the end of gastric digestion. In this group the pepsin secretion also usually followed the curve of acid secretion. Here, also, the total range included hypacidity and secretion to hyperacidity and secretion. In the third group the gastric secretions were found to be either absent or greatly delayed and this group contained three classes of cases: 1. Absence of both acid and enzymes; 2. Absence of acid alone; 3. Presence of both, but their late appearance. The first of these forms was very rare. All of the forms of curves of gastric activity were encountered repeatedly in apparently normal persons and it was found that each subject had his own particular type of curve which remained constant upon repeated examination. It was not possible to state that any one type was normal or abnormal from the data so far obtained.

Proceedings of National and Local Societies

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-eighth Annual Congress Held at Washington, D. C., May 9, 10, and 11, 1916.

The President, Dr. G. HUDSON-MAKUEN, in the Chair.

(*Continued from page 925.*)

Angioma of the Larynx (*Continued*).—Owing to the yielding character of the growth, its bluish tinge, and the history of previous bleeding, the diagnosis was made of angioma of the larynx. Removal of a portion for diagnosis was deemed too dangerous, and external operation was advised. This was subsequently performed by Dr. C. A. Elsberg. The growth was removed, the mucous membrane sutured, and the pathologist reported a hemangioma. The patient made an uneventful recovery. Doctor Mayer concluded that angioma of the larynx was a rare disease, occurring mostly in adults, the proportion of males to females being about four to one. It might be mistaken for cancer. Endolaryngeal removal, even of a portion of the growth, for diagnosis was fraught with danger, while laryngofissure was entirely safe and feasible.

Dr. HENRY L. SWAIN, of New Haven, remarked that if Doctor Mayer wanted another case simply to bear out what he said about the danger in these cases, he could mention one in which he attempted to remove a growth of this kind. They got hemorrhage all right. If anything further was needed to substantiate the diagnosis, the microscope did. He had a slide at home showing it to be true angioma of that type. He was interested to hear what Doctor Lynch thought he could do with such a case by suspension.

Dr. ROBERT CLYDE LYNCH, of New Orleans, had never had an opportunity of seeing one of these cases, and had, therefore, had no personal experience with them. He thought, however, that if it was possible to get underneath the place, and if the surface was not too broad and the position properly localized, it might be possible to do it under suspension. However, that could be decided at the time the case presented itself. After seeing the illustration of the size and site of this angioma, he would not attempt its removal under suspension.

Further Progress in the Use of Radium in the Field of Laryngology.—Dr. D. BRYSON DELAVAN, of New York, said that decided advances had been made during the past year in their knowledge of the application of radium in diseases of the upper air passages, while the number of the conditions in which it was found effective was being steadily increased. Several institutions, notably the General Memorial Hospital of New York, had been fortunate in acquiring amounts of radium large enough to meet all probable demands; while those administering it were gaining experience in its use and learning how it might best be used and controlled.

As to the uses of radium, closely allied to their department might be mentioned the success of radium in "vernal catarrh," or that form of conjunctivitis which occurred during the spring, and often, when established, lasted throughout the year. Abbe had observed ten cases, recurrent for many years, and asserted that improvement always began soon after the first treatment. Even patients who had been previously treated by the removal of hypertrophied masses, cauterization, and caustics, received uniform benefit from radium and were ultimately cured. A second interesting condition in which radium had no rival was in the reduction of lymphoid tumor cases, as found in tumors of the tongue, called hemolymphangioma. The treatment by radium of papillomata of the larynx, as with warty growths in general in other parts of the body, was being attended with ever increasing success. Leucoplakia of the tongue, Abbe believed, was as capable of cure by radium within the mouth as was the skin hyperkeratosis. In the mouth, however, the duration and the method of application required more judgment and skill to attain good results. The treatment was associated with transient painful irritation, but this seemed essential to success. Chronic abrasions and fissures of the lip were curable by radium. In the treatment of nevus, excellent results were being obtained. New growths of nonmalignant type were receiving an increasing amount of attention, with excellent results. Thus, Abbe had shown a case of myeloid tumor of the lower jaw completely cured. Tumors of the larynx of various kinds had been caused to disapear, with complete return of the singing voice. In the field of nasopharyngeal fibroma the use of radium was most encouraging, particularly so in view of its success in the treatment of fibromata of the uterus.

Two cases observed by the speaker, of sphenoid carcinoma, were worthy of notice. Both originated in the left side of the throat, close to the wall of the larynx, probably exolaryngeal. Both were seen late, long after operation would have been possible. Both patients were men in the early fifties, hitherto in perfect health, active, vigorous, and of good antecedents. When first seen, the disease in both had invaded the interior of the larynx, the left lateral wall of the pharynx, the pyriform sinus, the tonsil, and the base of the tongue. In both, ulcerations were present and there was marked aphonia and dysphagia. Both were treated at the same institution, exposed to large doses of radium, and in both the results were materially the same. The first effect locally was an almost immediate control of the secretions of the throat. From having been abundant and fetid, they promptly ceased. Following this, the areas of ulceration rapidly diminished in extent, and in the less severe of the two cases disappeared, while in the other case they seemed to do so. The swellings, which had appeared over extensive areas of the affected parts, decreased greatly and the infiltrated tissues were reduced in size, became soft to the touch, and more natural in appearance. Meanwhile the voice became clearer, and deglutition improved so that both patients were able to swallow without pain, and to increase largely the variety of their food. The general improvement was remarkable. Digestion became normal, and sleep more prolonged and restful. Strength increased steadily, and there was an almost normal condition of good spirits. One patient, a physician, was able to resume office practice and operative work for a period of over two months. Both had agreed that if the further progress of the disease should be entirely unfavorable, the benefit gained in the relief of suffering and the added comfort afforded would well have repaid them for any inconvenience which the radium had caused, whether from burns of the skin or from any other result.

Already results worthy of profound consideration had been obtained. Far from being discouraged, there was every reason why they should make persistent and continued effort finally to solve the existing problems and give to the world a successful cure.

Dr. Cornelius G. Coakley, of New York, believed that the great trouble with the use of radium was that they could find little or nothing to be used as a guide in the doses of this material. Doctor Delavan mentioned in his paper "the application of a tube of strong radium for fifteen minutes." Now, that did not mean anything to those working with it. He would like to know the actual amount of it to be a guide to other men. Another great difficulty with the use of radium was the enormous expense of the material. At the present time they were having placed at their disposal by the Crocker Institute about one hundred grams of radium, the cost of which was somewhere over $10,000. They used it in various pathological conditions. That was a prohibitive cost for most men in the practice of medicine.

Their greatest difficulty was that it burned, and it burned very severely. They had not yet been able properly to screen this material when placed in the mouth, or in the nose, or nasopharynx, or on the exterior of the body so as to have it reach the object of the pathological process without getting more or less burning. If they used too little, they did not get enough action; if too much, they got terrific burns which occurred not at the time, but even months later, as happened in one case treated by radium at Johns Hopkins. The patient had an application of radium a year ago last March, and the burn did not manifest itself until August of last year. In one of his own cases in which they applied it, a portion of the nose had been burned off as a result of the action, the burn coming on six months after the application. The radium destroyed the growth in the nose, but also almost all of the nose as well. It caused external thrombus and finally destruction. Those were some of the things with which they had to contend. They knew nothing themselves, and there was very little in the literature to guide them in escaping those factors.

There was one other point in relation to malignancy. If they used it they would unquestionably stimulate the action of the malignant process in the same way as they would if they curetted or cauterized it. If they were going to use radium, they had to get it right into the mass and have an amount which the ordinary practitioner could not afford to invest in, if they desired to do more than merely stimulate the growth.

Dr. Jacob H. Hartman, of Baltimore, desired to report a most unusual experience. In August, 1913, there was a patient, a gentleman, sent by his family physician with an endolaryngeal growth, of a red, angry color, filling up a large part of the larynx and interfering with the respiration. The speaker gave him an unfavorable prognosis and advised him to have another opinion. He was taken for consultation to Doctor Winslow, who agreed that the growth was undoubtedly malignant in character and inoperable. On September 4th, two small portions were removed very carefully for pathological examination. The microscopic examination was made and the specimen reported malignant. On September 14th, a tracheotomy was performed. On September 21st, radium was applied externally for three hours. On September 24th, radium was again applied for nine hours, and was followed by most extensive burns all over the neck, and the patient suffered intensely. On October 6th, there was almost complete obliteration of the growth, and on October 23d, the patient was again examined and there was no vestige of the growth at all, only a slight thickening of the mucous membrane over the arytenoid space. The larynx was absolutely normal. April 12, 1916, the larynx was thoroughly clean, and there was no evidence of growth noted at all. The patient had gained thirty to forty pounds and was remarkably well and absolutely free from any trouble of this kind.

Dr. Harmon Smith, of New York, told how, about three years ago, a young boy, twelve years of age, who had a large growth, was sent to the General Memorial Hospital in New York, where they now had some of the strongest radium in this country. At that time the application of radium only increased the growth, but they had not the strength of radium that they had at present. The boy was sent to him and had the growth removed on two different occasions with considerable hemorrhage, nearly fatal, each time. Injections of ammonium chloride and trichloracetic acid failed to hold it in check. The condition progressed gradually, the boy became anemic, and the growth extended out into the jaw and filled up the cheek. Some weeks ago he was sent back to the General Memorial Hospital, where they applied radium once for a period of three hours. Following that he had a hemorrhage, and a few days after the hemorrhage an edema of the larynx set up which necessitated tracheotomy, and the boy died.

He recalled a case of similar character where removal had not completed the disappearance of the growth and it had recurred, so this young boy, about nineteen years of age, was sent to have his application of radium at the same time. He had an application of strong radium which set up such inflammation in the cheek and the tissues adjacent to the growth, that for at least a week the boy was unable to swallow at all. They had to feed him by rectum and it became a very serious proposition; so that, in his opinion, they should know more about the action of radium before applying it indiscriminately. Yet this radium was in the hands of an expert, and applied at a hospital where radium was being used experimentally as well as practically. He also had three cases of cancer of the larynx which required tracheotomy, and a tube of radium was inserted to be left as long as was seen fit. Those cases went on without apparent benefit to death.

Dr. John R. Winslow, of Baltimore, told how it was his privilege to see the case mentioned by Doctor Hartman from the beginning until the end. The last time he examined it there was no evidence of growth, nor any indication of the site of attachment of the growth. One who had not seen the case previously would have been unable to determine whether there had ever been any pathological condition in the larynx. Of course, the case was an absolute cure of a condition which, as far as his experience and judgment went, would have been an absolutely incurable and inoperable one.

An interesting thought occurred to him as to what happened to these growths. He took particular pains to inquire of this patient whether he had had any increased expectoration or secretion in any way pointing to a breaking down by ulceration, or similar process, and he admitted no such condition. Apparently the growth simply disappeared.

Dr. Cornelius G. Coakley, of New York, wished to ask, with reference to Doctor Hartman's case, whether the growth of the larynx was ulcerated, and what was the strength of radium used.

Dr. John R. Winslow, of Baltimore, said they were greatly handicapped, for while they had practically one of the largest collections of radium in the country, it belonged to an incorporated, private institution which was conducted largely on a commercial basis. The cost of an application of radium was somewhere in the neighborhood of $100, if not more. That, in itself, was almost prohibitive in many cases, so that it could only be used exceptionally. There was no one who had obtained a loan of radium, and so far as he knew there was no Government institution for this purpose. It seemed to him it was a field in which the Government should take a hand and incorporate a national radium institute for the benefit of the public.

Just before he came away he saw an epithelioma of the nose, completely filling the nose and invading the ethmoid, as well as causing protuberance of the eyeball, in which he expected, if possible, to have the radium applied. It was absolutely inoperable. The patient was seventy-nine years of age, and the tumor myxomatous in appearance, bleeding on touch. While there had been no opportunity of removing a specimen for examination, he had no doubt that it was an epitheliomatous.

Answering Doctor Coakley's question as to whether the growth in the larynx was ulcerated, and the strength of the radium used in Doctor Hartman's case, there was no ulceration and no involvement of the glands. He did not know in what strength the radium was used, but he knew it was very strong.

Dr. Robert Clyde Lynch, of New Orleans, had had two or three experiences with the use of radium. The first case was that of a patient with sarcoma of the nose, treated two years ago. He did the first stage of the Caldwell-Luc operation and put in the radium, unscreened—simply the little capsule with the glass container which held the radium into the nose and antral cavity. This was a fifty-five mm. tube. The diagnosis of sarcoma had been made by microscopic examination, and the nose had been blocked up completely. In the course of four weeks there was free nasal respiration, and an examination with the Holmes laryngoscope did not reveal any evidence of the growth.

The second case was one of an intrinsic laryngeal growth in which an extension occurred, necessitating something else being done. Seventy-five mgm. of radium were applied externally, fifty on the diseased side and twenty-five on the opposite side, the radium being screened with brass, then four rows of sheet lead, then the same thickness of aluminum, then gauze, and finally a rubber cot. This roll was applied to the outside of the larynx and left for twelve hours. Two days following the application there appeared the most beautiful sunburn, the larynx was extremely red, and the patient complained a little. The growth became pale, white, and dry; it gave the appearance through the mirror of being dry. After a rest of five days and a reapplication for eight hours, a recurrence of this burn appeared, though not so much. Then there was a rest of one week and a reapplication for twelve hours. After this there was an apparent retraction of the growth. The surface remained dry and gave the impression as if the deeper invasion of the growth toward the cartilage was becoming less. He had devised an intubation tube for the endolaryngeal application of radium. In reporting an application of radium, he thought they ought to lay special stress upon the size of the dose and the length of application.

Dr. Henry L. Swain, of New Haven, in a case exactly similar to the one cited by Doctor Winslow, in which he was expecting to use radium, had used the capsule as mentioned by Doctor Lynch. In this case they merely put the capsule into the substance of the growth, which bled profusely for a little while. The capsule was allowed to remain in over night and the patient sent home in the morning. An external burn resulted from the application and recession of the growth. Doctor Winslow was interested to know what became of these growths. This was one of those pale, flat growths, and it became rosy hued, and all of this rose hued area eventually disappeared by mild ulceration. The whole growth was not exposed to this application of radium, so a second application was given about six weeks after the original application, at this time the radium remaining for nearly five hours. It was now only three months since the second application, and the growth had practically disappeared; at least we cannot find any trace with careful search. He thought it was extremely valuable to recite their experiences in this way and discuss them from so many angles.

Dr. Cornelius G. Coakley, of New York, said that seventy-five mgm. of radium, when put into the growth and left there, would cause an enormous amount of destruction. Seventy-five mgm. applied on the outside of the neck for involvement of the larynx, or tonsil, or pharyngeal mucous membrane, would not do very much. They must have an enormous amount, four hundred or one thousand mgm., if they wished to get results from external applications through healthy tissue to malignant tissue. This must be left in about three or four hours. He thought the best results were obtained by strong doses applied for a short time, and then reapplied at short intervals of about two or three days.

Dr. D. BRYSON DELAVAN, of New York, said that there were some things which belonged to the laboratory. Radium did, because it required large amounts to produce effects. The general practitioner had no more to do with radium than the driver of a hackney coach with the New York Central Railroad. It was something the general practitioner could not, in the nature of things, know about. It was something that even Doctor Abbe, who for many years had spent such a large amount of study upon the subject, did not know enough about to specify. It was something which was so new and the discussion of which was so fresh that there was actually no literature to guide them. There was nothing which they could use as a guide, but the work being done in a few places by a few men.

The largest amount of radium in this country was at the laboratory with which he had the honor of being slightly connected. There were two other institutions doing the best work they knew how to do and trying hard to learn just how to do the work—the one to which Doctor Coakley referred, and the other was one under Doctor Bissell at Johns Hopkins. Their institution would soon have two grams of radium, and he did not know any place in Europe that had as good a supply. Radium had not yet proved a cure for cancer, but it had a possibility, and that possibility was worthy of following up. Radium would burn. Well, it hurt to be operated upon in any way. It was not pleasant to take ether and be laid up for a month or two, or five months, after painful surgery, but it was a very beautiful thing to be well and among friends. And so it was with the use of radium. Suppose it did burn? In those two cases cited both patients suffered severe burns, but they rejoiced at it, even though they did not result in cures, but only in temporary benefit.

If there was nothing in radium, why, they had tried and done their best; if there was, there was a great prize in store.

Epidemic of a Severe Form of Acute Infection of the Throat with Abscess Formation.—Dr. CLEMENT F. THEISEN, of Albany, observed that this epidemic occurred in Albany during December, 1915, and January and February, 1916. Cases occurred in all parts of Albany, 384 coming under the speaker's personal observation. Fifty-eight of the patients had abscesses in different parts of the fauces. Forty-four of this number were more or less typical cases of peritonsillar abscess. Of the remaining fourteen cases, in eight abscesses developed in the lateral columns of the pharynx. There were two cases of infection of the epiglottis with great edema and some pus, two cases of abscess of the lingual tonsil, and two of retropharyngeal abscess. Joint complications, acute arthritis, and polyarthritis occurred in twelve cases, acute endocarditis in one, and in twenty-four examination of the urine showed the presence of albumin and casts. In sixty-eight cases acute otitis media developed, requiring incision of the tympanic membrane, with one mastoid complication in a young child whose membrana tympani ruptured ten days before the speaker was called. Cultures taken during the epidemic showed streptococcus infections in the majority of the cases. A few were pneumococcus infections. The milk supply was probably not a factor. There were no deaths among the speaker's cases, although some patients were seriously ill, particularly those with joint and kidney complications. The onset of the attack in most cases was extremely severe, with chills, great prostration, swelling of the glands of the neck, and high temperatures, particularly in children.

(*To be continued.*)

Letters to the Editors

RHUS POISONING.

SYRACUSE, N. Y., *November 6, 1916.*

To the Editors:

Nearly every year I am a victim to ivy poisoning, and beside my personal experience, I see many cases in practice. A localized, intense itching and burning are the first symptoms, followed in a few days with papules which fill with serum. With no treatment or the ordinary treatment of washes and ointments, it subsides in ten days or two weeks, and there is a desquamation of the parts involved.

Maisch, in 1865, made experiments and attributed the poison to a volatile acid which he named toxicondendric acid, but which Pfaff (*Jour. Experimental Med.*, II, 1897, p. 181) identified with acetic acid. Pfaff found the poisonous principle to be an oil which caused the eruption only in places where it had been applied, if care was taken not to distribute it to other parts of the body.

Many years ago, in desperation to relieve the itching, I would saturate a bit of cotton with chloroform and rub the part—generally fingers—and I soon found that I could abort the attack. The itching would gradually subside and the papules would not form. After reading Pfaff's contribution, it was plain to see that in using the chloroform I had cleansed my hands from the poison. Since then I have substituted benzol for chloroform, as it is a better solvent for oily and resinous substances, and gasoline is about as efficient.

One has only to scrub thoroughly and clean the part as soon as the first symptoms appear to be relieved.

JOHN B. TODD, M. D.

DOCTOR DAVIN AND THE ANDERSON TRIAL.

NEW YORK, *November 2, 1916.*

To the Editors:

During the progress of the Anderson trial in Brooklyn I was reported in the newspapers as having said that the case was not one of anterior poliomyelitis.

I endeavored in vain to obtain a retraction of this statement, both from the reporters and the editors responsible for it. The enclosed article, which gives my position in the proceedings, is only likely to have a limited circulation among those who read these newspaper stories. Its republication in your journal would remedy this drawback as far as it relates to my professional brethren, whose opinion I value and whom I would like to reach with my side of the story.[1] If this is inexpedient I would like to have published the statement that at no time did I give to any one, not even to counsel, my opinion of the case until it was given to the Court while I was on the stand.

JOHN P. DAVIN, M. D.

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[1] The article referred to by Dr. Davin, which we regret being unable to republish, appears in the *Medical Economist* for October, page 208, under the title of Psychology of the Public.

Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Changes in the Food Supply and Their Relation to Nutrition. By Lafayette B. Mendell, Professor of Physiological Chemistry in the Sheffiield Scientific School of Yale University. New Haven: Yale University Press, 1916. Pp. 61.

This little book is a collection of the author's remarks at the second Pan American Scientific Congress at Washington in 1915. It begins with a discussion of the problem of food production as it will soon face the rapidly growing populations. Food preservation and food conservation are taken up next, then transportation facilities, customs in diet, and changing industrial and social conditions. One way in which food products will meet increase of population is by addition to their number; within the last few months attention has been directed to the possibility of growing in the United States at least two plant products which may serve as human foods, i. e., proso millet and grain sorghum or kaoliang, both of which have been known in other parts of the world as constituents of the diet of mankind. It is pointed out (page 22) that protein has lost the special significance it possessed in Liebig's day as the sole source of energy. The too great consumption of meat in America is discussed, pride in the ability to buy it being one reason for its excessive use. Advertising is blamed for the excessive gum chewing in the United States, also, on the other hand, for the healthful substitution of cereals for meat and eggs at breakfast. It is said—not in this book, however—that gum chewing is common among the Allies in the European war. There are many other interesting items, e. g., that although the bakers in the United States are capitalized at $270,000,000, still seventy per cent. of our bread is home made. We commend this little volume as a useful and entertaining one.

Diseases of the Digestive Tract and Their Treatment. By A. Everett Austin, A. M., M. D., Former Professor of Physiological Chemistry at Tufts College, University of Virginia and University of Texas; Present Assistant Professor of Clinical Medicine, in Charge of Dietetics and Gastrointestinal Diseases, Tufts College, etc. With Eighty-five Illustrations, Including Ten Color Plates. St. Louis: C. V. Mosby Company, 1916. Pp. 552.

This book is conveniently divided into three parts; the first deals with general characteristics, the second with special gastric diseases, and the third with special intestinal diseases. The first part is by far the largest, and is, we think, the most valuable part of the work. There are chapters on the surface anatomy of the stomach and intestines, the physiology of digestion, examination of the patient, physical methods of examination of the digestive tract, acquisition and examination of gastric contents, examination of feces, dietetics in digestive disorders, and treatment of digestive disorders. Most of these chapters are well worth reading and contain in readily available form much information which the usual textbooks are careful to omit. The chapters on examination of the patient, dietetics, and treatment are particularly good. The chapter on digestion could be enlarged with advantage, for it contains less than what may be found in any book on physiology. The second and third parts of the book are concerned with the chief gastric and intestinal diseases, and may suffice as an introduction to the subject or as a serviceable summary. These parts are less complete than the corresponding sections in any good book on practice, and are far too brief to satisfy a specialist. The book is well printed and is adequately illustrated, but it lacks a bibliography. The author refers constantly to the various workers and writers, but forgets to say where any account of their work may be found. Incidentally, the author (in the first sentence of the preface) seems to have settled to his own satisfaction the vexed question of the authorship of the book of *Ecclesiastes;* unfortunately we have no proof that Milton lived in biblical times. Expressions like *per oram* and *per anus* should be corrected.

Differential-diagnostische Tabellen. der inneren Krankheiten. Von Dr. med. J. Cemach, Wien. 46 Tabellen mit 18 farbigen und schwarzen Abbildungen sowie 8 Fiebertypen. Zweite, vermehrte und verbesserte Auflage. München: J. F. Lehmanns, 1915.

This small book consists of a series of diagnostic tables, twenty-one in number, in which are compared the clinical and etiological features of affections of various organs of the body. Its object is not to replace the textbook of medicine, but to place before the eyes, so arranged as to permit of rapid comparison, the essential diagnostic signs of the various disorders, thereby facilitating quick differentiation and preventing omission, in the comparisons made, of any important clinical feature. Only the typical forms of the various diseases are taken up. In this new, second edition, a number of additional or subsidiary tables have been inserted. A few illustrations and temperature charts are also included where concise description is impossible.

S. Weir Mitchell, M.D., LL.D., F.R.S., 1829-1914. Memorial Addresses and Resolutions. Philadelphia, 1914. Pp. 155.

This book contains a series of personal tributes rendered the late Doctor Mitchell at a special meeting of the College of Physicians of Philadelphia; various minutes of appreciation passed by the Board of Trustees of the University of Pennsylvania, the Council of the University Medical School, the Directors of the Library Company of Philadelphia, and the Board of Trustees of the Jefferson Medical College, and the proceedings of a joint meeting held in memory of Doctor Mitchell by various learned societies of Philadelphia. At the last named meeting addresses were made by Mr. Talcott Williams, of Columbia University; Dr. William H. Welch, of Johns Hopkins University, and Mr. Owen Wister. In these various eulogies the essential characteristics and manifold activities of this untiring worker in medicine and literature are fittingly set forth. His medical labors are described by Doctor Welch, and his achievements and place in American literature pointed out by Owen Wister, his kinsman, who classes *Hugh Wynne* and *Westways* with the works of Trollope and Fielding, because they are friendly to mankind, not sensationally misanthropic. In spite of Mitchell's extensive knowledge of pain, evil, and sorrow, gained from "four years' observation of mutilated soldiers and fifty years' study of hysteria, neurosis, insanity, and drug mania, . . . the tone of Doctor Mitchell's books is a lesson and a tonic for an age that is sick and weak with literary perverts." This Owen Wister deems literature's true debt to him.

A Practical Treatise on Disorders of the Sexual Function in the Male and Female. By Max Hühner, M. D., Chief of Clinic, Genitourinary Department, Mount Sinai Hospital Dispensary, New York City; Formerly Attendding Genitourinary Surgeon, Bellevue Hospital, Out Patient Department, and Assistant Gynecologist, Mount Sinai Hospital Dispensary, New York City, etc. Philadelphia: F. A. Davis Company, 1916. Pp. xv-318. (Price, $3.)

The greater part of the present volume has already appeared in print in various medical journals and elsewhere. The publishing of these papers in a single volume will insure for them a wider circulation and a longer life. Those who are at all acquainted with the literature of the subject will find nothing new or unusual in the present work; but it is quite possible that many practitioners will appreciate a book of this kind, especially those parts which deal with the management of such of the sexual neuroses as are amenable to treatment. The author handles his subject in a plain, straightforward way, and since he is, as a rule, eminently "orthodox," the present contribution will offend very few, and may possibly be read by some who would be repelled by more authoritative and scientific books. We would like to know the author's authority for the statement (page 185) that it is the presence of vaginismus which causes *demi-vierges* to object to sexual intercourse; if such is really the case, vaginismus must be much more common than we had supposed. The "bibliography" at the end of the volume is not really a bibliography of the subject; it is rather a reference to the sources from which the author derived some of his information. Still, it makes interesting reading and supplies food for thought; the omissions, in some cases, are more eloquent than the names printed.

Interclinical Notes

The *Survey* for October 28th discusses editorially infant mortality, housing reform, and working hours for women. "So long as mothers work in factories," observes Doctor Robin, of Wilmington, Del., a valued member of the staff of the New York Medical Journal, "so long will babes go to their graves."

* * *

What with war, patriotism, religion, rebellion, the prospects of an enlarged periodical, etc., divvle a word is there about medicine in the *Outlook* for November 8th. It is an interesting issue, nevertheless; it pays particular attention to the status of the troops, regulars and militia, now scattered along the Mexican border. The guardsmen come in for some severe criticism for their lack of military appearance, etc. There is a sympathetic account of the career of the late William Merritt Chase.

* * *

Fiction chosen with unusual care seems to be the principal feature of the November *Century*. The short stories are The Persistent Little Fool, by Fanny Kemble Johnson; Olivia Mist, by Vincent O'Sullivan; The Sea Green Incorruptible, by E. F. Benson; and A Transit of Venus, by Marjory Morten. The superb serial, by William Dean Howells, The Leatherwood God, comes to a close, and Aurora the Magnificent, by Gertrude Hall, takes its place. The illustrations and other pictures are, as usual very fine.

* * *

"Chain your doctor" is the advice given by *Pulp and Paper Magazine* for August 15, 1916; very good advice, too, if the doctor is guilty of such outrageous conduct as charged further on. We suppose the doctor must have kicked the casting out of place or it would not have dropped him so suddenly. Here is the item, however, and our readers may judge for themselves: "In one of the Ontario Mills recently, one of their employees lost a leg, owing to a calender doctor falling. The injured man was performing his duties at the calender stack and without provocation one of the castings supporting a doctor broke, permitting the doctor to fall, striking the workman on the leg, crushing it so that amputation was necessary. While this sort of accident is very rare it shows that great care must be exercised in inspecting these castings. The company immediately chained all doctors to the frame of the stack. This gives absolute protection against a similar accident. We are calling attention to this in hopes that it may be a warning to other mills." The least the doctor can do is to replace the lost leg. The prompt action of the company is worthy of all praise.

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Meetings of Local Medical Societies

Monday, *November 13th.*—New York Ophthalmological Society; Society of Medical Jurisprudence, New New York; Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society; Yorkville Medical Society (annual).

Tuesday, *November 14th.*—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine; Newburgh Bay Medical Society; New York Obstetrical Society.

Wednesday, *November 15th.*—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society (annual); Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine.

Thursday, *November 16th.*—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club, of Buffalo; New York Celtic Medical Society.

Friday, *November 17th.*—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Alumni Association of Roosevelt Hospital; New York Microscopical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 1, 1916:

Armstrong, Charles, Assistant Surgeon. Continued on duty at Ellis Island, N. Y.

Corput, G. M., Surgeon. Granted four days' leave of absence on account of sickness from October 19, 1916.

Cox, Ora H., Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and will proceed to Saulte Saint Marie, Mich., for duty; granted three days' leave of absence en route.

Dyer, R. E., Assistant Surgeon. Continued on duty in plague eradicative measures at New Orleans, La.

Edmunds, Meade C., Assistant Surgeon. Continued on duty at the Marine Hospital, St. Louis, Mo.

Eskey, C. R., Assistant Surgeon. Relieved from duty at the Marine Hospital, Chicago, Ill.; will proceed to Ellis Island, N. Y., for duty.

Frost, W. H., Passed Assistant. Will deliver an address on poliomyelitis at the annual meeting of the Southern Medical Association at Atlanta, Ga., November 13-16, 1916.

Fuller, J .K., Assistant Surgeon. Continued on duty at the plague laboratory, San Francisco, Cal.

Gorman, P. J., Assistant Surgeon. Relieved from duty at the Marine Hospital, Chicago, Ill., and ordered to report to the commanding officer, Coast Guard cutter *Tampa.*

Grimm, R. M., Passed Assistant Surgeon. Bureau letter dated September 28, 1916, amended to read "nine days' leave of absence from October 16, 1916."

Harrison, Walter T., Assistant Surgeon. Ordered to report for duty at San Francisco Quarantine Station, Angel Island, Cal.

Hurley, J. R., Passed Assistant Surgeon. Assigned to duty in the Bureau of Medicine and Surgery, Washington, D. C., under Assistant Surgeon General W. C. Rucker.

Ivey, R. R., Assistant Surgeon. Detached from the New York Division of the Coast Guard; ordered to report at Barge Office, New York, N. Y., for duty in connection with the physical examination of applicants for enlistment.

Leake, J. P., Passed Assistant Surgeon. Ordered to proceed to Middlesex County, Va., to investigate the occurrence of cases of poliomyelitis.

Lumsden, L. L., Surgeon. Ordered to proceed to Carrollton, Ga., to make a preliminary sanitary survey of that town.

McMullen, John, Surgeon. Will deliver an address on trachoma at the annual meeting of the Southern Medical Association at Atlanta, Ga., November 13-16, 1916.

Motter, Murray G., Technical Assistant. Will deliver an address on the Public Health Service at Columbia, Pa., November 17, 1916.

Murray, V. B., Assistant Surgeon. Relieved from duty at the Marine Hospital, San Francisco, Cal., and ordered to report to commanding officer, Coast Guard cutter *McCulloch,* for duty.

Oakley, J. H., Surgeon. Granted four days' leave of absence from November 10, 1916.

Prather, J. J., Assistant Surgeon. Ordered to proceed to Mineola, L. I., for a survey of mental and physical conditions of groups of school children.

Perry, J. C., Senior Surgeon. Relieved from duty as chairman of the board convened at Ellis Island, November 13, 1916.

Reichard, J. D., Assistant Surgeon. Granted fourteen days' leave of absence from October 30, 1916.

Ridlon, J. R., Passed Assistant Surgeon. Granted one month and ten days' leave of absence from October 29, 1916.

Rucker, W. C., Assistant Surgeon General. Ordered to represent the Service at the annual convocation of the American College of Surgeons at Philadelphia, Pa., October 27, 1916.

Sprague, E. K., Surgeon. Detailed as chairman of a board convened at Ellis Island, November 13, 1916, *vice* Senior Surgeon J. C. Perry, relieved.

Wagenbach, W. F., Assistant Surgeon. Continued on duty at the Marine Hospital, St. Louis, Mo.

Warren, B. S., Surgeon. Will deliver an address on sickness insurance at the annual meeting of the Southern Medical Association, Atlanta, Ga., November 13-16, 1916.

Worley, J. F., Assistant Surgeon. Relieved from duty on Coast Guard cutter *McCulloch*, and will return to station, Marine Hospital, San Francisco.

Wynne, R. E., Assistant Surgeon. Granted three days' leave of absence en route to Stapleton, N. Y., from November 2, 1916.

Appointments.

Dr. Walter Trousdale Harrison, Dr. Charles Armstrong, Dr. Rolla Eugene Dyer, Dr. Justin Keyser Fuller, Dr. William Frederick Wagenbach, and Dr. Meade Castleton Edmunds have been appointed and commissioned as assistant surgeons from October 20, 1916.

Boards Convened.

Boards of cimmissioned medical officers convened for the physical examination for promotion of certain officers of the Coast Guard, November 6, 1916, as follows: Washington, D. C., detail for the board, Assistant Surgeon General W. G. Stimpson, chairman; Passed Assistant Surgeon W. F. Draper, recorder. Philadelphia, detail for the board, Senior Surgeon Fairfax Irwin, chairman; Assistant Surgeon Liston Paine, recorder. Baltimore, detail for the board, Surgeon C. W. Vogel, chairman; Assistant Surgeon Joseph D. Stout, recorder.

Boards of commissioned medical officers convened November 13, 1916, to conduct the examinations of applicants for appointment as assistant surgeon as follows: Ellis Island, N. Y., detail for the board, Senior Surgeon J. C. Perry, chairman; Passed Assistant Surgeon E. H. Mullan, recorder. Chicago, detail for the board, Surgeon J. O. Cobb, chairman; Assistant Surgeon H. C. Yarbrough, recorder. Cincinnati, detail for the board, Passed Assistant Surgeon W. H. Frost, chairman; Passed Assistant Surgeon Paul Preble, recorder. New Orleans, detail for the board, Passed Assistant Surgeon Friench Simpson, chairman; Assistant Surgeon S. L. Christian, recorder.

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the two weeks ending October 28, 1916:

Allen, A. H., Passed Assistant Surgeon. Detached from the *Texas* and ordered to duty on the *Louisiana*.

Berryhill, T. A., Medical Director. Detached from duty in the Great Lakes Hospital, Ill., and ordered to the Mare Island Hospital, Cal., for duty.

Bowman, F. H., Assistant Surgeon. Ordered to the *Colorado* for duty.

Connor, W. H., Passed Assistant Surgeon. Detached from the *Kansas* and ordered to the *Olympia*.

Curtis, L. W., Medical Director. Detached from the Newport Hospital and ordered to the Great Lakes Hospital, Ill., for duty.

Gates, M. F., Medical Director. Detached from the Mare Island Hospital and ordered to the Newport Hospital.

Giltner, H. A., Acting Assistant Surgeon. Appointed an acting assistant surgeon from October 21, 1916; ordered to duty at the Navy Recruiting Station, Parkersburg, W. Va.

Hart, S. D., Passed Assistant Surgeon. Detached from duty at the Newport Training Station and ordered to the *Maumee* for duty.

Kelley, H. L., Passed Assistant Surgeon. Ordered to command the Naval Hospital, Port Royal, S. C.

Ledbetter, P. B., Passed Assistant Surgeon. Detached from duty at the Naval Hospital, Las Animas, and ordered to the Training Station, Great Lakes, Ill.

Lee, E. K., Assistant Surgeon, Medical Reserve Corps. Commissioned an assistant surgeon in the Medical Reserve Corps from September 18, 1916.

Reed, T. W., Passed Assistant Surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the Asiatic Station, via November transport, for duty.

Rennie, W. H., Surgeon. Resignation accepted, effective November 1, 1916.

Schmidt, L. M., Passed Assistant Surgeon. Detached from the *Louisiana* and ordered to the Norfolk Hospital for duty.

Torrence, R. A., Assistant Surgeon. Ordered to the *Texas* for duty.

Waterhouse, R. M., Assistant Surgeon. Ordered to the *Melville* for duty.

Whiteside, L. C., Passed Assistant Surgeon. Ordered to the Las Animas Hospital for duty.

Casualty.

Surgeon J. H. Holloway, retired, died at Albuquerque, New Mexico, August 2, 1916.

Births, Marriages, and Deaths

Married.

Clark-Starkey.—In Newtonville, Mass., on Wednesday, October 25th, Dr. Frank Robinson Clark, and Miss Emily Jane Starkey.

Kimberlin-Bradley.—In Alameda, Cal., on Thursday, October 19th, Dr. Lester O. Kimberlin, of San Francisco, and Miss Gladys L. Bradley.

McCartney-Mitchell.—In Littleton, Colo., on Tuesday, October 17th, Dr. Frank M. McCartney, of Denver, and Miss Elizabeth M. Mitchell, of Denver.

Myers-Goeltz.—In San Francisco, Cal., on Wednesday, October 18th, Dr. Mark C. Meyers, of San Francisco, and Miss Louise A. Goeltz, of New York.

Wood-Corey.—In Hartford, Conn., on Wednesday, October 25th, Dr. Floyd Alberti Weed and Miss Marguerite Lucille Corey.

Died.

Abbott.—In Bethel, Ohio, on Sunday, October 22d, Dr. Julius Abbott, aged seventy-one years.

Borland.—In Elizabethtown, Pa., on Friday, October 20th, Dr. John Borland, aged eighty-one years.

Connell.—In Fond du Lac, Wis., on Saturday, October 21st, Dr. James P. Connell, aged fifty-five years.

Coyle.—In Nashville, Tenn., on Saturday, October 21st, Dr. James M. Coyle, aged sixty-seven years.

Drake.—In Brooklyn, N. Y., on Sunday, October 29th, Dr. Emory G. Drake, aged sixty-four years.

Dukeman.—In Los Angeles, Cal., on Monday, October 23rd, Dr. William H. Dukeman, aged sixty-one years.

Frierson.—In Shelbyville, Tenn., on Saturday, October 21st, Dr. William G. Frierson, aged forty-one years.

Hayward.—In Mt. Clemens, Mich., on Wednesday, October 25th, Dr. Abner Hayward, aged eighty-six years.

Henderson.—In Sarnia, Ont., on Wednesday, October 25th, Dr. William A. Henderson, aged forty-five years.

Jewett.—In Providence, R. I., on Tuesday, October 24th, Dr. Franklin S. Jewett, aged fifty-nine years.

Long.—In New York, N. Y., on Sunday, October 22nd, Dr. Henry D. Long, of Greensburg, Pa., aged forty years.

Maine.—In Springfield, Mass., on Sunday, October 29th, Dr. Frank D. Maine, aged seventy-seven years.

McKee.—In Quito, Ecuador, South America, on Friday, October 20th, Dr. Edward Sydney McKee, of Cincinnati, Ohio, aged sixty-two years.

McMann.—In Gardner, Ill., on Tuesday, October 24th, Dr. William W. McMann.

Plumbe.—In Chicago, Ill., on Sunday, October 22nd, Dr. Edward G. Plumbe, of Dubuque, Iowa, aged seventy-eight years.

Saltenberger.—In Millstadt Township, Pa., on Saturday, October 21st, Dr. John Saltenberger, aged seventy-eight years.

Webster.—In Siloam Springs, on Saturday, October 21st, Dr. J. W. Webster, aged sixty-nine years.

New York Medical Journal

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Original Communications

BIRTH CONTROL,*

Its Medical, Social, Economic, and Moral Aspects.

BY S. ADOLPHUS KNOPF, M. D.,
New York,

Professor of Medicine, Department of Phthisiotherapy, New York Post-Graduate Medical School and Hospital; Visiting Physician, Riverside Hospital-Sanatorium for the Consumptive Poor of the Health Department of the City of New York.

When at this very moment across the sea in Europe the best blood of the nations which were heretofore considered the most enlightened, cultured, and civilized, is daily being shed; and hundreds of thousands of young men in the prime of life are sacrificed to the Moloch of war, it must seem a hazardous undertaking to talk of birth control, which means artificial birth limitation, and by some superficial observers is designated as race suicide. I trust, however, that before I arrive at the end of my paper, I will have convinced you that the object of my appeal is not a plea for reducing the population, but for increasing its vigor by reducing the number of the physically, mentally, and morally unfit, and adding to the number of physically strong, mentally sound, and more highly developed men and women.

In accordance with the program outlined, I will deal first with the medical and sanitary aspects of the subject. No one will deny that we occasionally come across a family well to do and intelligent where the parents, by reason of unusual vigor, and particularly by reason of the physical strength of the mother, have been able to rear a large number of children. In some instances all have survived and have grown up to be healthy and vigorous. But these instances are rare, and are becoming more and more so every day. On the other hand, large families, that is to say, numerous children as the issue of one couple, among the ignorant, the poor, the underfed and badly housed, the tuberculous, the degenerate, the alcoholics, the vicious, and even the mentally defective, are an every day spectacle. It is well known to every general practitioner whose field of activity lies among the poor and the above mentioned classes, that the infant mortality among these is very great. The same holds true of the mortality of school children coming from large families among these classes of the population.

Concerning tuberculosis, with which, by reason of many years' experience, I am, perhaps, more familiar than with other medical and social diseases, let me relate the interesting fact that a carefully taken history of many cases has revealed to me that with surprising regularity the tuberculous subject, when he or she comes from a large family, is one of the later born children—the fifth, sixth, seventh, eighth, ninth, etc. The explanation of this phenomenon is obvious. When parents are older, and particularly when the mother is worn out by frequent pregnancies and often weakened because obliged to work in mill, factory, or workshop up to the very day of confinement, the child will come into the world with lessened vitality, its main inheritance being a physiological poverty. This systemic poverty will leave it less resistant, not only to tuberculosis, but to all other diseases of infancy and childhood as well. The morbidity and mortality among these children is greatest when the children are most numerous in one family.

Miss Emma Duke, in the third of the Infant Mortality Series, gives the result of a field study in Johnstown, Pa., based on the births of one calendar year (1911). The inspection was made of the 1911 babies in 1913, so that even the last born baby included had reached its first birthday—or rather had had a chance to reach its first birthday; many of them were dead long before that day. The following is Miss Duke's table showing the infant mortality rate for all children borne by married mothers in Johnstown during that year:

Deaths per 1,000 births in	
Families of 1 and 2 children	108.5
Families of 3 and 4 children	126.0
Families of 5 and 6 children	152.8
Families of 7 and 8 children	176.4
Families of 9 and more children	191.9

Dr. Alice Hamilton, of the Memorial Institute for Infectious Diseases, Hull House, Chicago, made a study of 1,600 families in the neighborhood of the settlement The following is the table of the child mortality rate of the 1,600 families as published by Doctor Hamilton:[1]

Deaths per 1,000 births in	
Families of 4 children and less,	118
Families of 6 children,	267
Families of 7 children,	280
Families of 8 children,	291
Families of 9 children and more,	303

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*Address delivered by invitation at the forty-fourth annual meeting of the American Public Health Association, Cincinnati, October 27, 1916.

[1] *Bulletin of the American Academy of Medicine*, May, 1910; and Miss Mary Alden Hopkins in *Harper's Weekly*.

Many families were found of thirteen, fourteen, and even sixteen members. The largest of all was that of an Italian woman who had borne twenty-two and raised two. The small families of every nationality had a lower mortality rate than the large families of the same nationality. The Jewish families of four and less had the astonishingly low mortality rate of eighty-one per 1,000, while in families of eight and less, the rate rose to 260 per 1,000.

The larger the family, the more congested will be the quarters they live in and the more unsanitary will be the environment. Last, but not least, with the increase of the family there is by no means a corresponding increase of the earning capacity of the father or mother, and as a result malnutrition and insufficient clothing enter as factors to predispose to tuberculosis or cause an already existing latent tuberculosis to become active.

What is the result of this condition in relation to tuberculosis—one single disease? Out of the 200,000 annual deaths from tuberculosis in the United States, 50,000 are children. Of the economic loss resulting from these early deaths I will speak later on, but in continuing along the medical and sanitary lines of my subject, I must call your attention to the fact that according to some authors sixty-five per cent. of women afflicted with tuberculosis, even when only in the relatively early and curable stages, die as a result of pregnancy, which could have been avoided and their lives saved had they but known the means of prevention.[2] Sometimes we succeed in saving such a mother by a timely and careful emptying of the uterus. But an abortion, even scientifically carried out and resorted to only with the view of saving the life of the mother, is never desirable, either for the consultant to advise, nor for the gynecologist or obstetrician to perform; and who will dare to say, even under the best conditions, that this operation is devoid of danger!

What is the explanation and what are the consequences from the point of view of sanitation of the death of 50,000 tuberculous children? They have become infected mostly from tuberculous parents, or tuberculous boarders who had to be taken into the family to help pay the rent. In the crowded homes of the poor there was neither sunlight, air, nor food enough to cure the sufferers, and before they died they became disseminators of the disease. Nearly all of the infectious and communicable diseases are more prevalent in the congested, overcrowded homes of the poor, particularly of those with large families. The propagation of syphilis and gonorrhea by contact infection, other than sexual, can be avoided in the homes of the well to do by enlightenment and the conscientiousness of the afflicted. They are almost invariably communicated to the innocent in the homes of the ignorant and poor. Gonorrheal infection transmitted from parent to child or from one infected member of the family to the other, is responsible, more than anything else, for the 57,272 blind persons in the United States.[3]

The great syphilographer, Fournier, left us the following irrefutable statistical evidences of the seriousness of syphilitic transmission. As a result of paternal transmission there is a morbidity of thirty-seven per cent. and a mortality of twenty-eight per cent.; maternal transmission resulted in eighty-four per cent. morbidity and sixty per cent. mortality; and the combined transmissions are no less than ninety per cent, of morbidity and 68.5 per cent. mortality.[4]

I venture to state here that would or could a syphilitic or gonorrheal parent be taught how to prevent conception during the acute and infectious stages of his or her disease, there would certainly be less inherited syphilis, less blindness from gonorrheal infection; in other words, fewer unfortunate children in this world handicapped for life and a burden to the community.

That insanity, idiocy, epilepsy, and alcoholic predisposition are often transmitted from parent to child is now universally admitted, and corroborated by everyday experience, and by an abundance of statistics. Countless millions of dollars are expended for the maintenance of these mentally unfit. The State of New York alone spends $2,000,000 annually for the care of its insane. Whether sterilization of these people would be the best remedy is a question still open for discussion. The constitutionality of the procedure is doubted by some of our legal authorities. Segregation is resorted to in the meantime with more or less rigor according to State laws. Every year, however, many of the patients who had been committed to institutions for the treatment of mental disorders are discharged as cured. They are allowed to procreate their kind. Would it not be an economic saving if at least the persons whose intelligence has been restored were instructed in the prevention of bringing into the world children who are most likely to be tainted mentally and to become a burden to the community?

The economic loss to our commonwealth from bringing into this world thousands of children mentally and physically crippled for life is beyond calculation. But considering tuberculosis we have been able to calculate at least approximately what it costs. I have stated that 50,000 children die annually from tuberculosis in the United States. Figuring the average length of life of these children to be seven and a half years, and their cost to the community as only $200 per annum, this represents a loss of $75,000,000. Such children have died without having been able to give any return to their parents or to the community. Who will dare to calculate in dollars and cents the loss which has accrued to the community because so many mothers died of tuberculosis when an avoidable pregnancy was added to a slight tuberculous ailment in a curable stage? Who will dare to estimate the cost of the loss of an equally large or perhaps larger number of mothers afflicted with serious cardiac or renal diseases, or frail or ill from other causes, whose lives could have been prolonged had an additional pregnancy not aggravated their condition?

Of the many mothers, married and unmarried, who have become chronic invalids and even lost their lives as a result of having resorted to abortive measures in order to rid themselves of an unwelcome child, no statistics are available. If they were they would be an appalling evidence of the great danger of such criminal procedures, and would certainly show the advantage of a more enlightened attitude regarding the means of contraception, at least for the married women who are enfeebled or diseased.

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[2] C. A. Credi-Hoerder: *Tuberkulose und Mutterschaft*, Berlin, J. Kraeger, 1915.

[3] United States Census, 1910.

[4] Berkowitz: Late Congenital Syphilis, New York Medical Journal, June 17, 1915.

The many diseases I have mentioned whereby children in large families, and mothers because of too frequent pregnancies are carried off to an early grave, are not limited to the poor. In regard to economics, the middle class suffers also. Thus, if even a relatively well to do family begins to increase out of proportion to the earnings of the father, the family will soon be in want and approaching poverty. Less and less good food, less sanitary housing, less care of the children, and more sickness will almost inevitably result. Every sickness or death of child or adult has increased the expenses of the family. There is the doctor's bill, the druggist's bill, and last, but not least, that of the undertaker. A grave has to be purchased. If there have been savings, they are gradually swallowed up, and debts are often contracted for the sake of a decent funeral.

Next to the medical and sanitary comes the physiological aspect of birth control, which can be summarized in a very few sentences. The average mother with two, three, or four children, not having arrived in too rapid succession, say, with two or three year intervals, is physiologically, that is to say, physically and mentally, stronger and better equipped to cope with life's problems than the worn out and weakened mother whose life is shortened by frequent and numerous pregnancies.

What is the physiological effect of voluntary artificial restriction of the birth rate of the offspring? In Holland, where the medical and legal professions have openly approved and helped to extend artificial restriction of the birth rate, the health of the people at large, as shown by its general death rate, has improved faster than in any other country in the world, and at the recent Eugenics Congress it was stated that the stature of the Dutch people was increasing more rapidly than that of any other country—the increase being no less than four inches within the last fifty years. According to the *Official Statistical Year Book of the Netherlands,* the proportion of young men enlisted for the army over five feet seven inches in height has increased from 24.5 to 47.5 per cent. since 1865, while the proportion below five feet two and a half inches in height has fallen from twenty-five to less than eight per cent.[5]

In that enlightened country teaching by the medical profession of the most hygienic methods of birth limitation has enabled the poor to have small families, which they could raise to be physically and morally better equipped than formerly, and what is most interesting to observe is that, whether as a result of this or for some other reason, the families among the more well to do are not nearly as small as in other countries.

In Australia and New Zealand, the means of artificial restriction are in free circulation and the restriction of families is almost universal. Yet these two English colonies have furnished to their mother country in these hours of struggle efficient and physically and mentally well equipped regiments. The soldiers of Australia and New Zealand have shown themselves brave and fearless fighters, and certainly equal, if not superior, as far as physical endurance is concerned, to their English brethren. In the latter country, it is well known, birth control is frowned upon by the legal, any by nearly all the ecclesiastical authorities.

And what of France? Before the present war, Drysdale, in his *Small Family System,* very aptly said: "It has become the fashion to speak of the depravity of France, of her alcoholism, of her disregard for law and order, and of her terrible *crimes passionnels,* and to ascribe to them the falling birth rate. If this was the case, it is obvious that these evils would be most intense where the process had gone furthest, i. e., in the cantons of the lowest birth rate (the French islands of Ré and Oéron)." "The passions of the inhabitants of these islands are very innocent; they are reading and dancing. The dancing, always decent, is the preparation for marriage; illegitimate births are very rare. One could not imagine manners more pleasant or more honorable. Nevertheless the birth rate of these islands is among the lowest. It is because every one there is more or less of a proprietor. Each person has some property to protect; each is ambitious for his children." But we have the authority of Doctor Bertillon, the great French statistician, that it is just in the cantons of these islands that the greatest moral improvement has taken place, and that where the French have obeyed the command to increase and multiply, there alcoholism and crime abound.

Let me quote briefly from an editorial article on contraception which appeared in the *Medical Times* for April, 1916: "France today is presenting her splendid spectacle of utter efficiency to the world because only the fittest of her people have survived, and the chief factor has admittedly been contraception. Surely we have heard the last of the croakers about decadent France. Holland would give an equally good account of herself if the need should arise and for the same reason."

We have already touched in part on the economic cost growing into the millions which accrues annually to the nation because of a high birth rate concomitant with a high infant and child mortality rate. Well may we ask the question whether disease and the deaths of thousands of women and children cannot be prevented by an enlightened attitude toward the question of birth control. Why is it not done? If the millions of dollars expended uselessly, reverted to the nation's wealth, would they not add immeasurably to the health and economic happiness of the nation at large?

And now we come to the social or sociological aspect of our topic, so closely interwoven with economics. That the social and moral life of a smaller family, where the father earns enough to support wife and children, and where the mother may devote her time to the care of them, and where neither she nor the children must go out to help in the support of the family, is superior to that of a family with a large number of children where the mother and often the older children must slave, does not permit discussion. The larger the family of the poor, the more child labor, the more disruption and irregularity, and the more frequently we find a lower standard of life and morals in general.

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[5] C. V. Drysdale: *The Small Family System; Is It Injurious or Immoral?* New York, B. W. Huebsch.

The records of our charities and benevolent societies amply prove that, as a rule, the larger the families are that apply for relief, the greater is their distress.

In answer to a letter containing suggestions on this topic, Doctor Foote, president of the New York Association for Improving the Condition of the Poor, very pertinently said: "The race suicide theory which has been so much exploited of late, is an immense encouragement to the large family idea, and the illiterate are hardly to be blamed if they are misled upon this question. The subject that you discuss is one that is worthy of serious consideration, and that has in the past been treated with an excess of sentiment."

That judicious birth control does not mean race suicide, but on the contrary race preservation, may best be shown by the reports from Holland. The average birth rate in the three principal cities of Holland was 33.7 per 1,000 in 1881, when birth control clinics were started. In 1912, it had fallen to 25.3 per 1,000. The general death rate, however, had dropped in the same period from 24.2 to 11.1 per 1,000, or to less than half, while the two thirds reduction in the mortality of children under one year of age—from 209 to seventy per 1,000 living births—is even more significant.[6]

As a final evidence of the social and economic value of imparting information concerning family limitation, permit me to quote from a personal letter from the great pioneer of this humanitarian movement, Dr. J. Rutgers, honorable secretary of the Neo-Malthusian League of The Hague. The league has been in existence since 1888, and received its legal sanction by a royal decree, January 30, 1895. It has 6,000 contributing members; all information is given gratuitously. As a result of this league in Holland we do not see children dressed in rags as in former years prior to the starting of this movement. To use the venerable secretary's own words:

> All children you now see are suitably dressed; they look now as neat as formerly only the children of the village clergyman did. In the families of the laborers there is now a better personal and general hygiene, a finer moral and intellectual development. All this has become possible by limitation in the number of children in these families. It may be that now and then this preventive teaching has caused illicit intercourse, but on the whole morality is now on a much higher level, and mercenary prostitution, with its demoralizing consequences and propagation of contagious diseases, is on the decline. The best test (the only possible mathematical test) of our moral, physiological, and financial progress, is the constant increase in longevity of our population. From 1890 to 1899 it was 46.20; from 1900 to 1909 it was fifty-one years. Such a rise cannot be equalled in any other country, except in Scandinavia, where birth limitation was preached long before it was in Holland. None of the dreadful consequences feared by the advocates of clericalism, militarism, and conservation have occurred. In spite of our low birth rate, the population in our country is rising faster than ever before, simply because it is concomitant with a greater economic improvement and better [illegible] hygiene.

To verify these figures statistically, Doctor Rutgers refers to Drysdale's[7] diagrams. The good doctor closes his splendid letter by saying:

> One must have been a family physician for twenty-five years like myself in a large city (Rotterdam) to appreciate the blessings of conscious motherhood resulting in the better care of children and the higher moral standard. And all these blessings are taken away from you by your government's peculiar laws, made to please the Puritans.

To these latter well meaning people and those similarly minded who fear race suicide, particularly a decline of the American stock, I strongly recommend the reading of that splendid address of Professor Charles A. L. Reed, A. M., M. D., former president of the American Medical Association, entitled *The American Family*. In the chapter on The Outlook of the American Family, he pertinently says: "We see in a declining birth rate only a natural and evolutional adjustment of race to environment—an adjustment that insures rather than menaces the perpetuation of our kind under favoring conditions." And concerning underpopulation in general, this distinguished writer says in the same address: "It seems, indeed, to the careful student that the danger to the American family today and still more in the future lies in the direction of overpopulation rather than underpopulation."

According to Mulhall and Reed, the increase in population from 1820 to 1890 was 650 per cent. in the United States (only twenty-five per cent. in the United Kingdom and less than 100 per cent. in France and Belgium). The rate of increase in this country has been vastly accelerated in the twenty-five years that have since elapsed. Our population today of over 100,000,000 has been doubling itself on an average of once in less than twenty-five years since 1790, and it will probably continue to do so in the future. May I say in passing, that in the State of New York we have observed the alarming phenomenon that the proportional increase among the insane is double that among the sane population?

And now I approach the last and most important phase of my subject, namely, the moral, which also means to me the religious, phase of this great problem. Let me say to you, my colleagues, that I approach it with awe and reverence, for I believe I fully understand the import of it.

A quarter of a century of practice among the tuberculous, the rich and the poor, in palatial homes, humble cottages, dark and dreary tenements, and in overcrowded hospitals, has shown me enough to bring to my mind the utter immorality of thoughtless procreation, and my experience has been limited to this one disease of the masses. The tears and sufferings I have witnessed when I have had to decline help because it was too late to prevent the despair of the poor, frail mother at the prospect of another inevitable confinement, and later the sight of a puny babe destined to disease, poverty, and misery, has made me take the stand I am taking today. I am doing it after profound reflection, and I am fully aware of the opposition I am bound to meet. But in my early career as an antituberculosis crusader, I became accustomed to the fate of those who venture on new and heretofore untrodden paths of progress.

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[6] *Birth Control News*, Cleveland, Birth Control League of Ohio, [illegible] 1

[7] C. W. Drysdale, D. Sc.: *Diagrams of International Vital Statistics with Description in English and Esperanto, together with a Table of Correlation Coefficients between Death and Birth rates, etc.*, London, Wm. Bell, 162 Drury Lane, W. C., [illegible] 12

What would the moral outcome of birth control, or let us rather say, rational family limitation be, if taught judiciously to those seeking and needing the advice? Millions of unborn children would be saved by contraception from the curse of handicapped existence as members of a family struggling with poverty or disease.

There are hundreds of young men and women, physically and morally strong, who would gladly enter wedlock if they knew that they could restrict their family to such an extent as to raise a few children well. But their fear of a large family retards, if it does not prevent their happiness, and *ipso facto* the procreation of a better and stronger manhood and womanhood. The woman withers away in sorrowful maidenhood and the man whose sexual instincts are often so strong that he cannot refrain, seeks relief in association with unfortunate and often diseased sisters, called prostitutes. The result is a propagation of venereal diseases with all its dire consequences. To an audience composed of physicians and sanitarians I need not say what these consequences are. They involve sterility, physical and mental suffering in the man, or sterility in both man and woman, and according to the severity of the infection—abortion, premature labor, a dead child, or one lastingly tainted with disease.

At times disease does not enter as a factor into the tragedy, but the result is a girl mother, a blasted life, for our double standard of morality recognizes "sin" in our sisters only, not in ourselves. Of her, compassionate tongues only say she loved not wisely, but too well; of him nothing is said at all. He is spotless and virtuous in the eyes of the world and can go through life as if he had never sinned and been responsible for a blasted life or two.

Even our moralists must acknowledge that by an early marriage with a man of her choice, enabled by understanding to limit the number of children, many a girl would be saved from so called dishonor, and in many instances from prostitution One of the strongest arguments of our moralists and purists is that the knowledge of contraception would lead the young to enter upon forbidden sexual relations and become degraded morally. Granted that this may happen in a number of instances, the benefit derived from a diminution of venereal diseases, in a greater number of happy and successful marriages among the younger people, fewer but better and healthier offspring instead of an unrestricted procreation of the underfed, the tuberculous, the alcoholic, the degenerate, the feeble minded and insane, would more than outweigh the isolated instances of sexual intercourse prior to marriage.

After all is said, I feel impelled to plead with all earnestness for the abolishment of the State and Federal laws which make the imparting of knowledge for contraception a criminal offense. I plead for the establishment of free clinics, directed by regular physicians of high repute, remunerated by city or State, who are competent to give information as to birth limitation in cases where they deem the giving of such instructions advisable.

As to the urgency and the wisdom of efforts to change these laws,[8] I am sure that you will be willing to listen to the words of two of our greatest American physicians; first, to those of our venerable Nestor of the medical profession, Professor A. Jacobi, of New York, ex-president of the American Medical Association; secondly, to Professor Hermann M. Biggs, of New York, my own beloved teacher, the distinguished sanitarian and pioneer in the modern warfare against tuberculosis. In his preface to Dr. William J. Robinson's book, *The Limitation of Offspring*, Doctor Jacobi says: "Our Federal and State laws on the subject of prevention of conception are grievously wrong and unjust. It is important that these laws be repealed at the earliest possible moment; it is important that useful teaching be not crippled, that personal freedom be not interfered with, that the independence of married couples be protected, that families be safeguarded in regard to health and comfort, and that the future children of the nation be prepared for competent and comfortable citizenship."

Dr. Hermann M. Biggs, prior to the recent dismissal of the case by Judge Dayton of the Federal Court against Mrs. Sanger for sending information about birth control through the mails, gave to the press the following statement: "I am strongly of the opinion that the present laws in regard to the giving out of information in relation to the governing of infant control are unwise and should be revised. There can be no question in the mind of any one familiar with the facts that the unrestricted propagation of the mentally and physically unfit as legally encouraged at the present time is coming to be a serious menace to civilization, and constitutes a great drain on our economic resources. This is my personal view."

To the foregoing expressions of opinions let me add what one of our most distinguished jurists, the Honorable Judge William H. Wadhams, of the Court of General Sessions, wrote me concerning these laws:

> In order to save the State from the burden of large families, where there is no possibility of their being supported and where the neglect which follows often results in their becoming State charges, not only because they are mentally, but often physically unfit to bear the burden of

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[8] United States Criminal Code, Section 211 (Act of March 4, 1909, Chapter 321, Section 211, U. S. Statutes at Large, xxxv, 1, page 1,088 *et seq.*), *New York Statute Book* (Section 1142 of the Penal Law). The Federal law prescribed a fine of $5,000 or imprisonment of not more than five years, or both, for any one using the mails to give advice for producing abortion or preventing conception. The New York State law, above mentioned, makes the giving of a recipe, drug, or medicine for the prevention of conception or for causing unlawful abortion a misdemeanor punishable with no less than ten days nor more than one year imprisonment or a fine of not less than $50 nor more than $1,000, or both, fine and imprisonment for each offense. It will be noticed that both laws make the giving of advice for the prevention of conception as great an offense as producing abortion. According to the New York State law, a "lawful" abortion is permitted and not punishable, but to prevent such abortion, always more or less dangerous to life, is not permitted and is punishable by law. In all medical colleges careful instruction is given how to perform the "lawful" abortion. All good textbooks on gynecology describe the operation as carefully as an amputation of the cervix or a hysterectomy; but concerning the advice to give, for example, to the poor tuberculous mother who has had her uterus emptied once so that she may not be obliged to submit to such a "lawful" operation again, our teachers of gynecology and our textbooks dare not say a word.

> life, I am of the opinion that there should be some proper birth regulation after a certain number of children have been born, and that, therefore, there should also be some modification of the laws with respect to the giving of information upon this subject. I think the sanitary, medical, social, economic, and moral status of the population would be improved by proper and more general information upon this subject.

Beside the letter from this eminent judicial authority and the strong expressions of opinion of A. Jacobi, M. D., and Hermann M. Biggs, M. D., I have been the recipient of communications from many leading physicians, divines, political economists, and sociologists, all agreeing with me that judicious birth control, under the highest ethical medical guidance, is a national necessity and that our present laws on the subject need urgent revision. For want of space I will mention only the following: Dr. John N. Hurty, secretary, Indiana State Board of Health; Dr. Godfrey R. Pisek, professor of diseases of children, New York Post-Graduate Medical School and Hospital; Dr. J. W. Trask, of Washington, D. C.; Dr. Lydia Allen de Vilbiss, formerly of the New York State Department of Health, now in charge of the division of Child Hygiene of the State Board of Kansas; Dr. Ira S. Wile, editor of *Medical Review of Reviews*, New York; Dr. John A. Wyeth, professor of surgery and president of the New York Polyclinic Medical School and Hospital; ex-president of the American Medical Association and New York Academy of Medicine; Frank Crane, D. D., formerly pastor of the Union Congregational Church of Worcester, Mass., now well known writer of leading editorial articles; Percy S. Grant, D. D., rector, Protestant Episcopal Church of the Ascension of New York city; Frank Oliver Hall, D. D., minister of the Church of the Divine Paternity, New York city; John Haynes Holmes, M. A., Unitarian Church of the Messiah, New York city; Stephen S. Wise, D. D., of the Free Synagogue, New York city; James A. Field, Ph. D., of the University of Chicago; Irving Fisher, Ph. D., professor of political economy of Yale University, and chairman of the Hygiene Reference Board of the Life Extension Institute; Franklin H. Giddings, Ph. D., professor of political science, Columbia University; William H. Allen, Ph. D., director of the Institute for Public Service of New York City; Hon. Homer Folks, former commissioner of charities of New York, now secretary of the State Charities Aid Association of New York; Miss Lillian D. Wald, founder of the Henry Street Settlement and originator of the work of the School Nurse in New York; A. Melville Dewey, educator and president of the National Society for Efficiency.

I must not fail to say a word about our Catholic friends and those of other faiths who are so strongly opposed to teaching or making public the means of contraception and limiting family increase. Let us have no word of bitterness or reproach because millions of devout Catholics hold these views. Let us not antagonize either priest or Catholic layman, who have a right to their convictions as much as we have to ours. If an enlightened Government will at last permit contraception to be taught where it is likely to be productive of the most good, when in years to come we can show our Catholic brethren that because of birth control resulting in a rational family limitation, we have decreased poverty, disease, and crime, and have produced a better generation of men and women, better equipped physically, mentally, and morally for life's mission—in short, men worthy to be called true citizens of a great republic—then I am sure our Catholic friends will see that after all we have not been wrong, and then they may be willing to follow along the same lines of teaching rational birth control.

I leave it to this distinguished body of physicians and sanitarians either to send a memorandum to the Federal and State governments setting forth the reason for a change of these laws, or, if it is wiser, to form a committee to study the best and most practical suggestions for Federal or State legislatures to act upon.

Dr. William L. Holt, writing on birth control as a social necessity and duty, says: "Conscious and limited procreation is dictated by love and intelligence; it improves the race. Unconscious, irresponsible procreation produces domestic misery, and half starved children. Conscious procreation of human lives elevates man to the gods. Unconscious procreation degrades man to the level of brutes."

May I be permitted to close with what I am free to confess is my innermost conviction? I believe in birth control, that is to say, birth limitation, based on medical, sanitary, ethical, moral, and economic reasons. I believe in it because with the aid of it man and woman can decide when to have a child, work and prepare for its arrival, welcome it as the fulfilment of their heart's desire, watch over it, tenderly care for and educate it, and raise it to be what every child should be destined to be—a being happy, healthy, strong in mind, body, and soul. If we but use our God-given sense to regulate the affairs of Government and family wisely and economically, this great world of ours will be one of plenty and beauty where the good will predominate over the evil, and the children born in it will become men and women only a little lower than the angels—images of their Creator.

16 West Ninety-fifth Street.

COMPRESSION FRACTURE OF THE FIFTH LUMBAR VERTEBRA.

By James K. Young, M. D., F. A. C. S.,
Philadelphia,

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Much attention has recently been attracted to displacements of the sacroiliac synchondrosis, and to anatomical and pathological lesions of the lumbosacral and the sacroiliac articulations. Nevertheless, compression or compression fracture, especially of the fifth lumbar vertebra, has not received the attention that it merits. With the exception of the excellent observations of Campbell, Henderson, Sever, and Adams, and the elaborate studies of Hartwell, the literature on the subject is meagre.

Etiology. Compression of the fifth lumbar vertebra is usually the result of a fall, the patient landing violently upon the buttocks in a sitting position, the body being flexed. If the strain is too great for the intervertebral discs, compression results. In this respect it differs from compression fracture in other parts of the vertebræ, which may be due to direct violence as well as to hyperflexion. The position of the fifth lumbar vertebra makes it especially susceptible to such injury; below is a firm unyielding base, and above it must sustain the body weight.

Symptoms. The symptoms of compression are so well given by Hartwell that they need be only briefly repeated: Pain upon movement, local tenderness, protective spasms, limitation of motion, and absence of paraplegia. The x ray findings are all characteristic. If complicated by ligamentous injuries, the patient will have symptoms characteristic of railway spine, reflex spasm upon the slightest movement or touch, etc. If complicated by displacement of the sacroiliac synchondrosis, Kernig's sign may be elicited.

Pain. Pain in the lumbar region is constant and is increased upon any movement which shifts the superincumbent weight of the body. Sitting down or rising from a sitting position increases pain. Changes of position afford temporary relief. Local tenderness is not a characteristic sign, but is more apt to be observed in fracture of the transverse process. Limitation of motion from protective spasm is not a symptom of compression, but is due to ligamentous injury or fracture of the processes or arches and may be absent in compression of the bodies. It is not strange to find the absence of paraplegia or nerve pressure, since the calibre of the spinal canal is not affected. Scoliosis with the convexity toward the compressed side is a constant and important objective symptom. Later a secondary compensatory curve develops. If complicated by displacement of the sacroiliac synchondrosis, we discover Kernig's sign. In the writer's experience there is one symptom which should be emphasized, and that is shock, which is out of all proportion to the amount of injury. One patient was unconscious, with a loss of speech, and inability to stand or walk for a time, on account of the intense pain in the lumbosacral region.

Frequent changes of position have been mentioned. This same patient could sleep only from two to two and a half hours each night for a year following the injury, and then only in a sitting position.

The spinal deformity may be a primary lumbar scoliosis, or a secondary dorsal scoliosis.

Injury to spinal contents. In fractures and compression of the spine, synchronous injury to the cord has been considered a frequent and important sign in establishing a diagnosis. In injuries to the fifth lumbar vertebra greater damage can be borne by the lumbar and sacral nerves if, without subsequent paralysis, the cord itself is compressed and injured. The question naturally arises, Why is the cord not more frequently injured in this condition? The answer is best given by Jacobson:[1] "Being lodged (the cord) in the centre of the column, it occupies neutral ground in respect to forces which might cause fracture. For it is a law in mechanics that when a beam, as of timber, is exposed to breakage, and the force does not exceed the limits of the strength of the material, one division resists compression, another laceration of the particles, while the third between the two is in a negative condition." And so with the spine in cases of compression fracture, one segment, either anterior or posterior, will be exposed to compression, the other to laceration, and the intermediate portion, where the cord is situated, will be in a neutral state.

Disalignment of the spinous processes. This is an invaluable sign and one that is usually present. It is recognized by touch. The impact of the bodies results in a rotation of the spine at the site of the fracture. Below the seat of fracture the tips of the spinous processes may be palpated in a line, which is broken at the seat of fracture, where the tips of the spinous processes will be found to deviate greatly to one side or the other. Localized tenderness is a symptom of great importance, so much so that, when found over the spinal processes, or just lateral to them in the lumbar region, fracture of the spine should always be suspected until examination by the Röntgen rays. Movements of the back are limited and painful, but are no more emphasized than in numerous cases of hypertrophic arthritis.

Among symptoms to be noted are rectal pain and spasm. These have not been especially referred to by other writers of experience, but they form a part of the symptom complex of compression fracture of the fifth lumbar vertebra; but these are also prone to occur in other lesions in the vicinity, as displacement of the latter vertebra, rotation, etc. Paralysis of the sphincter has not been observed in the writer's experience.

X ray diagnosis. This is the final means of determining the presence of compression or compression fracture. In addition, the usual anteroposterior, lateral, and oblique views should be taken, and a detailed study of the region should be made to determine the presence or absence of fracture. The sacroiliac region should be carefully studied, as there is associated at times a displacement on one side. These injuries often go unrecognized for years until the correct diagnosis is established by the x rays. It is then often too late to accomplish much, and this is sufficient excuse for emphasizing the possibility of the existence of compression fracture of the spine. Stereoscopic views are also of some value. Indeed, these patients are often treated for years for suspected lesions of other parts, for instance, a dislocation of the kidney, oophoritis, endometritis, and spasm of the anus. In one patient, irregular menstruation had led to dilatation and curettage, and the removal of one ovary. I have observed an association between displacement of the sacroiliac synchondrosis and displacement of the sacrolumbar articulation, one relieving the strain of the other; the pubic symphysis also took part in mitigating the strain.

DIFFERENTIAL DIAGNOSIS.

A. From fractures of the transverse process of the fifth lumbar vertebra. In this injury we have symptoms of railway spine, but there is never scoliosis or lateral deviation.

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[1] Holmes: *System of Surgery*, i, 1883, p. 529.

B. From displacement of the ilium. In this condition there is a history of sudden onset, as when a patient is lifting in a strained position, with no history of traumatism, as in fracture. There may be also lateral deviation of the spine from the beginning of the affection. There is no localized tenderness, no disalignment of the vertebræ; the x rays reveal a displacement upward of the ilium.

C. Rotation of the lumbar vertebræ. In this condition there are lumbar scoliosis, spasm of the spinal muscles, and tenderness over the fifth lumbar vertebra. There are also nerve pressure pains radiating down the limbs, pain in the arms, and general disability.

D. Lateral deviation in Pott's disease. There is always in this disease a marked cyphosis, with occasional abscess formation. The spine deviates to one side from absorption and crushing of the vertebral body and there is marked rigidity from ankylosis at the seat of the disease. Occasionally paraplegia is present.

E. Rickets of the pelvis. In rhachitic deformity of the pelvis, there is often great lateral deviation of the spine in the lumbar and dorsal regions; but always a scoliosis compensatory in character. The pelvic diameters are greatly changed and there are other evidences of rickets in the extremities.

F. Malignant disease of the fifth lumbar vertebra or sacrum. These give excruciating pain in the spine, both local and radiating down the course of the nerves, through the lumbar and lumbosacral plexuses. There is some localized tenderness, and a palpable rounded, oval, bilateral mass, that can be confirmed only by an x ray examination and by laboratory methods, including the Wassermann reaction. Syphilis often occurs in this region and the symptoms are almost identical, except for the laboratory findings. The x ray appearances are quite similar.

G. Arthritis deformans of the lumbosacral articulation. This gives localized pain, stiffness, and rigidity of the spine and pain on motion. There is difficulty in lying down. The x ray examination reveals deposits with some bridging of the intervertebral spaces.

TREATMENT.

Early treatment consists in traction in bed, by the head and feet—the patient being upon a hard mattress, or lying in a body cast, like a Lorenz's shell, or, as it is sometimes called, *Stehbett*. After the symptoms subside, the patient should be fitted with a spinal brace, having lateral uprights and crutches under the arms.

The first three cases here enumerated are instances of compression fractures of the fifth lumbar vertebra with fracture of the transverse process. The fourth case is one of compression fracture without fracture of the transverse process.

Case I. Z. G., aged forty-eight years, fell on a flagstone in a sitting position, February 23, 1914. She experienced severe pain in the lumbar region and lost consciousness. When she regained consciousness the ribs on one side were more prominent than on the other. Her body was "doubled up" as she entered the house, and she was compelled to sleep in a sitting posture for a year, and then only from 11 p. m. to 1.30 a. m. Examination showed the posterior superior spines level and the limbs of the same length. Lateral movements of the spine were slightly limited. There was some rotation of the vertebræ to the left in the lumbar region and to the right in the dorsal region. The lumbar muscles were prominent on the left side. To the left of the sternum the fourth to the seventh ribs were prominent. The left shoulder dropped forward and there was occipital cephalalgia. Pain was complained of all through the lower extremities after the accident. Marked spasm of the anus required divulsion. The x ray examination showed considerable curvature of the spine, an old fracture of the right transverse process of the fifth lumbar vertebra and a fracture of the body with partial crushing of the left side. The patient was treated with a spinal brace, extension, and suspension on a bar. Massage of the back brought about great improvement. Examination by Professor Wendell Reber showed the eye grounds absolutely normal, but she had a high grade esophoria, twelve degrees of latent convergence of the visual axis and a latent hyperphoria or upward deviation of the left eye. She was profoundly neurasthenic and this may have had much to do with her ocular status.

Case II. J. B., a sailor, aged forty years, admitted to my service in the Philadelphia General Hospital. He gave a history of being injured on shipboard four months previously. He slipped, but did not fall, so that he did not strike his buttocks. The affection had been regarded as an intracapsular fracture of the femur. The x rays showed a typical compression fracture of the fifth lumbar vertebra on the right side, with fracture of the left transverse process without displacement upward, but with callous formation about the fracture. The body of this vertebra was tilted forward and the spinous processes were elevated.

Case III. G. H., aged forty-two years, injured February 26, 1913, by falling twenty-five feet out of a tree on the lower part of the spine, striking the buttocks. He was unconscious for a time, and four days later showed peritonitis. He was in bed for three months. I saw him fifteen months after the injury. He complained of pains down the limbs and walked with a limp. He could not raise the right arm and had difficulty moving in bed from side to side. The reflexes were exaggerated on both sides, but there was no ankle clonus and Babinski's reflex was absent on both sides. On the left side there was loss of sensation over the arch of the foot, the inner side of the knee, and over the rectus femoris; but he was sensitive over all the muscles of the back. Kernig's sign was double plus on the right and single plus on the left side. There was sensation to touch in the sacroiliac region on the right side. The abdomen was much swollen, with dullness on percussion over the entire region. The x rays showed fracture of the transverse process of the fifth lumbar vertebra and the process was tilted upward with compression of the body of the vertebra.

Case IV. A. W., aged thirty-eight years, nurse; history of injury of eight years' standing. There was no history of a fall. The injury was brought about by lifting a heavy invalid. Pain was experienced on sitting down or on rising. There was a left lumbar scoliosis, and Kernig's sign was positive on the left side. The x ray examination showed crushing of the body of the fifth lumbar vertebra, with separation of the sacroiliac synchondrosis.

222 South Sixteenth Street.

DIAGNOSIS OF DUODENAL ULCER.

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Duodenal ulcer either is becoming more frequent, or our means of diagnosis more accurate, but every physician who comes in contact with a large series of diseases of the digestive tract must confess inability to disentangle the confusion of symptoms which occur with this disease, and with the so called nervous hypersecretion. As evidence of the former statement, we can only refer to the results of autopsies, where, in a lengthy series, duodenal ulcer was only infrequently noted.

For instance, under Chiari, of 3,061 autopsies, duodenal ulcer was found in only 1.38 per cent. Fenwick reports that in 13,055, only thirty-four such ulcers were discovered, or 0.26 per cent. Perry and Shaw report that in 17,652 autopsies, only seventy ulcers, or 0.5 per cent., were found. Weir, of New York, publishes the results of 1,000 autopsies in which only two duodenal ulcers, or 0.2 per cent., were found. In general, upon averaging these and other results, we find 0.365 per cent. of duodenal ulcer. On the other hand, since operation has been more freely undertaken for this disease, based on as complete evidence as could be deduced from symptoms and physical examination, its frequency has steadily increased. Moynihan reports operation in 187 cases in 1908-9 and 115 cases in 1909-10. William J. Mayo reports 152 cases previous to 1906, and 401 from 1906-1911. Why the section statistics should differ so from those obtained by examination *in vivo* has no plausible explanation.

It is conceivable, however, that a duodenal ulcer may spontaneously undergo so complete a cure that the scar tissue which is left may be fully absorbed, and hence escape the attention of the pathologist. The operation, naturally, takes place during the period of activity, and we are surprised at the unerring accuracy with which a competent surgeon, with hands incased in rubber gloves, can detect indurations in the duodenum resulting from this form of ulcer.

The practitioner, however, has to do with an entirely different phase of the problem. It is all right for such an authority as Moynihan to declare that he has been able to verify by operation almost all of the cases of duodenal ulcer which he had diagnosed, but the average practitioner would certainly lose ground in the confidence of his clientele if he recommended operation based upon his diagnosis, and in many of the cases, operation was found to be unnecessary. On the other hand, it is often dramatic to see the number of patients who have suffered for years from this disease, passing from physician to physician, and being treated for nervous indigestion, neurasthenia, etc., when the basis of all their suffering is an unrecognized duodenal ulcer. How, then, are we to avoid sins of omission and commission?

Let us first analyze the symptoms of which the patients suffering from this disease as well as from nervous hypersecretion complain, because, unfortunately, the manifestations of a comparatively simple functional ailment and of an ominous disease are extremely similar. These symptoms are: Periodicity of suffering, interrupted by intervals of comparative freedom, an excellent appetite, appearance of discomfort or pain some hours after the meal, and relief from distress after food is taken. In the first place, through complications brought about by adhesions, it is difficult, without leading questions, to obtain from the patient a clear succession of these symptoms. At first, unquestionably, the pain and discomfort are long delayed after food is taken, but there comes a time when patients insist that with either affection the pain is continuous and the former relief from food is either restricted or entirely absent. In general, we can always learn that the suffering has persisted for a long time, some declare for years, and in many instances its progress has been so gradual that the patient cannot remember its original onset. Nor is this discomfort always designated as a pain, but sometimes as pressure or fullness, particularly when the stomach is empty instead of filled, as is common with sufferers from myasthenia. Others describe their feeling as that of constant hunger, which is stayed only for a short period by taking food, a species of bulimia; and declare that their stomachs empty quickly, though even where undoubted ulcer exists, this can be disproved either by the use of the tube or by x ray examination. At least in such cases, except where adhesions have formed, we never have the overwhelming pain that is experienced with gallstone colic.

With reference to the character of the pain in duodenal ulcer and hypersecretion, there are included here a few of the actual expressions of patients who have suffered from these disorders and in whom the former affection has been demonstrated by operation:

No. 611. Pain in pit of stomach, accompanied by vomiting, two to three hours after food is taken; relieved by soda and by eating. Never occurs in the morning.

No. 720. Dull pain two to three hours after eating; relieved by food. Pain awakens at three or four o'clock in the morning with sour eructations.

No. 658. Pain occurs only in the evening and early morning.

No. 129. Pain in pit of stomach extending to back, three or four hours after meals; relieved by food.

No. 560. Pain in pit of stomach occurring mostly at midnight; relieved by food.

No. 166. Pain three or four hours after eating; relieved by food or hot drink.

On the other hand, in cases of pure hypersecretion, where neither the presence of occult blood nor x ray examination could verify the presence of an ulcer, we have the following descriptions of the pain:

No. 552. Severe pain at two or three a. m., which is relieved temporarily by food.

No. 225. Pain may come directly after food or several hours after; when occurring late, relieved by food.

No. 739. Pain arouses from sleep in early morning, with occasional vomiting; relieved by food.

No. 172. Pain under the breast bone four hours after meals; occurs much oftener after a large meal.

From these brief reports, which comprise only a few which could be cited, we can plainly see that as to character and period, the pain does not vary. The appetite remains excellent in both conditions, in fact, is exaggerated, and periods when the stomach is empty are times of great discomfort to the patient, who hastens to refill his stomach. It will also be noted from these descriptions that the period at which the pain occurs in the night varies greatly. When these are analyzed, however, we learn that the patient who indulges in a hearty meal at six or seven o'clock in the evening finds that his attack occurs in the early morning, while he who indulges in an ordinary light New England supper, experiences his distress late in the evening or about midnight.

Schrijver states that the severity of the night pain has considerable diagnostic value; the more severe and frequent it is, the greater is the severity of the lesion when ulcer actually exists. When pure hypersecretion is present, however, the pain can often be alleviated by taking a light meal rather than a heavy dinner. Another feature of both diseases is their characteristic periodicity. In true duodenal ulcer, however, most patients report attacks occurring constantly in fall and spring, while with hypersecretion of nervous origin, periods of mental distress or worry bring on an attack. A traveling salesman under my care, was always plagued by this latter affection whenever he started on one of his long business trips which usually lasted from four to six weeks, during which strenuous efforts were demanded of him on account of competition. At home, he was always free from this discomfort.

Acid eructations may occur with both conditions, which may be exaggerated until actual vomiting takes place, but an occasional opportunity to examine the vomitus has demonstrated almost always a pure gastric juice without food fragments, so that they are not induced by pyloric stenosis or spasm.

The site of the pain has no diagnostic value since some describe it as extending through to the back; others as passing up along the chest on both sides; while in one instance, in which operation proved the presence of duodenal ulcer, the pain was invariably situated under the sternum.

As the symptomatology of duodenal ulcer is somewhat vague, and as already stated, coincides so closely with that of pure gastric hypersecretion, unless we agree with the Mayos, that the hypersecretion is always the outcome of an ulcer or ulcer scars, we are forced to rely almost wholly upon physical examination for the differentiation of the conditions.

As regards the patient's general condition, unless he has refrained from eating for fear of exaggerating the pain, which rarely occurs, because instinctively he soon learns that food eases the pain, we find the sufferers from either condition well nourished, in fact, in two instances under my observation, they were obese from the frequency and the quantity of the food which they had taken to satisfy the spurious hunger. Only rarely do we find a patient blanched and anemic from repeated minute hemorrhages into the intestinal tract.

The tender point which is so frequently described, has not been discovered at all constantly by me. In fact, instead of the localized tender point, as described, midway between the sternum and the navel and a little to the right, various forms of tenderness have been found in cases in which operation showed an undoubted duodenal ulcer. In one instance, the painful point was at the right of the median line just above the navel; in another in the epigastrium to the left of the median line at the level of the eighth rib; in another, the tender point was just under the xiphoid, and in still another, over McBurney's point. In all others of the thirteen cases, the records report no tenderness whatever. The rigidity of the right rectus has also been adduced as a diagnostic point in the detection of duodenal ulcer, but in my series of twenty-five cases this peculiarity was never discovered.

Increased acidities, either alimentary or due to the presence of highly acid gastric juice in the fasting stomach, are well recognized features which are rarely missed, particularly the former. While some authors report undoubted instances of duodenal ulcer where the acidities are normal or sometimes diminished, this has not been my experience. In all of the thirteen cases operated in, in which estimations of the gastric acidities were made, there was no exception to the presence of a hyperchlorhydria. These acidities, as a general rule, run higher than fifty and eighty for free and total, but two instances were found where the total acidity ran as high as 120 and 150. In the cases not operated in, the same rule holds true. While these latter may be regarded as instances of pure hypersecretion, yet the presence of occult blood, characteristic pain, and the results of the x ray examination indicate that they were unquestionably cases of duodenal ulcer. These examples, of course, were based upon the alimentary hypersecretion and have nothing to do with the continuous secretion which was found in many cases. In practically all instances, too, these high acidities were accompanied by an increase in the total volume, the gastric contents often running as high as 200 to 250 c. c., hence the conclusion must be drawn, based upon this limited number which, of course, bears no relation to the enormous number which the Mayos and others have collected, that an alimentary hypersecretion is always associated with duodenal ulcer. Unfortunately, however, while duodenal ulcer is associated with hypersecretion, the latter does not by any means always indicate an ulcer, so that the diagnostic value of this symptom is much impaired.

With reference to the continuous secretion, we find among the thirteen cases, six in which the fasting stomach always contained a larger amount of gastric juice than normal. Just what the normal amount is, has never been fully determined, but for comparison, a minimum of thirty c. c. was selected, and all amounts beyond that were regarded as hypersecretions. Among the twelve cases not operated in, there were also found six characterized by this fasting hypersecretion, making practically half of the total accompanied by this persistence of gastric juice after the food had left the stomach, as shown by careful microscopic analysis. Again, there is a distinct difference between the increased acidities associated with myasthenia, in which the solid residuum of the gastric contents forms half or more of the total. In many instances, however, though not all, record was made of the relative amount of solid material, as determined either by sedimentation or by the use of the centrifuge. Of the cases operated in, four were found in which the solids were as low as 1/12, 7/100, 1/6, and 1/8, while the others did not differ from the normal. This was also true of the cases not operated in, hence it seems possible to conclude that, with a large amount of content withdrawn with high acidities and small residue, we have a much greater probability of some organic lesion acting as an irritant, than with high acidities with small volume and large residue.

The next main suggestive diagnostic point is the presence of small quantities of blood in the digestive tract. Of course, where the ulcer is situated in the first part of the duodenum, blood is rarely found in the gastric contents, and even when blood is found, its availability for diagnosis is much impaired from the fact that it is often produced by the slight mechanical lesions caused by the tube. When we examine the feces for the detection of blood, after the usual precautions of excluding hemorrhoids, clearing out the intestinal tract by a laxative, and demanding a three days' meat free diet, and find blood, in my estimation it is one of the most suggestive of all the varied points which lead to the diagnosis of duodenal ulcer. Never, in my experience, has a purely functional gastric hypersecretion been accompanied by chemical blood in the stool, so that while duodenal ulcer may unquestionably exist without minute hemorrhage into the intestinal tract, its presence, associated with the other main symptoms of characteristic pain, fasting discomfort, hypersecretion, and x ray findings, is almost pathognomic of duodenal ulcer.

Of the thirteen cases operated in, occult blood was found in six, which gives a ratio much greater than that reported by other investigators. Unfortunately, however, no distinction is made by various authors between visible blood in the stool or the so called "tarry stool," and the chemical blood, always minute in quantity, determined by reagents. Moynihan reports occult blood in only fifty per cent. of his cases, Perry and Shaw in fifteen per cent., and Fenwick in forty per cent.

When we depend upon such gross hemorrhages as produce "tarry stools," the percentages must be vastly less than in the detection of occult blood; hence Mayo regards this symptom as possessing the least significance for the diagnosis of duodenal ulcer. On the other hand, if the feces from a patient suffering with this disease are examined persistently over some little period, it will rarely happen that no evidence whatever of blood is found. It is conceivable, however, that an ulcer may heal so that no active oozing takes place and still may produce symptoms through adhesions, which renders the life of the patient miserable. Then, again, there may be periods during which no discomfort is experienced, when minute traces of blood in the stool are not found. During an exacerbation, however, it rarely happens that a careful, persistent search for blood is not rewarded by success.

Of my cases not operated in, twelve in number, occult blood was found in ten. The only explanation which can be offered for the disproportion between these two groups is that the group operated in was of much greater chronicity, a factor which often induced the patients to submit to operation on account of the long duration of their illness and their desperation in search of relief. Many of these cases, too, at operation showed that adhesions caused the greater part of the discomfort and that the ulcer was probably not in a state of activity. In my estimation, the presence of occult blood will always strongly substantiate the diagnosis of ulcer, while its absence does not necessarily exclude ulcer, when backed up by other evidence.

As to the value of x ray examination, many different opinions are expressed. Some would base the diagnosis almost wholly upon distortions found in or about the so called "Bishop's cap," while others demand in the x ray examination evidence of early rapid motility and exaggerated peristaltic waves. It was found that of the thirteen cases operated in, seven had had x ray examinations; of these, six confirmed the diagnosis of duodenal ulcer made upon other evidence and substantiated by operation, while one proved entirely negative, though the scar was clearly evident when the abdomen was opened. One case not included in this list was diagnosed as ulcer largely on account of the x ray examination, but at operation there proved to be a kinked and twisted duodenum due to adhesions to the gallbladder. It seems, however, that we are not justified in recommending operative intervention unless the assurance of röntgenological investigation is given the patient. In my own cases, where such an examination was not made, other evidence already mentioned was so positive that the former seemed superfluous, while the expense to people of limited means is no inconsiderable matter. Of the cases not operated in, five had x ray examinations with three negative results and two positive, but identification of the ulcer was wanting because the abdomen was not opened.

From review of the factors included in this short article, it seems that a diagnosis of duodenal ulcer must be based largely upon the four factors of periodical and characteristic fasting discomfort, if not pain; on the presence of hypersecretion, particularly of the alimentary variety rather than the continuous; on the presence of occult blood in the stool; and on distortions of the first part of the duodenum, as shown by the radiogram. A short perusal of any series of case histories will soon show that all of these are practically never found in any one case. When, however, any two or three are evident, we may well forego the presence of the fourth factor. The relative value of the history, of the character of the pain and its intermissions, and the detection at some time of occult blood in the stool, appears to me to be of the greatest importance. On account of the close similarity of symptoms, as explained, of duodenal ulcer and functional hypersecretion, the former lose much of their significance and dependence must be placed more upon physical signs than upon symptoms, and, as hypersecretion is present both as a functional disorder and as the outcome of ulcer, we are driven to the conclusion that occult blood in the stool and the distortion of the duodenum shown by the x ray examination are the positive signs upon which we must largely base our diagnosis.

As far as the differential diagnosis is concerned, there is probably no condition which so closely simulates duodenal ulcer as cholelithiasis. Reference is not made to the typical attacks of gallstone colic with vomiting, but to the advanced forms, where adhesions have taken place between the gallbladder and the duodenum. It is common, too, to find in cases of gallbladder involvement, by reflex action, the same hypersecretion which we may find with the ulcer, and, secondly, there is often the tender point so characteristic of the latter. The periodicity of attacks of cholecystitis is well known. In my experience, one of the most distinctive points of difference between these two conditions is the slight trace of bile found in the urine when the common duct and gallbladder are involved. Still, with the greatest effort at learning the truth, mistakes are often made. Reference has already been made to the instance where a primary cholecystitis produced such marked symptoms of duodenal ulcer by adhesions to the duodenum that the operation was undertaken with that mistaken diagnosis, only to find that the primary condition was an inflamed gallbladder with several small stones. On the other hand, a man presenting himself with jaundice following an attack of typical pain, though a diagnosis of cholecystitis was made, was shown at operation to have a duodenal ulcer which, by causing adhesions to the gallbladder, had produced obstruction in the common duct. In typical gallstone colic, however, the pain reaches a severity which is never found with duodenal ulcer. Another characteristic feature is that the distress produced by duodenal ulcer can generally be allayed by food or an alkali, or, as one patient puts it, "the employment of a hot drink," but these means are never successful in checking a gallstone colic. Again, a marked distinction can be made by the common experience that icterus, or at least bile in the urine, occurs with cholecystitis, while blood in the feces is found more particularly with duodenal ulcer, although there have occurred in my practice cases of cholecystitis associated with arteriosclerosis, where occult blood was found repeatedly in the stool, owing probably to the rupture of some small arteriole in the intestinal tract.

The distinction between gastric ulcer situated near the pylorus, and duodenal ulcer, is often impossible; in my estimation, it is a mere refinement of diagnosis to reach such a decision, so that, like many practitioners, we merely refer to the lesion as a gastroduodenal ulcer, leaving it to the surgeon to differentiate. The ulcer inside the pylorus, or, in other words, on the gastric side, has been found by me to be much more likely to produce gastric stasis either through the redundancy of the scar tissue or by means of the pyloric spasm which so often accompanies it. As to the delayed pain or fasting discomfort, there is little or no difference whether the ulcer is inside or outside the pylorus. This does not exclude the possibility of saying that the ulcer is of gastric origin when it is situated in the lesser curvature or in the fundus, where, unquestionably, pain occurs much earlier.

Another difficulty which has apparently confused many diagnosticians is the differentiation of duodenal ulcer and appendicitis. In more than half of the operative cases which have come under my observation, the appendix had been removed without more than temporary relief of pain and discomfort. In many of the reports which have been received in regard to the condition of the removed appendix, it is plainly indicated that there was not a distinctly diseased organ; such terms as "moderately enlarged," "slightly congested," being employed to designate its condition. Whether this similarity is due to the reflex relation of the plexuses by which pressure applied above the navel causes pain at the appendix or not, or whether there is an associated causal relation between mild disease of the appendix and a duodenal ulcer, as has been held, is not certain. At least, whenever the appendix has escaped removal and patients are operated on for duodenal ulcer, the appendix, at my suggestion, has always been removed.

Moynihan calls attention to this associated lesion of the appendix and the duodenum, considering it probable that the duodenal ulcer is secondary to the invasion of the appendix and due to a toxemia arising from the latter. On the other hand, Schrijver declares that, when both pathological conditions are found, the appendicitis is more likely to be secondary or oftener a coincident affection. The conjoint condition of duodenal ulcer and inflamed appendix has not been found by him with the frequency that it has been by Moynihan. My own opinion has always been that the diagnosis of diseased appendix is often made in error on account of the reflex relations of the plexuses involved, and that unless undoubted evidence of disease in the right lower quadrant is present, in the form of tenderness at McBurney's point, rigidity of the right rectus over it, and attacks of slight rise of temperature, it is much wiser to let the surgeon make the median incision and examine the region of the duodenum, at the same time removing the appendix, if the duodenum is found normal. At least, confusion occurs only with the so called chronic condition or appendicitis larvata.

110 Marlboro Street.

THE VALUE TO THE OPERATING SURGEON OF A THOROUGH UNDERSTANDING OF THERAPEUTIC AGENTS.*

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I feel it proper to preface with some remarks the paper I am about to present. The older I grow, and now that more time is afforded me to review the results of a rather active life, the less hope I have of contributing something of value to the members of this society. Since the organization of the society I have believed it possible for your papers and discussions to be of great value to the busy operating surgeon, and in this I have not been disappointed. In our early study and diagnosis of abdominal lesions, the physician, or general practitioner of olden days, and the surgeon accomplished much in the joint study of their cases, but not until the introduction of aseptic surgery did the operating surgeon become a factor of therapeutic importance. In those memorable periods, however, one great advance was made, when, in consultation, the physician and surgeon combined in one strong effort to study the new conditions of abdominal work. Also, at this time, laboratory investigations developed, and, as a result, a more perfect knowledge of their importance. In an early announcement of one of our annual meetings it was stated, in addition to the list of valuable papers, "let us have your suggestions regarding any subject you may believe to be of value to the society." I consider this one of the most impressive appeals given by any of our National associations, and here may I be permitted to say: That in general surgery the men of the future who accomplish success will be those who give the best that is in them to the study of surgical bacteriology, and that, closely following them, will be those who work in the atmosphere of this society. It is difficult for me to express how much I regret the tendency, in some of the younger men in our profession, in the handling of their patients, or in getting the histories, to frequently lose all interest in the case when once they have touched upon a surgical lesion and have said, "this is a case for the surgeon." In a certain percentage of cases more persistent investigation would have demonstrated that therapeutic measures following a correct diagnosis, would have obviated the necessity for an operation. The operating surgeon is, at times, placed in an embarrassing position, when the attending physician, having assured the family that an operation was absolutely demanded, finds on a more prolonged study of the case that therapeutic measures alone are necessary; or—another dilemma—when hurriedly called to do an operation, he finds it unnecessary and that the therapeutic elements in the case have been sadly neglected. Alas! too often is it a source of great distress when the surgeon comes in contact with conditions that might have been cleared up by proper therapeutic measures.

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In these remarks I offer no excuse for the failure of the operating surgeon thoroughly to examine the patient upon whom surgical intervention is about to be employed, nor do I wish to convey the impression that in any way I am depreciating the earnest, painstaking investigations of our splendid physicians of today. If we have a criticism to make at present, in medicine or surgery, it is that we are prone to discredit our efforts and to forget that the enemies of our profession—disease and death—never relax their tendency to destroy.

Here let me say that no surgeon is free from errors in his diagnostic work, but also allow me to make this plea, that we continue our team work and not forget the mistakes in diagnosis that are now being brought so prominently to the front by our laboratory reports. Since my first visit to the Mayo clinics I have often thought of the thoroughness of their examinations, and the completeness of the sequence whereby each doctor has his special work, leaving no doubtful points of diagnosis when the case finally reaches the operating table.

At my time in life there is much, very much, to be recalled, not only in preventive medicine, but in the more efficient application of therapeutic remedies, as we know them at the present time. It is not out of place to refer to serious operations necessitated upon some particular part of the human system, in which the earlier application of rational therapeutics, as we understand them now, would have relieved much suffering. How often the simple alveolar abscess—particularly in the child—has been allowed to go on until more serious necrosis followed.

It took us a long time to understand that a number of our joint troubles arose from invasion of the system through the tonsils, and today, although no subject has received more attention in our laboratories, by clinicians and surgeons, than suppuration, what baneful influences continue to attend the formation of pus. Inflammatory processes today, with the methods of examining the secretions, the blood, and especially the genitourinary tract, the biliary system, and other important organs, afford us more accurate diagnoses, and the various new therapeutic methods have relieved much suffering, and prevented serious organic changes. Pus, however, maintains the same vicious influence as of old. We have but to study the wounds now occurring in this terrible European war to be convinced. The therapeutic value of the continuance of the methods to which I have referred, and the more thorough investigation of the blood, in aiding location of the foci of pus, cannot be overestimated. The same statement applies to x ray work and a host of similar aids to the application of therapeutic remedies. I am sure that some of the criticisms of today will be condemned, so far as they tend to undermine our confidence in past bacteriological and therapeutic measures.

Although the class of cases to which I am about to refer were the easiest for me to select from my histories, I might say that today it would be difficult to give, in the same period, a like number, owing to advanced therapeutic knowledge, yet their symptoms corresponded so nearly to those of the disease suspected that I believe they are of sufficient importance to be embodied in this short paper; and to lead to conclusions that may be of service to children, with whom my advancing years bring me more and more in love and sympathy.

It is difficult to get subjective symptoms from children, and unless we are exceedingly careful we fail to recognize the true condition. Occasionally the child is treated for a supposed rheumatic condition, when, in reality, joint changes are already present, and an error is committed in not getting a consultation sufficiently early. These cases sometimes reach us in a lamentable condition. Yet it is desirable not to put a child under the strenuous treatment required in acute surgical disease, unless it is positively indicated.

There are many advances in my profession I review with the greatest of gratitude, among them a better and increasing knowledge of reflex conditions. In the cases I am now reporting it was plain that the condition of the system was manifested in the urine and other secretions, correction bringing rest and comfort to the little one, and relief to the anxious parents. Examination of the urine, feces, tonsils, and teeth should be made with great care in all cases pointing to joint trouble in children or in adults.

As a profession we have, for many years, felt the necessity of relieving reflex irritation early in hipjoint disease especially, and men of my age will remember how enthusiastically the late Doctor Sayre emphasized the adherent prepuce and congenital phimosis as an element of irritation that must always be eliminated before putting such cases upon mechanical treatment.

In the five cases I report each presented such characteristic symptoms as lameness, nocturnal pain, pain on examination of the joint, fixation with contraction of the limb, increased pain on pressure of the head of the bone into the acetabulum, with other marked signs, and general illness of the child, so that it seemed absolutely necessary, as the opinion of two of the physicians in charge was expressed, that the child should be put upon treatment for acute inflammation of the joint. As will be observed, in one case a splint was actually procured, with the intention of placing the child upon that line of treatment.

After the study of these cases I not infrequently heard the remark, through some of my patients, that there were doctors who considered me a crank on uric acid in the urine and diet. Perhaps there may have been an atom of truth in the statement, but what better therapeutic aids have we had in the past few years in the treatment of blood pressure, with its associate conditions, than those derived from understanding of acidosis and diet?

CASE I. K., aged twenty months, a strong, well developed girl, walking when a year old; active and energetic in every respect. About August 1, 1892, the child showed a slight hesitation in her walk with the right leg. This early attracted the attention of her trained nurse, and the physician of the family was called to see her. There was no history of traumatism. The child could not tolerate having the leg extended, was fretful, did not sleep well at night, and was petulant during the day; there were some digestive disturbances, and the danger of hipjoint trouble was pointed out. When I examined her, August 2d, there was flexion of the thigh upon the abdomen, and characteristic symptoms pointing to hipjoint disturbance. The child cried very much indeed when approached, particularly when an examination was made.

She was ordered kept absolutely quiet, no effort made to take her out in the carriage; she very reluctantly consented to be lifted from the crib to the sofa, and was contented not to he disturbed in any way. When moved, she complained of pain in the joint. She was an only daughter in a representative family, and the intimation of hipjoint trouble caused great sorrow, as an aunt had died of tuberculosis at an early age. On examination of the urine, made on my third visit, and at a time when the wire breeches had been ordered, I found a marked condition of uric acid. The term, acidosis, would not have been inappropriately used.

I immediately put her upon a preparation of bicarbonate of potassium, and ordered her to drink freely of lithia water, which she was very willing to do. She soon showed signs of improvement, and in two weeks made a complete recovery, having no return of symptoms later on, nor any indication of having suffered as she did for a length of time. Her urine has been examined a number of times, and there is always a trace of uric acid, but she drinks pretty continuously of lithia water and shows no evidence of rheumatic trouble elsewhere; is a well, active, healthy woman.

CASE II. November 7, 1895, I was called in consultation hy the family physician to see Master S., aged eighteen months, who was, apparently, suffering from marked lesions about the left hipjoint. He had shown somewhat similar symptoms previously, had been circumcised for a congenital phimosis, and improved after that, but the parents were on the alert and promptly advised their physician when they observed any untoward symptom. He had been ill for nearly two weeks when I saw him, crying out in his sleep at night, could not be handled with comfort, objected to the approach of his nurse, or to any attention on the part of his mother, presented a rise in temperature, with loss of appetite, and looked sick. The objective symptoms were really deceptive. There was some contraction of the thigh upon the abdomen, apparent pain in every effort to straighten it, fixation of the joint when bringing the leg down to the level of the mattress, the spine was elevated, and there were symptoms of acute inflammation of the joint. He received a thorough examination, although somewhat unsatisfactory, owing to his crying and struggles, a condition now lessened for a moment by administration of an anesthetic. Upon inquiry, I learned that his urine had not been examined. This was done and it was found to contain a large amount of uric acid. It was noticed he was not voiding very much, and in urinating he was quite distressed.

He was put upon a thoroughly alkaline treatment, with marked benefit, ultimately making a good recovery, and within a short time. No mechanical contrivance was used. He is now a fine, robust, and energetic man, with no return of his trouble. His mother and himself thoroughly believe in careful diet, and free drinking of water.

CASE III. September 10, 1896, I was requested by the family physician to see Master S., aged two years. The patient had suddenly been seized with pain in the left hip, and the doctor feared that incipient disease of the hipjoint was developing. The little fellow had a slight congenital phimosis, which was relieved at once, but his pain continued and his inability to sleep disturbed the household. In all ways he presented an alarming sickness. He showed rather more characteristic symptoms than either of the previous patients. On my second visit, I secured a specimen of his urine and found a very pronounced acid condition, with a great deposit of uric acid and triple phosphates—lithemia well marked.

After letting him drink very freely of lithia water, which he took willingly, keeping him quite faithfully upon the potassium carbonate, which he also took readily, and after having given him small doses of calomel, the little fellow improved, made a complete recovery, and today is an active, healthy man.

CASE IV. On March 12, . . . Master B., aged eight years, an active, healthy boy, attending the primary department in school, was supposed to have been injured in coasting. Soon after, he complained of lameness, which, in a few days, developed into the characteristic symptoms of disease of the hipjoint, and the consulting surgeon felt the necessity of placing him in bed with a weight and pulley. The child was brought some little distance to me for consultation, and while there were many of the characteristic symptoms of early disease of the hipjoint, yet examination of his urine presented the same history that previous cases reported in this paper had shown. After a pretty vigorous alkaline treatment, he made an exceedingly prompt recovery, and remained well without return of his active symptoms.

In considering these cases we find a number of interesting conditions. Rheumatism in children, as most of the authorities agree, when affecting the joint, is apt to be slight. It is true the stiffness and tenderness may be well marked, and that the inflammation may be limited to a very few joints, but I do not now remember any reference to cases where the affection seemed to be confined so decidedly to one joint, and that the hip. Then the treatment must claim consideration, for it seemed in the most pronounced manner to grant relief, when prescribed on the basis of a rheumatic trouble—an excessive amount of uric acid in the system.

The length of time since the attack certainly leads us to consider that there were no real inflammatory conditions causing organic changes. No lesions whatever were left in any case, nerve, muscular, osseous, or other.

This paper is a slight contribution to a class of cases to aid us somewhat, perhaps, in the diagnosis of a condition that causes great anxiety, one requiring positive treatment if it is a true surgical lesion.

Recently, in the *Lancet*, Langmead, referring to rheumatism in children, said: "About one in every fifteen London school children is rheumatic, and, if poor, he does not get adequate treatment. The disease is left to smoulder on. There should be routine examination of children from this standpoint."

These cases are in line with that important study we are now attaching to our surgical investigations, i. e., end results. My fifth case, however, is one that introduces the element that will probably never be excluded from the ultimate conclusions.

Case V. Miss C. H., aged twelve years, was treated for some little time by one of the ablest men in our profession, a diagnostician of rare skill, and exceedingly painstaking. When called to see this child, he found, in his careful examination, that the left hipjoint seemed to be more particularly involved, also in her walk; there were some nocturnal pains. He went over the case very thoroughly and put her upon a line of treatment for a rheumatic condition, although the urine exhibited little uric acid. No great improvement followed. A few weeks later, June 24, 1912, I saw the case with him in consultation, and the contraction of the limb, together with other symptoms, led us to believe that hip trouble might be developing. The patient was put upon Hutchinson's treatment, with crutches, the shoe of the well leg elevated, a weight applied to the shoe of the suspected limb, and she was allowed to get about, her general medical treatment being continued.

After a few months it was a delight to all to note her symptoms had quite entirely disappeared. At the end of six months, she was able to get about without the crutches; the flattening of the hip gradually disappeared, and she has remained well since, developing into a fine, healthy girl, but with this criticism in the mind of the older physician, living in an adjoining city, who saw her two or three times during her early illness—that the surgical treatment had little to do with her recovery.

May it not be said, there will always be a borderline of cases in which both medical and surgical diagnosis may be questioned?

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POST PARTUM SEPSIS.

By Albert M. Judd, M. D., F. A. C. S.,
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I wish to present the records of a list of 100 cases of post partum and postabortive sepsis which occurred in my service in two hospitals, and from which I have elicited many interesting points. My plan in the arrangement of this list has been to place the prominent features under headings, as follows: 1. Number of days in the hospital; 2, hospital diagnosis which was placed on the chart on the discharge of the patient; duration of pregnancy, and the days post partum or postabortive; 3, treatment before admission; 4, treatment in the hospital; 5, under remarks I have placed morbidity, the change of symptomatology due to change of position or vaginal examination, and the result on discharge; 6, laboratory findings. Under laboratory findings I have the results of blood cultures, and in a few cases the findings of colon bacilli in the urine. Leucocytosis and the differential I have not given, but will simply state that the leucocyte count varied from eleven to 40,000, and the differential from eighty to ninety-five. These cases varied; first, from a class which may be spoken of as sapremia; second, the more dangerous toxemias, which formed the great majority; third, a minor number of bacteriemias. Most of the sapremic cases went along without further trouble than was shown by a rise of temperature, which dropped in a few days and the case proceeded to a moderately quick recovery. The toxemia cases varied in symptomatology according to the local lesions and the result of the toxemia. The bacteriemia cases were not uniformly fatal as will be seen from a further analysis. Unfortunately the blood cultures were studied only for aerobic bacteria, not anaerobic. The cases varied in length of time of illness, one case of bacteriemia being fatal two days after admission to the hospital, and one case of pyemia is credited with a stay of ninety days. Every time I have reviewed this list I have been able to pick out something new from it, and I recommend it for study.

It is my opinion that these two conditions, especially that occurring post partum, cause the general practitioner more annoyance and worry than any other condition with which he is confronted. He is subjected many times to unjustifiable pressure from the family and friends. Often for fear of criticism he is led to adopt active treatment which his own better judgment teaches him he should not attempt, such as, for instance, the application of forceps too early in delivery; vaginal or intrauerine manipulation; curettage; vaginal or intrauterine douches; and usually when there is a chill following such treatment, the worrying of the family will lead him to continue active treatment to the detriment of the patient and to his own reputation. I know that many times if he calls a consultant he will be supported in active interference. The laity has been taught and allowed to continue in the belief that retained secundines or portions of placenta or both are the cause of a complex symptomatology known as "blood poisoning," and whereas in an incomplete abortion, with placenta or membranes presenting at a dilated os, I advise careful removal by means of placental forceps or sponge stick, I feel that the active curettage that has been done in these cases is distinctly harmful. We may thus many times change a sapremia to an extensive pelvic lesion with its resulting toxemias, or perhaps to a bacteriemia. Thus it seems to me that it is high time that the laity were taught the meaning of an enthetic infection, and thus we should discourage wrongfully directed mechanical efforts to remove small pieces of placenta or membranes, which, if not discharged within a few days by Nature are discharged at a subsequent menstrual period. I use the term, enthetic, because autogenous is really a biological term, whereas enthetic means an infection which has been introduced from without. It may have been introduced at the time of the labor or abortion or at some remote period and brought into activity only by the conditions of which we are speaking.

In the list presented the cases were all under close personal observation in two hospitals. The

CHART OF 100 CASES OF POST PARTUM SEPSIS (DR. A. M. JUDD).

TIME IN HOSPITAL	DIAGNOSIS. DURATION OF PREGNANCY. DAYS POSTPARTUM OR POSTABORTIVE	TREATMENT BEFORE ADMISSION	TREATMENT IN HOSPITAL	REMARKS. MORBIDITY. CHANGE OF POSITION AND MANIPULATION. RESULT.	LABORATORY FINDINGS
5 days	P. A. bacteriemia 6 weeks	Induced	Conservative and vaccine	Initial rise 103° F. for five days. Fatal.	Streptococcus
15 days	P. A. metritis 4 months	Spontaneous	Conservative	Initial rise 104° F. 1 day, then normal 2 days. Vaginal examination 106° F. with chill, for 4 days 104° F., then normal for 3 days. Third rise 104.5 for 2 days after discontinuing Fowler, then normal. Recovery.	Negative
5 days	P. P. peritonitis pneumonia. 7 days P. P.	Spontaneous	Conservative	Initial rise 104° F. for 4 days, then 106.5° F. Fatal.	Negative
9 days	P. P. metritis 9 days P. P.	Spontaneous	Conservative	Initial rise 102° F. for 3 days, then normal. Recovery.	Negative
21 days	P. P. cellulitis 4 weeks	Spontaneous	Conservative	Initial rise 103° F. for 5 days, second rise 104.5° F., gradually normal after 9 days. Improved.	Negative
21 days	P. P. abscess of right gluteal reg. 12 days P. P.	Spontaneous	Incision and drainage	Initial rise 101° F. for 6 days, then 102° F. Operation, then temp. normal. Improved. Transferred for acute mania. Final recovery.	Negative
14 days	P. P. cellulitis 10 days P. P.	Spontaneous	Conservative	Initial rise 102° F. for 1 day; normal for 8 days; second rise 102° F. for 2 days. Then temp. normal. Recovery.	Negative
14 days	P. P. cellulitis 10 days P. P.	Forceps	Conservative and vaccine	Initial rise 105.5° F for 2 days, normal for 1 day; second rise 102.5° F. for 2 days, then temp. normal. Recovery.	Negative
56 days	P. A. bacteriemia perforated uterus 6 weeks	Induced	Conservative and vaccine	Initial rise 102° F. for 3 days, then normal. Recovery.	Streptococcus longus
14 days	P. A. metritis 6 weeks	Spontaneous	Conservative	Initial rise 103.5° F. for 2 days; second rise 102.5° F for 1 day; then temp. normal. Recovery.	Negative
14 days	P. A. cellulitis 3 months	Induced	Conservative	Initial rise 102° F. for 2 days, then normal. Recovery.	Negative
21 days	P. A. cellulitis 2 months	Spontaneous; Curette for bleeding	Conservative	Initial rise 105° F. for 4 days, normal for 1 day; second rise 106° F. for 2 days; then normal. Recovery.	Negative
12 days	P. A. cellulitis 8 weeks	Spontaneous	Conservative	Initial rise 102.6° F. for 2 days, then normal. She developed a very large exudate 1 month after discharge from hospital. Improved.	Colon bacillus in urine
40 days	P. P. pelvic abscess 8 weeks P. P.	Version	Incision above Pouparts	Initial rise 102° F. for 2 days; second rise 104° F. for 3 days; then normal for 3 days; third rise 102° F. for 1 day; fourth rise 104° F. Operation. Then normal. Recovery.	Negative
30 days	P. P. pelvic cellulitis 7 days P. P.	Spontaneous	Conservative	Initial rise 102.5° F. for 1 day, then normal. Recovery.	Negative
24 days	P. A. cellulitis	Induced	Conservative	Initial rise 104° F. for 2 days; temp. normal for 6 days; secoud rise 102.4° for 3 days, then normal. Recovery.	Negative
37 days	P. P. cellulitis 5 weeks P. P.	Forceps	Conservative	Initial rise 103° F.; then normal for 8 days; second rise with chill 103° F. after discontinuing Fowler. Next day chill, 103° F.; another chill, 103.2° F.; then temp. normal for 7 days; out of bed; then chill, 105° F. for 2 days; then normal. Improved.	Blood culture a number of times. Widal neg. Malaria neg.
1 day	P. A. cellulitis 8 weeks	?		Initial rise 101° F. Discharged against advice.	Negative
63 days	P. P. cellulitis 10 days P. P.	Spontaneous	Conservative	Initial rise 102° F. for 2 days; normal for 6 days; second rise 102° F. for 4 days; chill, 105.5° F.; then 103° F. for 11 days; normal for 3 days; third rise 103° F. for 2 days; normal for 20 days; fourth rise 103° F. for 2 days; then normal. Improved.	Negative
49 days	P. P. cellulitis 4 months P. P. 6 wks. pregnant on admission	Spontaneous	Laparot. left salpingo oophorectomy for tubo-ovar. abscess; mistake in diagnosis.	Initial rise 102° F. Operation; third day post-operative 102.4° F. for 3 days, then normal; 14 days post-operative, 102.5° F. for 6 days; then normal. Improved. Aborted 1 month after leaving hospital.	Gonococcus in fal. tube
35 days	P. P. cellulitis 6 days P. P.	Spontaneous	Conservative	Initial rise 104° F. for 1 day; normal for 19 days; second rise 103° F. for 3 days; then normal. Recovery.	Negative
28 days	P. A. cellulitis 6 weeks	?	Conservative	Initial rise 102° F for 2 days; normal for 3 days; second rise 103.4° F. for 3 days; normal for 3 days; third rise 103° F. for 2 days; normal. Recovery.	Negative
21 days	P. A. cellulitis 42 days	Induced	Conservative	Initial rise 104° F. for one day; chill, 105° F.; normal for 1 day; 102° F. for 6 days, then normal. Recovery.	Negative
35 days	P. P. cellulitis 5 days P. P.	Spontaneous	Conservative	Initial rise 103° F. for 2 days; gradually normal for 10 days; second rise 102° F. after discontinuing Fowler; normal in 2 days. Improved.	Negative
10 days	P. A. cellulitis 42 days bacteriemia	?	Conservative	Initial rise 103° F. followed by chill; 105° F. for 2 days; 104° F. for 1 day; chill, 105° F.; aborted, 100° F. next day; then normal. Improved.	Blood culture Staphylococcus
8 days	P. A. cellulitis	?	Conservative	Initial rise 103° F.; gradually normal in 3 days: then second rise 101° F. for 1 day; then normal. Improved.	
22 days	P. A. pelvic abscess 42 days	Induced	Postvaginal section	Initial rise 102° F.; gradually normal after 15 days. (Discharged against advice.) Improved.	Negative
24 days	P. A. abscess 42 days	?	Postvaginal section	Initial rise 102° F. for 1 day; normal for 2 days; second rise 103° F.; then 101° F. for 3 days; operation. Improved.	Negative
42 days	P. A cellulitis 42 days	?	Conservative	Initial rise 103° F.: second day 105° F. with chill, ranging between 102° F. and 104° F. for 20 days. Then normal. Improved.	Negative
2 days	P. P. bacteriemia 12 days P. P.	Spontaneous	Conservative	Initial rise 105° F., then 103° F.; second rise, 100° F. Fatal	Streptococcus brevis
17 days	P. P. cellulitis 77 days	Forceps	Conservative	Initial rise 101° F. for 4 days; second rise 102.5° F. for 2 days, then normal. Recovery.	Negative
30 days	P. P. cellulitis 10 days P. P.	Spontaneous	Conservative	Initial rise 105° F. for 1 day; then 101° F.; normal for 3 days; second rise 102° F. for 3 days, then normal. Against advice. Recovery.	Negative
30 days	P. A. pelvic abscess	?	Postvaginal section	Initial rise 101° F; operation; between 101° and 102° F. for 2 days, then normal. After laparotomy for mistaken diagnosis of tuboovarian abscess post-vaginal section done. Discharged against advice	Negative
10 days	P. A. pelvic cellulitis	?	Conservative	Initial rise 102° F. for 2 days, then normal. Admitted 4 weeks later to another hospital; operated on for pelvic abscess pointing above Poupart's ligament. Improved.	Negative

CHART OF 100 CASES OF POST PARTUM SEPSIS (DR. A. M. JUDD).

TIME IN HOSPITAL	DIAGNOSIS. DURATION OF PREGNANCY. DAYS POSTPARTUM OR POSTABORTIVE	TREATMENT BEFORE ADMISSION	TREATMENT IN HOSPITAL	REMARKS MORBIDITY. CHANGE OF POSITION AND MANIPULATION. RESULT.	LABORATORY FINDINGS
21 days	P. P. pelvic cellulitis. 8 days	Forceps	Conservative and vaccine	Initial rise 103° F. for 2 days; normal for 1 day; second rise 103° F. for 2 days; normal for 9 days; third rise 103.5° F. for 1 day, then normal. Recovery.	Negative
14 days	P. P. metritis 10 days	Forceps	Conservative and vaccine	Initial rise 105° F., chill; 102° F. for 8 days, then normal. Recovery.	Negative
21 days	P. P. exudate in abdominal wall 1 day	Spontaneous	Conservative	Initial rise 102° F. for 19 days; second rise 103° F. for 1 day; normal. Recovery.	Negative
28 days	P. A. cellulitis thrombophlebitis of popliteal 90 days	?	Conservative	Initial rise 106° F., chill, expelled fetus; 107° F., chill; expelled placenta; normal for 2 days; chill, 105° F. for 1 day, then normal. Recovery.	Negative
14 days	P. P. cellulitis 14 days	Spontaneous; packed for bleeding	Conservative	Initial rise 104° F. for 1 day, then normal. Recovery.	Negative
21 days	P. P. cellulitis 3 days	Spontaneous	Conservative and vaccine	Initial rise 104.5° F., gradually normal in 10 days; second rise 103.2° F. for 2 days, then normal Recovery.	Negative
10 days	P. P. metritis 3 days	Forceps	Conservative	Initial rise 101° F. for 5 days, then normal. Recovery.	Negative
28 days	P. A. cellulitis 42 days	?	Conservative	Initial rise 103.5° F. for 1 day; normal 5 days; second rise 103° F. for 3 days, then normal. Recovery.	Negative
21 days	P. P. cellulitis 14 days	Spontaneous	Conservative	Initial rise 103° F., chill; for 3 days normal; second rise 102° F., then normal. Recovery.	Negative
2 days	P. P. bacteriemia 3 days	Spontaneous	Conservative	Initial rise 106° F. for 2 days. Fatal.	Streptococcus
35 days	P. A. cellulitis	?	Conservative	Curetted at hospital for incomplete abortion. Initial rise 103° F.; second day normal; then 103° F.; for 3 days, normal; then 104° F.; normal 19 days. Against advice left hospital. Returned 1 month later; operated upon; postvaginal section; nothing found. Fatal 2 weeks after operation	Negative
21 days	Pelvic abscess P. A.	Spontaneous	Postvaginal section	Initial rise 101° F. 4 days; second rise 103° F.; operated upon. Recovery.	Negative
28 days	Pelvic abscess. P. A. rectovag. fistula to drain prev. op.	Spontaneous	Postvaginal section	Initial rise 100° F. for 8 days; operation; second rise 103° F. for 2 days, then normal. Improved.	Negative smears
42 days	P. A. retroperitoneal abscess 42 days	Spontaneous	Incision and drainage	Initial rise 102.5° F. for 9 days; operation; normal for 18 days; second rise 103° F.; gradually normal. Recovery.	Negative
28 days	P. P. cellulitis 28 days	Spontaneous	Conservative	Initial rise 103.5° F. for 5 days, then normal. Recovery.	Negative
21 days	P. A. cellulitis 42 days	Curettage	Conservative	Initial rise 102° F. for 7 days, then normal. Recovery.	Negative
16 days	P. P. cellulitis 3 days	Forceps	Conservative	Initial rise 103° F. for 9 days, then normal. Recovery.	Negative
21 days	P. A. pelvic abscess 42 days	?	Postvaginal section	Initial rise 104.2° F. for 2 days; operation 102° F.; then normal. Improved.	Positive Wassermann
28 days	P. A. pelvic abscess	?	Postvaginal section	Initial rise 101° F.; operation; then normal. Improved.	Negative
42 days	P. A. pelvic abscess	?	Postvaginal section	Initial rise 102.5° F. for 4 days; operation; 101° F for 5 days; then normal. Recovery.	Negative
16 days	P. A. pelvic abscess 42 days	Induced	Postvaginal section	Initial rise 101° for 1 day; operation. Recovery.	Negative
15 days	P. P. cellulitis 8 days	Abscess of vulva	Conservative	Abscess incised 8 days before labor. Initial rise 105° F.; between 103° and 105° F. for 6 days; normal for 2 days; second rise 101° F. for 3 days, then normal. Recovery.	Negative
28 days	P. A. pelvic abscess 42 days	Curettage for bleeding	Postvaginal section	Initial rise 101° F.: operation; 14 days normal; second rise 103° F. for 2 days, then normal. Recovery.	Colon bacilli; pus
6 days	P. P. pelvic cellulitis 4 days	Spontaneous	Conservative	Initial rise 101.5° F. for 2 days, then normal. Recovery.	Negative
16 days	P. A. pelvio peritonitis 56 days	Curettage for bleeding	Postvaginal section for diagnosis	Initial rise 102° F.; operation; 101° F. for 4 days, then normal. Recovery.	Negative
13 days	P. P. cellulitis 3 days	Spontaneous	Conservative	Initial rise 101.4° for 3 days, then normal. Recovery.	Negative
2 days	P. P. cellulitis desquamating erythema	Forceps	Conservative	Initial rise 101° F. for 3 days. Discharged against advice. Unimproved.	Negative
42 days	P. A. pelvic abscess	?	Postvaginal section	Initial rise 104.5° F. for 7 days; normal for 10 days; second rise 103° F.; operation; normal. Improved.	Negative
21 days	P. P. cellulitis 7 days	Spontaneous	Conservative	Initial rise 103.4° F.; gradually normal. Recovery.	Negative
42 days	P. A. pelvic abscess	Manipulation	Postvaginal section	Initial rise 101° F. for 13 days; operation; 102.5° F. for 9 days; 105.5° for 1 day, then normal. Recovery.	Negative
21 days	P. A. pelvic abscess	Curettage after abortion	Conservative	Initial rise 105° F.; gradually to normal in 4 days; second rise 102.5° F.; then normal. Recovery.	Smear neg.
21 days	P. A. pelvic abscess	?	Postvaginal section	Initial rise 101° F. for 2 days; operation; 102° F. for 2 days, then normal. Recovery.	Negative
14 days	P. P. cellulitis 10 days	Forceps	Conservative	Initial rise 103° F. for 6 days, then normal; second rise 102.5° F. for 3 days, then normal. Against advice. Improved.	Negative
21 days	P. A. pelvic abscess	Curettage for bleeding	Postvaginal section	Initial rise 104° F. for 2 days; second rise 105° F.; operation; normal in 7 days. Recovery.	Negative
9 days	P. P. metritis 9 days	Spontaneous	Conservative	Initial rise 100.5° F. for 2 days, then normal. Recovery.	Negative
25 days	P. P. cellulitis 14 days	Spontaneous	Conservative	Initial rise 102.8° F. for 2 days; normal 1 day; second rise 103° F.; gradually to normal. Recovery.	Negative
90 days	P. P. cellulitis 28 days	Spontaneous	Douches; vaccine	Initial rise 103° F.; for 30 days between 102°-103° F.; then gradually to normal. Improved.	Negative
14 days	P. P. cellulitis 14 days	Spontaneous	Conservative and douches	Initial rise 102° F. for 2 days; gradually to normal. Improved.	Negative
17 days	P. P. metritis 7 days	Forceps	Conservative and douches	Initial rise 102° F. for 3 days; then first douche, temperature being 99° F.; gradually to normal. Recovery.	Negative
21 days	P. P. cellulitis 11 days	Forceps	Conservative	Initial rise 101° F. for 2 days; then normal for 7 days; second rise 104° F.; out of bed caused rise from 99° to 104° F.; gradually to normal. Recovery.	Negative smears

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TIME IN HOSPITAL	DIAGNOSIS. DURATION OF PREGNANCY. DAYS POSTPARTUM OR POSTABORTIVE	TREATMENT BEFORE ADMISSION	TREATMENT IN HOSPITAL	REMARKS. MORBIDITY. CHANGE OF POSITION AND MANIPULATION. RESULT.	LABORATORY FINDINGS
28 days	P. A. endometritis, metritis 42 days	Manipulation	Vaccine and douches	Initial rise 103° F.; temperature between 102° and 103° F. for 14 days; gradually to normal. Improved.	Negative
21 days	P. P. cellulitis 5 days	Spontaneous	Conservative	Initial rise 102° F. for 1 day; normal for 3 days; second rise 102° F. for 2 days; normal for 6 days; third rise 103° F. for 1 day; followed vaginal examination; gradually to normal. Recovery.	Negative
40 days	P. P. cellulitis 6 days P. P.	Forceps	Vaccine and conservative	Initial rise 104.5° F. for 2 days; normal for 10 days; second rise 103.5° F. after vaginal examination; gradually to normal for 8 days; third rise 104° F. after vaccine, for 4 days, then gradually to normal. Recovery.	Negative
42 days	P. P. cellulitis 4 days P. P.	Forceps	Conservative and vaccine	Initial rise 103° F. for 2 days; normal for 1 day; 103° F. for 9 days; gradually to normal; third rise 104° F.; gradually to normal. Recovery.	Negative
24 days	P. P. cellulitis 9 days P. P.	Forceps	Conservative and vaccine	Initial rise 101° F.; gradually to normal in 4 days. Recovery.	Negative
8 days	P. P. cellulitis 4 days	Spontaneous	Conservative	Initial rise 104° F.; gradually to normal in 2 days. Recovery.	Negative
90 days	P. P. bacteremia; pyemia 2 days P. P.	Forceps	Incision of pyemic abscesses; vaccine	Initial rise 101° F. for 14 days; second rise 105° F. up and down for 14 days; between 101° and 102° F. for 28 days; between 102° and 104° F. Fatal.	Streptococcus brevis
35 days	P. A. cellulitis 42 days	Manipulation	Conservative	Initial rise 103° F. for 4 days, then normal. Improved.	Negative
14 days	P. P. cellulitis 6 days P. P.	Spontaneous	Vaccine	Initial rise 104° F., gradually normal in 4 days. Discharged against advice. Improved.	Negative
14 days	P. A. cellulitis 42 days	Curettage for bleeding	Conservative	Initial rise 101.5° F. for 2 days, then normal. Improved.	Negative
35 days	P. A. pelvic abscess 90 days	Manipulation	Postvaginal section	Initial rise 101° F. for 2 days; operation; no rise. Recovery.	Negative
14 days	P. P. cellulitis 7 days P. P.	Spontaneous	Conservative and vaccine	Initial rise 102° F. for 3 days, then normal. Improved.	Negative
35 days	P. P. cellulitis; phlebitis of arm. 6 days P. P.	Forceps	Conservative	Initial rise, chill, 102° F. for 3 days; gradually to normal. Recovery.	Negative
60 days	P. P. cellulitis; breast abscess 5 days P. P.	Spontaneous	Incision of breast; vaccine	Initial rise 104° F. for 3 days; normal for 2 days; 103° F. for 4 days; third rise, chill, 105° to 104° F. for 2 days; operation; normal for 5 days; fourth rise 104° F.; normal for 5 days; fifth rise 104 F. for 2 days; then gradually to normal. Improved.	Negative
21 days	P. A. pelvic abscess 60 days	?	Postvaginal section	Initial rise 104° F. for 1 day; normal for 2 days; operation; normal. Second operation 5 weeks after discharge; post-vaginal section. Improved.	Negative
21 days	P. A. pelvic abscess	?	Postvaginal section	Initial rise 102° F. for 2 days; operation; normal. Improved.	Negative
42 days	P. P. pelvic abscess 42 days	Spontaneous	Postvaginal section	Initial rise 104° F. for 3 days; normal for 19 days; second rise 101° F.; operation; normal. Recovery.	Negative
35 days	P. A. pelvic abscess	?	Postvaginal section	Initial rise 102.5° F. for 2 days; operation; normal. Recovery.	Negative
28 days	P. P. metritis 7 days	Spontaneous	Conservative	Initial rise 103° F. for 2 days; then normal. Recovery.	Negative
42 days	P. P. pelvic abscess 14 days	Spontaneous	Postvaginal section	Initial rise 104° F. for 4 days; normal for 5 days; second rise 102° F.; between 100° and 102° F. for 15 days; operation; then normal. Recovery.	Pus; Streptococcus
35 days	P. A. cellulitis 42 days	Manipulation	Conservative and vaccine	Initial rise 102.5° F. for 3 days; second rise 104° F. for 1 day; then normal for 8 days; third rise for 1 day; then normal. Improved.	Negative
35 days	P. P. cellulitis 14 days	Spontaneous	Conservative and vaccine	Initial rise 105° F. for 3 days; gradually to normal; second rise 103° F.; between 102° and 103° F. for 10 days; third rise 104.5° F. 1 day, after vaginal; then normal. Recovery.	Negative
21 days	P. P. peritonitis	Packed for placenta præv. In 14 days was septic	Conservative and vaccine	Initial rise 102.5° F. for 1 day; normal for 5 days; second rise 105° F.; up and down with chill for 8 days. Fatal. (Packed in hospital.)	Blood culture sterile
7 days	P. A. cellulitis 9 days	Curettage for bleeding	Conservative and vaccine	Initial rise 101° F. for 2 days; then normal. Recovery.	Negative
16 days	P. A. pelvic abscess 70 days	?	Postvaginal section	Initial rise 101.5° F. for 3 days; operation; normal for 7 days; second rise 102° F. for 2 days, then normal. Recovery.	Negative
21 days	P. A. pelvic abscess 42 days	Manipulation	Postvaginal section	Initial rise 102.5° F. for 2 days; second rise 104.5° F.; operation; then normal. Recovery.	Negative

aggregate stay was 2,518 days, a little more than twenty-five days for each case. Fifty-two were post partum, forty-eight postabortive. Of the fifty-two post partum cases thirty-four were said to be spontaneous deliveries, inasmuch as forceps were not used. We all know what is meant by the term, spontaneous, in a great many cases. The physician often uses his fingers coated with some lubricant for the purpose of dilating the vagina or cervix and still calls the case a spontaneous delivery. It may be spontaneous, but if the fingers were kept out of the vagina there would be a great deal less probability of infection. This is particularly true after the rupture of the membranes and in cases of so called dry labors. We are taught in the schools the importance of diagnosis of position and to follow the extent of dilatation of the cervix. If the position were always made out by means of abdominal palpation and auscultation, and the extent of dilatation of the cervix followed up by means of rectal examination, there would be much less post partum sepsis. Sixteen of the cases involved forceps deliveries and two required version. When I speak of a spontaneous abortion in the list I simply call it so because the patient has so stated it. As some renowned obstetrician has remarked, and I think it is classical: "Any case of abortion which shows high temperature or a resulting cellulitis is not spontaneous; there has been some manipulation." While this statement is dogmatic, and one in practical work cannot agree with it in its entirety, it contains a great deal of truth. Considered as a truthful statement, it would be necessary to place a question mark after the whole list of so called spontaneous abortions.

As a working basis, we must have a classification and the most simple classification is: Toxemias. Under this are included the sapremias and also all cases with distinctly local lesions without bacteriemia. These local lesions varied from infected abrasions, tears of the mucous membranes of the vulva, vagina, and cervix, simple or extensive, into the broad ligaments, with resulting cellulitis or inflammatory conditions of the endometrium, myometrium, Fallopian tubes, ovaries, and peritoneum. Under the other heading I would place septicemia, and subdivide this into bacteriemias and pyemias. In the 100 patients ninety-three had toxemia. They varied from those who were only slightly ill to those who were extremely so. Six of the cases were bacteriemias, and one was a pyemia. I believe that a late rise in temperature, from six to ten days after delivery or abortion, which has been spontaneous or without manipulation, is due to the gonococcus.

There were seven deaths in the series. If the fatalities are criticized I answer that these patients were all sick enough to be sent to an institution. I think that will answer any criticism. Analyzing the deaths, five were post partum, and of these two showed negative blood cultures. One had peritonitis and the other died of a lobular, not a lobar, pneumonia. Doctor Stone, of Manhattan, holds that this is not a condition of pneumonia, but is due to infarcts in the lungs. Three of the post partum deaths had positive blood cultures, one showed bacteriemia and pyemia, and two bacteriemia only. One of the two postabortive cases showed a positive culture. We had one case of streptococcus bacteriemia that ended in recovery. We are discharging patients at the present time, who show cellulitis, as improved, not cured, as we find some of them are later showing up at other institutions with large exudates, some of them extending up to the crest of the ilium. The prognosis varies in the toxemias according to the severity of the symptoms and local lesions, and of course according to the patient's resistance. This is best shown by successive blood counts taken from day to day or every other day, depending upon variations of the leucocyte or differential, from which the attending physician can make a fair prognosis. The prognosis of bacteriemia is extremely bad and depends upon the resistance and the multiplication of the colonies.

TREATMENT.

It has been my pleasure to see many cases in consultation and to note the remarkable change for the better that takes place in a case when placed in proper hospital care, within twenty-four hours after admission. They are placed in better hygienic surroundings and taken away from the nervous importunities of the families. Given a case of postabortive or post partum infection, the first thing is to find the focus of infection. Of course general diseases should be excluded as well as the breasts before proceeding to a very careful abdominal and pelvic examination. The pelvic examination should be considered in the nature of an operative procedure, and should be handled in as aseptic or antiseptic manner as possible. Local lesions of the vulva and vagina are carefully noted, as are also all intrapelvic conditions. If placenta or membranes present at the external os, they are removed with the gloved finger or placental forceps, and nothing further in operative or manipulative line is done. In case of uncontrollable hemorrhage in postabortive cases, a carefully applied vaginal pack is to be used. This should be introduced with the patient in the Sims position and the gauze should be wet and wrung out in the antiseptic solution that is the attending surgeon's favorite. I advise against the use of vaginal douches, and when a case has become septic and all the conditions are as noted above, and it is sure that the uterus is to all practical purposes empty and contracted, the case should be let alone so far as instrumentation is concerned and treated conservatively, increasing the patient's resistance by all possible means, which practically includes concentrated nourishment and fresh air. In the Peter Brent Brigham Hospital, of Boston, which I had the pleasure of visiting a short time ago, every bed in the institution can be run out into the open air, which makes a model arrangement for this class of cases. There is a certain class of cases where the body of the uterus is flexed upon the cervix with a retention of fluid blood. This uterus may be emptied at the primary examination by simply passing the finger into the cervix and allowing the blood to drain off, with a resulting drop of the temperature. I approve of the Fowler position, especially in cases where the lesion has extended to the peritoneum. As the cases proceed, many of them result in abscess formation which may point in the posterior fornix, about Poupart's ligament, or as occurred in one of my cases, in the guteal region. The abscess should be treated like an abscess anywhere else in the body, by incision and drainage. In posterior vaginal section as I practise, the cavity is not washed out, but is simply drained and tightly packed with iodoform gauze, which is allowed to remain in place for at least twelve days. We have thereby an opening at the vault, which, on removal of the gauze, will not completely close down, until the cavity above has had time to become obliterated. Too early removal of the gauze results in the closure of the opening with the necessity for enlarging it subsequently.

As to the indications for vaccine, I have no faith in them, except in one condition. In an old pelvic exudate with pus, where there has been a section or incision above Poupart's ligament, where there is still a discharging sinus after weeks of drainage, an autogenous vaccine may be of benefit. But as for the use of vaccines early in active cases, I do not approve of them. Some of my early cases had vaccines used because my associate was a great believer in them at that time.

The daily use of catharsis is bad. A patient who is on a fluid or soft diet does not require a movement of the bowels every day, and when necessary, in the majority of cases, we may use a simple soapsuds enema, or at times a dose of castor oil, or some mild laxative. The use of the Gellhorn baker, which is a series of electric light bulbs in a frame, is a valuable adjunct in the chronic cases with large exudates without fever. Iron and arsenic in old cases are of value.

The main value of this paper, I believe, is in the list of cases presented for study, and the opportunity of bringing once more to the attention of the profession the value of conservatism in the treatment of these two important conditions. I take advantage of this opportunity to thank my assistant, Dr. Harry Unger, for his aid in working up the histories.

375 Grand Avenue, Brooklyn.

THE SURGICAL STAFF CONFERENCE.*

By Frank E. Adair, M. D.,
New York.

It is requisite that every surgical service of a hospital have periodically a systematic review of its full activities; only then is it possible to obtain an exact knowledge of its strength and its weakness, its successes and its failures. It is in order to obtain such a complete comprehension of all its activities that the weekly Staff Conferences of the second surgical division of the New York Hospital are held. These conferences are attended by the entire attending and house staff. They include:

I. A review and discussion of the work of the past week.
II. A report from the standing staff committees:
1. Outpatient department.
2. Clinical clerks.
3. Operating room technic and efficiency.
4. Supervision of charts and clinical records.
5. Anteoperative and postoperative treatments.
III. A brief report on any subject assigned by the chief to a staff member; or a review of the literature having a bearing on some unusual case in the hospital.

Such a program is not only very instructive to all, but shows with equal clearness results which are satisfactory and those which are unsatisfactory. By taking advantage of the resulting information, the staff energy and vigor can be efficiently and profitably directed. Such careful scrutiny of the work as the conference affords, reacts in increased enthusiasm and caution, and produces happier results. So great have been the stimulation, pleasure, and profit derived therefrom, that it has seemed desirable to submit to the profession, the details of the system followed at these conferences. Review of the work of the past week includes a study of:

I. Infections.
II. Deaths.
III. Postoperative complications—pneumonias, hematomas, etc.
IV. Unsatisfactory results in cases traced by the follow-up system (1).

At the conference every case of operative or postoperative infection is studied with the idea of tracing the infection to its source. In any case of diagnostic error, a retrospective study is made to determine the reason for the error—whether it is due to:

1. Lack of consideration of the patient's history.
2. Haste in the physical examination.
3. Lack of laboratory data.
4. Other causes.

Thus where diagnostic errors have been made, or where infection, death, or any other unsatisfactory phenomenon has followed operation, the operator explains in detail at the conference his viewpoint and reasoning on that particular case—or his excuse, as it may be—and he has thereby an opportunity to defend himself.

Our attending surgeon, Doctor Pool, has made it a rule that free discussion at the conferences shall be the privilege of every member of the staff, including attending surgeons and interns. This point cannot be overemphasized, for it is herein that part of the success of such a conference lies; if this was not true, many interesting and original ideas would be stifled, and enthusiasm would be diminished.

It is the duty of the junior surgeon to compile the data for the résumé, and to arrange it in forms convenient for presentation. In compiling these details (see Form IV), he obtains the operative list of the week from the book of operations kept in the operating room. Infections, deaths, postoperative pneumonias, or hematomas are described on the patient's chart. Anteoperative and postoperative diagnoses are found recorded on the anesthetic page in the patient's chart. The data on the cases which are being followed up are taken from the file cards of those patients who were notified to report on the previous "Return Day."

In reviewing the cases of our follow up system, time is not consumed on cases with satisfactory results, but study is made only of cases whose results are not satisfactory.

The forms below are compiled with the idea of giving an example of some of the items studied at the conference.

The initial letters placed in the margin beside the particular case report in Form III below, designate the classification of the end results. The system followed is that published by Codman (2), of Boston. Examples: E-s means error in skill; E-j, error in judgment; E-c, error in care or equipment; E-d, error in diagnosis; P-d, patient's disease, such as cancer, and C, a surgical calamity, such as embolism.

After full discussion of the cases, the attending surgeon places appropriate initials beside the case report.

By following this method, Codman maintains it is possible "to ascertain the results of the treatment given and to analyze the causes of failure in cases in which the treatment has been successful," and thereby "prevent similar failures in the future."

The following detail and explanation gives a few of the chief reasons for the adoption of such a system.

I. The weekly conference brings to the attending surgeon an accurate conception of the entire activity of his service. The strong and weak points of individual members of his staff are prominently projected. The surgical judgment, diagnostic skill, and technic of each operator, with the end result of his cases, are manifest.

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*Read before the Brooklyn Surgical Society, May 4, 1916.

II. The mere fact that cases which have other than a satisfactory end result are to be reviewed and critically discussed, is sufficient to induce increased caution and thought in, *a*, the anteoperative diagnosis; *b*, the operation; *c*, the postoperative treatment. Indeed the entire staff becomes more open eyed and vigilant as a result of the friendly criticisms brought out in the conference. Interest is greatly augmented and stimulated.

III. In any case of unusual interest, much is to be learned at the conference by reviewing systematically, *a*, the history; *b*, the physical examination; *c*, the laboratory findings—chemical, bacteriological, and pathological; *d*, the x ray plates; *e*, the operative note—for the operator's rationale; *f*, the subsequent course of the patient in the hospital. A full discussion in these particular cases is extremely valuable to each member of the staff—especially to the younger surgeons.

IV. In certain operative crises, the problem of the wisest procedure confronts even surgeons of wide experience. At the conference a review and discussion of such crises are most profitable to all.

FORM IV.

Date of Op.	Pt.'s Name	Operator	Ward	Anteoperative Diagnosis	Postoperative Diagnosis	Wound Anteoperative Aseptic	Wound Anteoperative Questionable	Wound Anteoperative Septic	Asepsis Lost
Sept. 1, 1915	S. Schwartz	Dr. X.	Q	Fibromyoma uteri	Same	+	0	0	0
Sept. 1, 1915	E. Jones	Dr. X.	K	Chronic appendicitis	Same	+	0	0	0
Sept. 1, 1915	U. Herz	Dr. X.	K	General peritonitis	Same	0	0	+	0
Sept. 1, 1915	K. Johnson	Dr. X.	O	Ventral hernia	Same	+	0	0	+
Sept. 1, 1915	H. Richard	Dr. X.	E	Acute appendicitis	Mesenteric thrombosis	0	+	0	0
Sept. 2, 1915	D. Bean	Dr. Y.	E	Bone cyst	Same	+	0	0	0
Sept. 2, 1915	J. Shappiro	Dr. Y.	O	Diverticulitis	Adhesions about colon	+	0	0	0

V. The study of our infections follows fairly closely the scheme of Brewer (3). The "questionable cases" offer a most interesting class for study; if the bacteriological reports are consistently coupled and compared with the clinical records, the problem of drainage in borderline cases of appendicitis, peritonitis, etc., will be more easily solved; and some criterion can be established for procedure in these puzzling cases.

Beside problems of infection common to surgery in general, each hospital has its own particular problems of operating room and ward infections; and herein lies opportunity for work in order to eliminate some of the local contributing factors.

VI. Postoperative pneumonias, like infections, have causes which are common to every clinic, but each hospital may have some contributing factors peculiar to itself; these form a subject for valuable work.

The attending surgeon can assign as an *Arbeit* to a member of his staff the influence of certain factors in relation to postoperative pneumonia, e. g., the study of, *a*. the bacteriology of postoperative pneumonia (4); *b*, the different hypes of anesthetic apparatus used; *c*, the various anesthetic agents used; *d*, the quantity used; *e*, the clothing of the patient at the time of operation; *f*, the months when postoperative pneumonias are most prevalent, together with the record of temperatures, drafts, etc., in operating room and recovery rooms during these months.

By thus studying carefully a considerable number of cases, valuable conclusions may be drawn; and some of the causes contributory to postoperative pneumonia may be eliminated.

VII. The study and discussion of all the factors involved in the various cases of postoperative hernia and hematoma, together with some well directed experimental work, ought to result in valuable remedial conclusions.

FORM I.

Résumé of Week, September 1 to 7, 1915, inclusive.

Cases operated in	34
I. *Infection Record.*	
Clean cases (anteoperative):	
Asepsis maintained	21
Asepsis lost	1
	22
Questionable cases (anteoperative)	2
Septic cases (anteoperative)	10
	34

Remarks—Clean cases (anteoperative):

Pt. K. Johnson, Ward O. Operator, Dr. X. Ventral hernia. Asepsis lost.

Questionable cases (anteoperative):

Pt. H. Richard, Ward E. Operator, Dr. X. Mesenteric thrombosis. Bacteriological report of culture taken at operation, "B. coli." Wound not drained. Uneventful recovery.

Pt. S. Smith, Ward O. Operator, Dr. Z. Chronic salpingitis. Bacteriological report of culture taken at operation, "Sterile." Wound not drained. Uneventful recovery.

II. *Deaths* (2).

Pt. U. G. Herz, Ward K. Operator, Dr. X. Diffuse peritonitis and postoperative pneumonia.

Pt. R. E. Reilly, Ward K. Operator, Dr. Y. Septic endocarditis with numerous emboli. Patient was operated upon for mesenteric embolus; recovered from surgical condition uneventfully. Two weeks later, patient died from a cerebral embolus.

III. *Postoperative hematomas* (1).

Pt. A. Smith, Ward K. Operator, Dr. X. Cystic goitre. A small sized rubber tube placed in middle of the incision for drainage. Hematoma formed at upper pole of right lobe; drained through primary incision.

IV. *Postoperative pneumonias* (2).

Pt. S. Brown, Ward E. Operator, Dr. Z. Resection right knee for joint tuberculosis. Anesthetist Dr. A. Gas for induction; ether oz. 5. Time, 40 minutes. Patient had a rhinitis at the time of operation. Right lower lobe involved. Cleared up within four days. Uneventful recovery from pneumonia.

Pt. U. G. Herz. (See under Deaths above.)

FORM II.

Diagnostic Errors of Week September 1 to 7, Inclusive.

Pt. W. S., Ward K. Operator, Dr. X. Anteoperative diagnosis, Acute appendicitis. Postoperative diagnosis, Mesenteric thrombosis.

Pt. I. L., Ward O. Operator, Dr. Y. Anteoperative diagnosis, Diverticulitis. Postoperative diagnosis, Adhesions about colon."

Pt. P. D., Ward E. Operator, Dr. Z. Anteoperative diagnosis, Hydrosalpinx. Postoperative diagnosis, Ovarian cyst.

FORM III.

Follow Up System—Return Day.
Sunday, September 5, 1915.

	Number.	Percentage.
Cases to report	60	
Cases reporting in person	50	83
Cases reporting by mail	4	7
Total cases reporting	54	90
Cases not reporting	6	10

Results in the fifty-four cases reported:

Good	48
Fair	2
Poor	3
Dead	1

Analysis of "Fair, Poor, and Dead" Cases:

Fair:	Pt. R. F. (E-j.)	Operator, Dr. Z. Tuberculous cervical adenitis. Incomplete dissection. At present there is enlargement of and discomfort in the nodes not removed at operation.
	Pt. A. C. (P-d.)	Operator, Dr. X. Adhesions about gallbladder. At present indefinite discomfort in right upper quadrant. Constipation.
Poor:	Pt. E. S. (E-s.)	Operator, Dr. X. Nephrolithiasis and perirenal abscess. Patient has a persistent sinus.
	Pt. B. D. (E-d.)	Operator, Dr. Y. Chronic appendicitis. Patient has a persistence of the indefinite abdominal discomfort.
	Pt. C. H. (P-d.)	Operator, Dr. Z. Tuberculous peritonitis. General health is very poor.
Dead:	Pt. L. U. (P-d.)	Operator, Dr. Y. Carcinoma of gallbladder. Letter from patient's daughter states that patient died eight months after the operation.
Postoperative hernia (1).		
	Pt. H. F.	Operator, Dr. Z. Acute appendicitis with drainage of appendix abscess.

Form IV is that used by the junior house surgeon for compiling the data. It is the only one of the four forms herewith shown which is not presented at the conference; but the information contained therein, is used as the basis of Forms I and II.

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8 West Sixteenth Street.

TESTICULAR SYPHILIS,

With Particular Reference to Gumma,

By M. Zigler, M. D.,
New York,
Instructor in Genitourinary and Venereal Diseases, Post-Graduate Medical School and Hospital; Chief of Genitourinary Clinic, Lebanon Hospital.

Before going into the detailed history of these cases of testicular syphilis, it would not be amiss to quote from Symmers's paper entitled, Anatomic Lesions in Late Acquired Syphilis; a Study of 314 Cases Based on the Analysis of 4,880 Necropsies at Bellevue Hospital, published in the *Journal A. M. A.* for May 6, 1916: "There is a syphilitic lesion of the testicle characterized by slowly progressive hyperplastic changes in the connective tissue eventuating in complete or partial sclerosis of the organ, the so called chronic interstitial orchitis. . . . Among 171 male subjects of late acquired syphilis in the Bellevue Hospital series, chronic interstitial orchitis was found sixty-seven times, or in thirty-nine per cent. . . . In connection with the general subject of testicular syphilis it is worthy of emphasis that in not one of the 314 cases of fatal acquired syphilis did we encounter gumma of the testicle proper."

Since almost forty per cent. of adult syphilitic males eventually acquire syphilis of the testicle, it behooves us to be more on the watch for chronic interstitial orchitis. This percentage of occurrence of syphilitic testicle is certainly much higher than I had been led tò suppose by both private and hospital experience. Since such is the case, all patients with testicular involvement, where the diagnosis does not readily fall into either the gonorrheal or tuberculous class, should receive both the benefit of a Wassermann and a thorough antisyphilitic therapeutic test. If this is done, syphilis of the testicle will respond to treatment as elsewhere in the body. Thereby the patient will be spared the possibility of further serious damage to his testicles; possibly even spared the loss of one or both testicles, as in the cases I am about to report.

Mistakes in the diagnosis of syphilis are so many that we must consider the possibility of syphilis in almost every patient who comes to us, no matter what the complaint. I shall quote from my article entitled Pitfalls and Mistakes in the Diagnosis and Treatment of Syphilis (*New York State Journal of Medicine*, January, 1915): "The object of this paper is to bring out, first, the fact that a certain number of patients never knew that they had been infected with syphilis; secondly, that there is a larger group who really forget that they had been infected; thirdly, another class still greater in number than the preceding who, although they knew that they had been infected, are not conscious of the fact that their past syphilis has any relation to present manifestations; and lastly, we come to the most important class of patients, who 'try to live down' their syphilis and wilfully deceive their physician as to their past. . . . For these various reasons and because some of the manifestations of syphilis are at times so vague and uncharacteristic, if I may use this term, mistakes in the diagnosis and treatment of syphilis are very much more frequent than we suppose."

The following are the reports of three cases of testicular syphilis, the first two being gummata. Because of the great rarity of testicular gumma as emphasized in Doctor Symmers's paper and because one of the patients was absolutely unsexed and the other partially so, these cases are reported.

Case I. S. M., aged twenty years, single, stage hand. Personal and family history: Neither he nor any member of his family ever had tuberculosis. Past history: Had never had gonorrhea. Denied ever having had intercourse with the opposite sex. About four and one half years ago had rectal intercourse with another young man Some time thereafter, interval uncertain, he noticed a small sore on the head of his penis. Said that it was not accompanied by pain. As far as he knew, there was neither a generalized eruption after the appearance of this lesion nor were there other secondary symptoms. About four years ago, and about six months after the appearance of a lesion on his penis, the right testicle suddenly became swollen to about the size of a baseball. During the first two months this was not accompanied by pain; thereafter at times it was slightful painful. Two months later the left testicle gradually became swollen. Then for the first time he consulted a physician, who made the diagnosis of tuberculosis of the testicles. Within six months of the onset of his testicular condition, each testicle had developed to the size of an orange. At this time both testicles were operated upon. He was unable to state the nature of the operation.

After the operation his testicular condition was worse. A number of sinuses broke through each testicle. Tuberculin was then tried. He received one injection weekly for about twenty weeks. He also took creosote and codliver oil internally, without benefit. He was then sent away to the country. This also failed to cause any improvement in his condition. During this entire period, in addition to symptoms referable to his testicle, he also suffered with pain in the back and in both knees. He was very weak generally and suffered from restlessness and insomnia at night.

Present history dated back to May, 1914, which was about two years after the onset of his trouble. It was then that I saw him for the first time, at the clinic. His chief complaint was enlargement and swelling of both testicles, persisting for two years. Examination showed that both testicles were double their normal size, with a number of sinuses draining out of each. Careful palpation of the right testicle disclosed the fact that the epididymis and the body of the testicle were matted together into one soft, boggy, fluctuating, degenerated mass. The same was true of the left testicle. The patient looked feverish and septic.

This patient was admitted to the hospital May 6, 1914, and operated upon. Both testicles were taken out very much degenerated. The laboratory report, some days later, was gumma of both testicles. A Wassermann of the blood was then taken and found to be plus four. From that date, May 6, 1914, to July, 1916, he has received about forty injections of mercury salicylate, and potassium iodide internally in large doses. During this period he has gained twenty pounds. He no longer suffers with insomnia and feels absolutely well in every way.

This case is reported, first, to show how closely syphilis of the testicle may simulate tuberculosis of that organ and how dire the results may be, if testicular syphilis is allowed to go without specific medication. Secondly, here is a young man but twenty years old who is already unsexed. What the final outcome, because of the lack of testicular internal secretion will be on his general economy, is still to be seen. That some profound changes will take place from lack of the internal testicular secretion, is probable, because within nineteen days of the operation, both breasts became enlarged to the size of a silver dollar. In addition, they were tender and painful. At the end of two months the breasts were still enlarged to the size of a silver quarter. Is this a compensatory process of the mammæ, to make up for the loss of internal secretions of the testicle? The patient is absolutely sure that he never had swelling of the breasts before. Thirdly, the case is reported because of the great rarity of gumma of the testicle, especially bilateral gumma.

Case II. Mr. A. W., clinic patient, aged twenty-eight years, married. Family history: Married four years. His wife had one child, who died after two months, cause unknown. Neither he nor any member of his family ever had tuberculosis. Venereal history: Had gonorrhea eight years ago. Denied ever having had a chancre or other manifestation of syphilis. Past history: October, 1915, was operated upon for a double inguinal hernia. Said that immediately after the operation the left testicle became enlarged to the size of a pear. Two weeks later the right testicle became involved. Two months after the onset of his left testicular condition, it broke down into abscess formation, so that a left orchidectomy was performed on December 8, 1915. Ever since the onset of his trouble, the right testicle has remained swollen and hard. Present history: This patient came under my observation at the Post-Graduate Hospital, for the first time in May, 1916, about ten weeks ago. At that time complained of enlargement of his right testicle, which had remained swollen during the past seven months. In addition had pains all over body and felt generally weak. Suffered so severely with insomnia that he rose in the morning completely exhausted. Examination at the first visit showed that the right testicle was about twice its normal size, thickened, and hardened. The entire testicle was involved, both epididymis, and the body of the testicle. The left testicle was absent. A Wassermann of the blood was taken and found to be plus four.

For the past two months he had received potassium iodide, grains thirty, three times a day, and mercury internally, with marked improvement in the local and general symptoms. The testicle had gone down about one half, so that it was now almost its normal size, but was still quite hard. This marked diminution in size in such a short period of treatment, in spite of the fact that all other methods of treatment for seven months failed to improve the condition, undoubtedly spoke for syphilis of the testicle, especially when the strongly positive Wassermann was considered. In fact, the patient said that during the seven months preceding the course of specific treatment, his right and only testicle was constantly becoming heavier and larger. The marked restlessness at night also spoke for syphilis. Unfortunately I could not obtain the extirpated testicle.

In this case apparently marked manifestations of syphilis did not appear until the patient was operated upon for hernia. Syphilis not infrequently acts in this manner. That is, syphilis does not seriously affect or threaten an organ or a person until organ or person is either locally or generally devitalized by some other condition, disease or trauma. In this case very likely the handling of the cord during the hernia operation was enough to irritate the cord or possibly carry infection down the same. After the ordinary infection had started the trouble, Spirochæta pallida very promptly attacked the site of lowered resistance. It is just for this reason, in this type of cases, that the diagnosis of syphilis is at times so difficult. Syphilis at times engrafts itself so insidiously into or upon another infection that lues is not thought of by the surgeon. The only diagnosis in the mind of the attendant is the primary condition. For the reasons named above this patient was obliged to lose one of his testicles. If syphilis had been thought of, there is no doubt that both testicles could have been saved.

The third patient to be reported undoubtedly had a syphilitic interstitial epididymoorchitis, accompanied by hydrocele. Symmers's article speaks of this condition as being frequent, and says that gummata of the testicle are rare. To my mind it is quite possible for a patient to begin with an interstitial syphilitic orchitis of a mild type which, if untreated, may change to the more malignant form of syphilis, namely, gumma. Of course this is only a possibility. We all know that syphilis frequently has done just that. Mild primary and secondary syphilis may terminate in severe tertiary syphilis. We may start with mild secondaries, allow them to go untreated, and see develop most malignant tertiaries.

Case III. H. U., man, twenty-three years old. Past history: Ten months ago, acquired an initial lesion at the base of the index finger of his right hand. This was the result of a fight, during which he had punched another man in the mouth. Eight months ago secondaries developed, manifested by mucous patches on the tonsils and moist papules on the penis. The blood showed a positive Wassermann reaction. Received one intravenous injection of salvarsan and a number of mercury salicylate injections intramuscularly. Subsequently took mercurials by mouth, after which symptoms disappeared and the patient discontinued treatment for several months. Present history: April 4, 1915, came to my office with the history that eighteen days ago severe pain in the left testicle had suddenly developed, followed by a sudden enlargement. After one week, went to a doctor, who diagnosed his condition as an acute hydrocele. The sac was successfully tapped several times, but refilled promptly. His physician then advised him to go to the hospital for a radical hydrocele operation. After remaining in the hospital for twenty-four hours and not being operated upon promptly, he became discouraged and left the institution without operation. Examination on April 4, 1915, showed that the left testicle was swollen to about twice its normal size. Palpation showed that he had a hydrocele, accompanied by an epididymitis. Because of the sudden onset of hydrocele, in a patient known to be syphilitic prior to this present involvement, I made the diagnosis of a syphilitic testicle.

The hydrocele sac was tapped at once and about one ounce of clear fluid was obtained. In addition he received an injection of mercury salicylate, potassium iodide, grams fifteen, three times a day, with an increase of one grain each dose. I assured him that the entire process would clear up without operation, which it promptly did.

In Cases I and II, unfortunately, early diagnosis was not made, so that the former patient lost both testicles and the latter but one. The second patient, in addition to losing one testicle, sustained considerable damage to the remaining one; the diagnosis, however, was made soon enough to save the remaining one from utter destruction. The third case, while not so malignant, almost came to operation. The diagnosis having been made earlier, the patient was possibly saved from a fate similar to patients one and two. Of course, all syphilitic testicles do not go on to gumma formation, but even the rare possibility should be emphasized, so that early diagnosis, followed by prompt and intensive treatment, may be instituted. Another important point is that neither of the first two patients knew that they had been infected with syphilis. In fact, the first patient repeatedly denied either intercourse or a lesion. It was only after repeated questioning that he finally admitted homosexual connection and the subsequent initial sore.

In conclusion I will again quote from my article on Pitfalls in Diagnosis: "The foregoing series of mistakes in the diagnosis and treatment of syphilis are pointed out, not in a spirit of criticism, but rather to show how frequently such errors are made, and as a warning that we should be on our guard against the many pitfalls of this hidden and almost mysterious disease which makes its appearance in such divers ways, and may simulate some of the characteristic symptoms of a large number of other conditions and diseases."

40 East Forty-first Street.

A FEMALE MEDICAL CLINIC.

A Report from Mount Sinai Hospital Dispensary.

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New York,

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The following is a report and an analysis of the work done in one of the medical clinics of the Mount Sinai Hospital Dispensary during the two years ending May 1, 1916. The objects in making this study were the following:

1. To ascertain the proportion of the various diseases as they appear for treatment in the clinic.
2. To analyze some of the problems confronted, viewed from the standpoint of the clinic physician.
3. To advocate the establishment of a special clinic for the study and treatment of cases of heart disease.
4. To suggest a system which will require the head of each clinic to make an annual or biennial report of the work done.

I. CLASSIFICATION OF CASES.

In dispensary practice, the complaints of any one patient may be manifold and most diverse; there may be many factors contributing to the patient's illness. On this account it is at times difficult to establish a diagnosis until we have discovered the different influences at work. We must remember that the problems confronting us are social as well as medical. Beside the ills that human flesh is heir to, not a few of the patients suffer from ills of the human mind and the inhuman purse.

It is therefore important in each case to correlate the symptoms with the physical signs. In cases of poverty or domestic strife, or in cases of headache and nervousness of uncertain origin, we should follow the principle that the physical or organic condition takes precedence of the functional complaint, and our diagnosis should be made accordingly.

During the two years ending May 1, 1916, there were admitted to our female medical clinic 1,702 new patients; these we classified in a table, according to their predominating ailment:

CLASSIFICATION OF DISEASES.	NUMBER.	PROPORTION.
General Diseases.		
Rheumatism, acute articular	2	
Rheumatism, subacute articular	19	
Rheumatism, chronic periarticular	3	
Arthritis deformans	6	
Torticollis and rheumatic myositis	7	
Diabetes mellitus	30	1.7 per cent.
Diabetes insipidus	1	
Exophthalmic goitre	17	1 per cent.
Nontoxic goitre	6	
Obesity	11	
Systemic syphilis	5	
Starvation from lack of food	4	
Fatigue from overwork	3	
Metastatic carcinoma	2	
Mesenteric neoplasm	1	
Acute abscess of rib	1	
Acromegaly	1	
Dercum's disease	1	
Cervical rib	1	
Senility	3	
Acute Infectious Diseases.		
Acute follicular tonsillitis	8	
Typhoid fever	1	
Typhus fever	1	
Diseases of the Alimentary System.		
Constipation	545	32 per cent.
Hyperacidity	38	
Anacidity	7	
Gastric ulcer	8	
Gastric neurosis	5	

CLASSIFICATION OF DISEASES.	NUMBER.	PROPORTION.
Duodenal ulcer	1	
Carcinoma of the esophagus	6	
Pyorrhœa alveolaris	3	
Acute colitis	7	
Hemorrhoids	1	
Mucous colitis	1	
Chronic enteritis	2	
Abdominal tuberculosis	1	
Visceroptosis	4	
Intestinal tæniasis	6	
Appendicitis, acute	6	
Appendicitis, subacute	22	
Appendicitis, chronic	17	
Postoperative adhesions	15	
Diseases of the Liver and Gallbladder.		
Cholelithiasis	47	2.7 per cent.
Cholecystitis	3	
Catarrhal jaundice	2	
Hepatoptosis	1	
Diseases of the Respiratory System.		
Acute laryngitis	10	0.6 per cent.
Acute bronchitis	195	11.4 per cent.
Chronic conditions of nose and throat	11	
Emphysema and chronic broncnitis	39	
Bronchial asthma	25	1.4 per cent.
Acute pleuritis—fibrous	6	
Acute pleuritis—with effusion	2	
Pulmonary tuberculosis	39	2.2 per cent.
Suspected pulmonary tuberculosis, referred for examination	80	4.7 per cent.
Mediastinal tumor	1	
Pulmonary tuberculosis with pregnancy	3	.17 per cent.
Diseases of the Heart and Bloodvessels.		
Chronic endocarditis	45	2.6 per cent.
Chronic myocarditis	1	
Auricular fibrillation	9	
Paroxysmal tachycardia	3	
Sinus arrhythmia	1	
Ventricular extrasystoles	1	
Chronic endocarditis with pregnancy	2	
Angina pectoris	2	
Pseudoangina pectoris	1	
Aneurysm of the aorta	1	
Varicose veins of legs	5	
Diseases of the Blood and Lymph Glands.		
Secondary anemias	12	
Chlorosis	1	
Primary pernicious anemia	1	
Hodgkin's disease	3	
Polycythemia with splenomegaly	1	
Polycythemia with emphysema	1	
Acute lymphatic leucemia	1	
Tuberculous cervical adenitis	1	
Diseases of the Urinary System.		
Acute parenchymatous nephritis	3	
Chronic parenchymatous nephritis	18	
Chronic interstitial nephritis	4	
Nephrolithiasis and ureteral calculus	12	
Nephroptosis	16	
Acute pyelitis	1	
Enuresis—nocturnal	1	
Chronic cystitis	1	
Tuberculous cystitis	1	
Malingering hematuria—beet coloring matter.	1	
Gynecological Diseases.		
Pregnancy—uncomplicated	49	2.8 per cent.
Amenorrhea	1	
Fibroid uterus	7	
Metrorrhagia after abortion	5	
Retroversion	3	
Chronic endometritis	2	
Sterility	1	
Fissured nipples in lactating breasts	1	
Ovarian cyst	4	
Diseased annexa	2	
Diseases of the Nervous System.		
Headache	60	3.5 per cent.
Nervousness	60	3.5 per cent.
Nervous symptoms of menopause	7	
Hysteria	2	
Grand mal epilepsy	1	
Chorea minor	3	
Tabes dorsalis	1	
Sciatica	3	
Cerebellar tumor	1	
Functional tremor	1	
Diseases of Special Senses.		
Chronic catarrhal otitis media	3	
Skin Diseases.		
Autotoxic urticaria	7	
Psoriasis	1	
Pityriasis versicolor	2	
Prurigo	1	
Pediculosis capitis of 237 examined, positive	172	75 per cent.
Ichthyosis	1	
Acne facialis	1	
Poisoning.		
Cocaine	1	
Sodium chloride edema of legs	1	
Orthopedic Conditions.		
Pes planus	2	
Surgical Cases.		
Abdominal hernia—inguinal, femoral, umbilical, ventral	14	
Minor injuries—none serious	11	

II. ANALYSIS OF SOME OF THE CLINICAL PROBLEMS.

Most of the items in our classification require no comment. We shall discuss only very briefly some of the more important problems of a dispensary clinic from their medicosociological aspects.

Functional derangements and dispensary treatment.—From the table it is seen that the most frequent complaint for which patients seek dispensary care in a medical clinic is constipation. Of the 1,702 new patients seen during the two years, there were 545 with functional constipation, or thirty-two per cent., practically one third of the total number treated.

In making this diagnosis it was our particular desire to exclude from this category all cases which depended on an organic cause, or in which any other physical condition existed of equal importance to the constipation. The 545 cases include only the functional disorder, as diagnosed after an extended period of observation.

In most of them the ultimate cause of the malady was an irregular mode of living. The few minutes of teaching in a clinic could do little to change this. The prescription gave direct, but usually only temporary relief. These patients visited us weekly as they would a drug store, to obtain the prescription for their favorite laxative. Many even sent a messenger for the medicine.

Are these proper patients for prolonged dispensary care after the diagnosis has been definitely established? It appears to us that if a sufficient quantity of medicine is given to last from four to six weeks or more, these patients may be kept under observation in the clinic indefinitely. If the medicine, however, is inexpensive and obtainable in a drug store, such as the vegetable cathartics, these patients can no longer be considered proper dispensary charges, and should be directed to obtain medicine in the dispensary or drug store without repeated consultations, unless new developments in their condition take place.

This may seem a radical suggestion, but it would reduce to a small fraction the innumerable caravan of patients with chronic constipation, who take up uselessly the time and energy of the clinic physicians, which might better be given to the adequate and conscientious examination and sifting of the new cases applying for treatment.

Acute bronchitis.—Next in order of frequency were the cases of acute bronchitis, including those which occurred during epidemics of grippe. Of these there were 195 or 11.4 per cent. In this group may properly be included the cases of acute laryngitis, making a total of twelve per cent. Most of these reached us in the stage of subsidence, when the expectoration was abundant and the condition improving.

Nervousness.—There were 120 cases of headache and nervousness or seven per cent. of the total, who were under observation for a varying period to ascertain the possible existence of an organic cause. None could be discovered.

The assignable cause in most of these was economic stress. Frequent causes also were unhygienic conditions in the place of employment, worry over low wages, and the apprehension of discharge from work. Some of the patients realized that their nervousness resulted from poverty, with indebtedness for food and other commodities, or with a large number of minor dependents in the family. Other cases revealed domestic or social friction growing out of ignorance and ill adjusted temperament. It was these cases of nervousness that recruited the lists of our social service bureaus.

Pulmonary tuberculosis.—There were forty-two cases or 2.4 per cent. of pulmonary tuberculosis, most of which had positive sputum examinations. Eighty patients who presented vague symptoms were under observation as suspects. Some of the latter came primarily to assure themselves of their state of health. Thirteen of these were referred by public schools and charity organizations.

Clinical and sociological research.—If properly and conscientiously administered, a medical clinic can be made to serve as a teaching institution for the attending physician and his associates and offers excellent opportunities for clinical study. We were able to undertake a few problems of clinical research naturally limited in their scope, which we are still pursuing and concerning which we shall report later.

That the poverty and unfavorable home conditions of dispensary patients are reflected in their personal cleanliness as well as health, is shown by the great frequency among them of pediculosis capitis. Of 237 consecutive patients whose hair we examined for nits and pediculosis, only fifty-nine, or twenty-five per cent., were clean, while 172, or seventy-five per cent., showed a various degree of abundance of vermin. At the same time there were examined for pediculosis 150 girls of the same economic level working in a department store in this city, and it was found that seventy-five of them, or fifty per cent., showed vermin in the hair (1). This lesser figure is due probably to a greater diligence in the attempts at eradication by the younger visitors who have more social contact. In the clinic we distributed leaflets issued by the department of health instructing in a method of eradication.

An interesting problem presented itself to us during the period of active propaganda in this city on the subject of birth control. Many mothers came to seek instruction in the subject. Disregarding the statute existing in the State of New York, however, we undertook a scientific study of existing conditions as revealed by a verbal questionnaire which we devised. This showed some interesting facts and situations which we hope to publish as a separate study later.

Life Extension Institute.—A powerful stimulus was given to the movement for periodic physical examination of all visitors by the Life Extension Institute and the Department of Health of the City of New York. S. S. Goldwater, former commissioner of health of New York, characterized the movement as "the next step in preventive medicine." We desired to estimate to what extent a general dispensary clinic may serve as a centre for such periodical physical examinations and to note what benefits may accrue to the patients from the system we inaugurated in our own class.

> It is the function of preventive medicine to prevent disease; not to prevent disease in some places, in a limited number of individuals, at certain times, but to prevent disease wherever, by the intelligent application of the principles of medicine and hygiene, disease is preventable. No program which is less comprehensive than this will suffice. And in the case of those diseases which are not wholly preventable, but the progress of which can be arrested or stayed, the task before us is to discover the first sign of departure from the physiological normal path, and promptly and effectually to apply the brake (2).

Doubtless it is generally appreciated, and in fact tacitly implied by Goldwater that there are many obstacles to the carrying out of so high and excellent a standard. The crux of the difficulties, however, appears to be in the last phrase, "to apply the brake."

In our dispensary cases, most of the ailments, even excluding the functional complaints, were early physical defects or curable maladies. We attempted periodical physical examinations during two years, and desire to make some observations on the work.

We often discovered the first signs of departure from the physiological path. We often felt that certain cases were medically remediable and we recorded the slight abnormalities which time might correct under proper hygienic conditions, good food, a necessary amount of rest, and medical attention.

But most often we found ourselves helpless against existing conditions. We were confronted by a lamentable economic situation which permitted no correction—certainly not by mere preaching or teaching in a clinic. To "apply the brake" in these cases meant a complete change in the mode of life of the person. We had to call on our social service bureaus and municipal charities to help us to ameliorate conditions. We found that there existed a vicious circle, which created and maintained the conditions calling for correction.

III. THE NEED OF A SPECIAL CLINIC FOR CASES OF HEART DISEASE.

There were sixty-six cases of chronic heart disease, or 3.8 per cent., including chronic endocarditis, myocarditis, auricular fibrillation, angina pectoris, aortic aneurysm, etc.

For almost all these cases we found dispensary care in a general clinic inadequate, and this despite the fact that we devoted much time and attention to these patients. The amount of time these patients required was out of proportion to their number. They came for frequent examination and lengthy consultation. We endeavored to impress upon them the importance of comparative rest as the essential factor in the treatment. We reiterated detailed instructions as to the exact mode of living, and helped them to direct and plan their activities. We advised them of the only relative value of medicines.

Under concurrent favorable circumstances, these patients might remain *in statu quo* for years and enjoy life in comparative comfort and independence. In our endeavors to benefit them, however, we again met with antagonizing home conditions. Most of the patients were at work at occupations unsuited to their state of health, with little prospect of convenient change. Women with large families could not, with ease, take complete rest in bed for several hours each day; nor could they manage the other details of their day's activities with an intelligent view to the state of their heart disease. We studied five children of school age, for whom climbing the school stairs was distinctly harmful.

The proper conduct of their life, the relative amount of rest necessary, the suitable adjustment to economic and industrial conditions demanded special education and guidance. The patients could not acquire this from a few minutes of advice in the clinic, no matter how definite and emphatic that may have been.

For the more advanced cardiac cases, permanent stay in a "home" proved to be the best solution. But as beds were not usually available, it was difficult to find means of adequate treatment.

For the early and milder cases of heart disease, we believe, there exist two phases of therapeutics which ought to be developed, and which can be done systematically with great benefit. These two methods are, 1, the educational, and, 2, the supervisory.

1. *The educational method.*—The time to advocate a system for the educational treatment of cases of heart disease deserves a separate and fuller discussion than is permissible in this paper. We shall therefore merely mention some of the conditions upon which the idea is based. We believe that all patients with heart disease should receive a hospital education, especially when the disease is first discovered, just as patients with incipient tuberculosis do in a sanitarium. By a hospital education is meant a sojourn for a period of two to four weeks. During this time an estimate can be made of the patient's capacity for action, and he can be shown how to adapt his life to his capabilities for physical work.

Inasmuch as this method, so far as we know, has not been definitely tried, our judgment may be based on analogous attempts in more advanced cases treated in the homes for chronic invalids and in general hospitals. We have seen patients who paid no attention to their malady, which they knew to exist, after a stay in the hospital lead a life altogether different from before. They recognized the importance of prolonged rest, were able to estimate their capacity for work, and learned the details in the management of their disease. This we have seen to be a most excellent means of education for bettering and prolonging the lives of these patients.

It seems to be the policy of most general hospitals to admit only decompensated or urgent cases. We had the sad experience of observing a few patients who were referred to the hospital while able to be up and about, admitted when they were decompensated and remain there for a long period, unable to recover. This seems to us wrong, both medically and economically. Medically, admission of compensated cases would be of value as an education for the patient for the proper control of his disease. Economically, stay in a hospital would save many months of occupancy of a bed later; since many cases would never become decompensated or not until after a much longer period.

The educational method, we believe, combined perhaps with the supervisory system, is the next step in the treatment of heart disease.

2. *The supervisory method.*—An associated or an alternative method is offered by the supervision of patients with heart disease at their homes by a physician and nurse associated with a special clinic where the cases can be studied. Such a clinic should provide ordinary medical equipment and special medical training. It is obviously desirable to have an electrocardiograph, or at least a polygraphic machine available for the study of special cases. A little of this work in special clinics has already been done in this city with some degree of success. It appears, however, to be an important need in every large hospital.

According to public health statistics, more people in New York city die of heart disease than of tuberculosis, and the death rate from heart disease is increasing steadily from year to year.

Under the present social conditions, patients with heart disease, like the aged, are compelled to maintain the struggle for existence with healthy people. We know, *à priori*, that they must lose out. Recognizing this as a reality to contend with, it may be a correct idea to attempt to segregate cardiac cases into an industrial sphere of their own.

In the industries, principle asserts the transfer of employees from one kind of occupation to another more fitting their state of health (3). This results in an adaptation of the individual to his work; but even so, his prospects of progress and gain are far below those of a normal person. From the broadest standpoint, therefore, our advancing intelligence should dictate to us to unyoke those to whom only disaster can result from strenuous effort of any kind. It is our conviction that the principle to be followed by the physician in his attitude toward the life of an incurable cardiac patient should be, not that of developing physical usefulness or productive efficiency; but that of the prolongation of life and the encouragement of pleasure. We might lay it down as a reasonable plea that the cardiac should indulge in as much pleasure as will be harmless to his organic condition. In fact, if we substitute the word "may" for "should," this will apply universally.

In order that the patient with heart disease may be able to do this, it is necessary that he have advice, instruction, and supervision in a special clinic for the study of such cases, and at home by the nurse of the clinic.

IV. *The need of dispensary class reports.*—Though this study was primarily undertaken as an analysis of an individual clinic, it occurs to us that this paper may achieve much if it serves as a suggestion that the head of each clinic be required to make an annual or biennial report for publication in order to stimulate progressive work in the dispensary classes.

We desire to express our thanks to Dr. S. S. Goldwater, superintendent of the Mount Sinai Hospital, for his cordial encouragement and kindness in reviewing this report. We also wish to thank Dr. Joseph Heine for his capable, energetic, and diligent assistance in the clinic.

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165 WEST SEVENTY-FIRST STREET.

THE SPINAL FLUID OF NORMAL CHILDREN.

A Preliminary Report,

By Orlando H. Petty, M. D.,
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The now abating epidemic of acute meningoencephalo poliomyelitis will doubtless give additional information as to the pressure and composition of the spinal fluid in this disease, and increase the interest in the study of spinal fluids in all forms of meningitis.

Having personally procured and examined spinal fluids in nearly fifty cases of infantile paralysis in private homes, I was impressed with the fact that the fatal and severer forms of the disease as a rule showed a lower pressure, i. e., fewer drops a minute from the spinal needle, than the apparently milder types of the disease. This brought up the question of the normal fluid, its pressure in mm. Hg., the number of drops through the spinal needle at different pressures on a mercury manometer, and its composition.

Detailed records of the normal in a large series of cases I could not find, so I have started the study on a series of normal children, a child being considered normal if it gives no history, and shows no symptoms of cerebrospinal disease.

The number in this series is yet too small to furnish reliable data, being a few less than twenty, but the average results are almost startling. They are as follows: Pressure close to twenty mm. Hg.; cell count approximating eleven cells per c. mm.; and the number of drops of spinal fluid a minute usually being above seventy-five. Up to this time the normal pressure has been considered as from six to eight mm. Hg., the number of drops a minute as about twenty, and a cell count above six per c. mm. as pathological. After a sufficient number has been studied to determine a constant average, they will be reported in detail, showing pressure as recorded by a mercurial manometer, both with and without general anesthesia, drops a minute with gauge of needle used, and cell count.

6215 Ridge Avenue.

PUBLIC HEALTH.

The Duties of a Health Officer,

By Harry Greenstein, M. D.,
New York.

The greatest problem of the modern age is the health of a community. Every individual should be taught to do his share; the physician owes it to the community in which he resides. He must be a student of sanitation and hygiene.

It is the work of a health officer to trace and detect the origin of all diseases. A person holding this important and responsible position of trust must be alert, up to date, and well informed on all the subjects that will assist him in removing and preventing the spread of disease.

Disease is the result of some noxious influence, and may be of long or short duration. It may result in complete recovery, or loss of function of one or many parts of the body. It may result in impaired action or death. Disease may be carried from one person to another in many different ways: By contact with one suffering from an infectious or a contagious disease, or with one who has recently recovered from disease. It may be carried in the clothing of persons who have been in contact with the patient during the period of sickness and convalescence, or by domestic animals about the household, or by insects, such as lice, bugs, and flies. It is often carried indirectly through food and water.

Any person that carries disease to another person is a carrier. A carrier harbors the organisms of disease in his body, and is capable of transmitting that disease to another person, although he may be entirely free from the symptoms of that disease. He may have recently recovered, or have had the disease a long time previously; but still is not free from the causative organism.

The greatest danger is from the latent carriers, for they are free at times from the organism, which remains quiet, does not develop, and is harmless, but becomes virulent when immunity is broken down. Such carriers are responsible for most of the sudden outbreaks of infectious diseases.

Every one bears in the blood a power that is resistant to the virulent organisms that cause disease. This power is known as immunity. It is natural or may be acquired. By natural immunity, we mean that this power is inherited to a greater or less extent. It may appear early or late in life. It is for this reason that many persons pass safely through epidemics of disease. Acquired immunity is not inherited, but is obtained by recovery from a disease, or by inoculation of vaccines, virus, or serum. All human kind is susceptible to disease, some more than others; none are immune to many diseases, none are free from all.

Immunity is broken down by disease, by exhaustion, by excess of alcohol, by exposure to cold and wet, by lack of ventilation, and by insufficient food and loss of sleep.

When a disease spreads over a large area of a community it is called an epidemic. Epidemics are sometimes difficult to check. It requires a considerable amount of time, energy, and money before it is under control. An epidemic of measles, typhoid fever, scarlet fever, diphtheria, chicken pox, smallpox, infantile paralysis, or influenza may spread rapidly over an entire town, and infect so many that the schools and factories must be closed and houses quarantined.

During the course of the epidemic many lives are lost; many persons become infirm. Many must be isolated, segregated, and placed under strict and forcible quarantine. They must be watched until convalescence is complete, and they are no longer able to infect another person with disease. Quarantine is the detention, isolation, and segregation of persons until all signs and symptoms of disease are gone, and there is only a minimum chance of transmission to another person.

We all know that infectious and contagious diseases are due to some virulent organism. By virulence is meant that the organism has the power to transmit infection. Organisms are transmitted by some outside source, man, lower animal, or insect. The greater the number of organisms in the body, the severer the disease, and the more serious the outcome.

The organisms, having invaded the system through some of its many tracts, such as the nose, eyes, and ears, by inhalation or by ingestion, or by way of the broken skin, multiply rapidly in the human body. When they are excessive in number, the disease has a short period of incubation, that is from the time of invasion until the full development of the disease. This may be a few hours, or several days.

The clothing and premises used and occupied by patients should be disinfected and cleansed daily. All the woodwork in the sickroom should be scrubbed with a hot solution of washing soda. Windows are opened for the free circulation of air. The room must be properly heated and ventilated, free from draperies and excess furniture. No dust should be scattered about the room by broom or duster. Wipe parts clean with damp cloth. After quarantine disinfect with fumes of sulphur or formaldehyde, the amount of material used depending upon the size of the room. All loose wall paper should be removed, the rest scraped off and covered with new material. The walls may be painted, and the woodwork painted and varnished.

Imagine what time and money are lost through disease to the wage earner. He is kept under restraint, is quarantined from family and friends. His family may soon be in want and they become dependent upon others for support and maintenance.

New York State has taken a step forward and has for its motto: "Public health is purchasable. Within natural limitations, a community can determine its own death rate."

THE HEALTH OFFICER.

The duties of a health officer are many. He must keep the public informed of his work, and notify them when an infectious or contagious disease becomes epidemic. He must tell of its presence, its nature, its mode of transmission, and methods used for its destruction and elimination. He must conduct a house to house canvass, through physicians, inspectors, and nurses. This canvass is made for the detection of the sick, missed cases, hidden patients, neglected cases, and carriers. Any person not under treatment, or one who refuses to obey the rules and regulations set down by the sanitary code, or adopted for the time by the health officer, may be forcibly removed by police power.

The health officer must have under his control, all properly conducted hospitals, tents, and detention camps. He must avail himself of all known means of advertising that the news may reach the public.

Every available place and person is used to notify the public as to what is going on, and what is necessary to do, so as to aid in controlling and checking the disease.

The management of an epidemic requires skill and executive ability. It must be invested in the hands of a competent physician, who should have proper authority and full control. He must have a vast knowledge of infectious and contagious diseases, know their mode of transmission, and methods for their destruction.

He must carefully organize his squad of helpers, and have under his control all physicians, inspectors, nurses, attendants, bacteriologists, and chemists that are required to carry on this work. He must be provided with hospitals, detention camps, tents, and available public and private places in which to house the sick.

In order to make the work much easier, and prevent overlapping and duplicate records, the area is divided into sections, each district in charge of a competent physician, who in turn is responsible to the quarantine officer.

There must be a strict and unbroken quarantine during the period of incubation, and attention given to segregation, isolation, sanitation, and disinfection. None should be discharged until convalescence is complete.

It is of the utmost importance that care be taken of everything that goes in and out of the kitchen, its utensils, food, water, milk, and laundry supplies. Food must be covered and protected from dust, dirt, flies, insects, and rodents, and, above all, from frequent handling.

307 East Fifty-seventh Street.

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Abstracts and Reviews

THE ROLE OF FAT IN DIABETES.*

By F. M. Allen, M. D.,
Hospital of The Rockefeller Institute,
New York.

Doctor Allen briefly outlined the many new methods of analyzing the blood quantitatively for its various normal and abnormal constituents, and stated that it was the development of these methods which had made possible in large measure the study of the problems upon which he was to report. It was a tribute to American science that every one of these tests was devised or perfected by an American investigator. Finally, the possibility of better study of the problems of diabetes was greatly increased by the ability to reproduce in dogs conditions almost identical with those encountered in human diabetes. This could be done by the surgical removal of a large proportion of the pancreas, leaving the remainder in communication with the intestine through the pancreatic duct. This operation rendered the dogs diabetic, and yet retained their digestive functions through the preservation of the pancreatic secretion.

The first point in the problem of the role of fat in diabetes was that of lipemia. This condition was almost a constant finding in severe human diabetes and might be present to a slight degree even in very mild cases. The same was found to be true in partially depancreatized dogs. Further, diabetes in man and the partial depancreatization of dogs were the only conditions in which a high degree of lipemia was found. The fat might be present in the plasma of severe cases in either man or the dog in amounts up to fifteen per cent. or over, and the ability to produce the condition in the latter afforded ideal conditions for the study of its causation and significance. It had long been believed that lipemia was due to a diminution in the lipase present in the blood, but this could now be stated to be incorrect and we could safely regard the lipase as quite a negligible factor. It had been shown in experimental dogs that lipemia varied in degree largely with the digestive power of the animals, that the fat was derived in great measure from the food fats, and that lipemia could be controlled largely by feeding. The fat in the blood was chiefly neutral fat with a considerable proportion of cholesterol, which ran parallel to the former, and a small amount of lecithin.

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*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, November 4, 1916.

As to the causation of lipemia, experiments on the partially depancreatized dogs made it possible to say definitely: 1. Lipemia was not due to the occurrence of hyperglycemia. 2. It was not due to the absence of carbohydrate or to the loss of sugar. 3. It was not due to the presence of acetone bodies or to the change in the reaction of the blood. 4. It could not be produced by simple overfeeding with fat. Its exact cause was as yet unknown, but recent studies in the author's laboratory seemed to point to its being related in some way to the condition of the cells in the pancreas, and evidence was accumulating which indicated that there might be an internal secretion of that gland which was directly concerned with the production of lipemia.

The second problem in the role of fat in diabetes was concerned with acidosis. Before entering into its discussion, it was necessary to have a clear understanding of what was meant by acidosis. In the author's opinion the term should be restricted to the original definition given by Naunyn, which stated that its one constant characteristic was the occurrence in the blood of an abnormal amount of betaoxybutyric acid and acetone bodies. Contrary to the present misuse of the term it had nothing to do with a simple displacement of the reaction of the blood, and conditions with diminished alkalinity, increased carbon dioxide tension, increased hydrogen ion concentration, and reduction of the "buffer" salts should not be classed as acidosis, since such a classification led to confusion.

Here, as in lipemia, the precise ultimate cause of acidosis is not known. It was fairly certain, however, that fat played an important role in its production and that the acids were produced largely in the muscles and liver—organs in which fat was burned. It was not yet known what proportion of fat could be burned without the production of acidosis in subjects with diabetes, or what proportion of carbohydrate was required to prevent the development of acidosis. It could be stated positively, however, that acidosis was not necessarily due to a lack of carbohydrate. If it was not possible to state the ultimate causes of acidosis at least the study of the partially depancreatized dogs had made it possible to gain an insight into some of the more remote causes.

It was found that acidosis could be produced in such dogs in three ways, all in complete imitation of the conditions encountered in man. First, it could be produced by following the plan adopted in the usual clinical treatment of human diabetes, namely, by giving a diet of high caloric value and high fat content. If an experimental dog with diabetes be made to hold or to gain weight—which is the practice in man—fat must be introduced into the dietary and calories must be crowded. One of two things soon happens in the dog; either he begins to vomit and suffer from diarrhea with loss of weight and refusal of the food, or, if the feeding is forcibly continued, his metabolism breaks down. When the latter occurs true acidosis develops and a fatal diabetic coma quite similar to that in man ensues. Such a diabetic coma can be produced in these animals while they are thus kept on a full diet, and this is just what occurs in human beings. Secondly, if the treatment employed in moderate human cases be applied to these dogs, the same results will ensue as in the first case. This is the fattening treatment which is marked by a reduction in the intake of protein and the administration of fat. These dogs look extremely well, but they go on to a fatal acidosis. The third way is that in which the animals are kept free from glycosuria through the administration of a diet very low in carbohydrate and consisting mainly of fat and protein. This form of diet is also often prescribed for man.

In both man and in these animals if the condition has not gone too far the acidosis may be checked by the introduction of a period of fasting, but if the diet is restored, the downward progress will continue. In severe cases—human or animal—the fasting may at first increase the acidosis, but if the fasting is repeated with periods of return to a properly adjusted diet, it is usually possible to produce an immunity to the fasting acidosis and an ultimate recovery of very marked degree. These observations, along with others, the details of which cannot be given, all point to the existence of some specific internal function of the pancreas which is concerned with the production of acidosis. They also show that an alteration in the reaction of the blood is not the cause of death in acidosis, for the blood may be kept normal in reaction by the proper administration of alkalies, and yet the man or the animal may die of diabetic coma and typical acidosis.

If periods of fasting are properly introduced and the diet is adjusted, it is possible to keep the human or animal patient in a condition of physical comfort and fair health for long periods of time and ultimately to increase his tolerance for foods to a great extent. It was also pointed out that the craving for carbohydrate seen in many diabetics was not due to "original sin," but was a physiological demand for that food element which does the most perhaps to control the development of acidosis. The same craving was to be observed in an intense degree in the dogs suffering from acidosis.

The last point to be discussed was the value of fat in the dietary of diabetics, and it was shown that fat unbalanced by other food constituents was a poison. The essence of these observations was to show that it was necessary to preserve a natural balance between fats on the one hand and protein and carbohydrate on the other if dangerous complications were to be avoided—especially acidosis and coma.

The net results of the observations pointed to the absolute necessity for clearing up the lipemia of diabetes; to the need of a proper appreciation of the importance of fat, unbalanced by other foods, in the production of acidosis; and finally to the most important fact of all, namely, that in diabetes there was a deficient assimilative function and that efforts to maintain the body weight by high calory feeding would soon lead to an exhaustion of whatever function remained to the patient. The true lesson to be learned was that it was not fat alone, not protein alone, and not carbohydrate alone which was the source of danger, but that it was a disturbed balance between all three combined with an overtaxing of the patient's assimilative powers which led to the downward progress of diabetics under the usual plans of dietetic regulation. Depending upon the severity of the case, the load on his assimilative function should be lightened; if he had acidosis he should be starved, once or repeatedly, until his assimilative function could be restored; and his diet should be kept within his assimilative capacity. If such a plan was followed, the majority of patients would live in comfort, and a large proportion of them would ultimately show a decided increase in the extent of their assimilative capacities.

Contemporary Comment

Boards of Health.—The Rhode Island State Board of Health, says the *Providence Medical Journal* for November, 1916, is to be commended upon the efficiency and sanity of their attitude toward the epidemic of infantile paralysis which has struck terror to hearts of the parents of children throughout the areas afflicted. The sensible investigation of unrestricted visitors to the State and the subsequent observation at their point of destination is in pleasing contrast to the rigid and therefore inefficient quarantine and uncertain control as instituted in neighboring States. It is in no spirit of hostile criticism of the State Board of Health that we express the following opinion, and so at the risk of becoming the target of a whole hodful of "editorial bricks," we make bold to suggest that the public health of a community will be better served by a single health commissioner than by a large board made up of physicians in general practice. It is, we admit, a "bromidiom" to say that this is an age of specialism, but in no department of medicine is it more true than in public health. The State of Rhode Island should engage at a salary sufficient to demand his full time a trained sanitarian of the type exemplified by Gorgas of the Panama Canal. He should be given supreme power in matters of public health and control, free from the baneful touch of party politics, over the subsidiary departments of food and drug inspection, sewage disposal, quarantine, etc. The time demanded, the scope of the problems to be met, the rapidly increasing control by the State of matters formerly considered of purely individual concern will make it impossible for us who make our living in private practice to serve the State as it will soon demand its health officials shall serve. Doubtless this same thought has occurred to the members of the board themselves, many of whom have served long and well at the expense of their own valuable time and comfort. It is to be hoped that before long they will take steps to initiate legislation which will put the health affairs of Rhode Island on a strictly modern basis.

Modern Humanitarianism.—The present era is permeated with a strong sentiment of opposition to cruelty in every form, observes the *Illinois State Journal of Medicine* for November, 1916. On one hand we see the greatest philanthropic organization in the history of the world devoted to the relief of suffering in Belgium. Another aspect of this sentiment is the modern idea that crime is largely due to mental defect or disease on the part of the criminal. The refinements in the diagnosis of feeblemindedness enable the courts to separate these victims of heredity from the criminals due to vicious associations. But few communities are prepared to follow these offenders to the logical conclusion, viz., permanent confinement with self supporting labor. If the present trend continues, the prosecution, in addition to overcoming the "presumption of innocence," will also have to assume the probability that the culprit is mentally irresponsible!

An Intelligence Test in Brooklyn.—That one of the candidates for a Supreme Court Justiceship in the second judicial district, voted upon at the election, happens to be a physician, observed the *Medical Times* just before election day, is something the significance of which may not be wholly apparent either to the profession or to the public. A medical man takes with him when he enters great fields of human service other than medicine much of what he assimilated, as a practising physician, of our traditions and principles. This is a splendid heritage. If to other qualifications for the exalted office of Justice a man adds the peculiar knowledge of men and of science that medical practice develops, it would seem that the political powers that be are doing their very best for the people when they conscript a candidate so equipped, for it is obvious that a man medically trained is preeminently qualified to adjudicate cases having a medical phase, and we are all aware how large a proportion of the mass of litigation such cases constitute. Surely the people would profit through the special insight that a medically informed jurist takes to the bench. For ourselves, we should say that it is most desirable that the profession be represented more largely in high civic office of every grade. Our interests would be safer in every way were this the case. All possible checks should be placed upon the nuisances who appear bent upon placing mines under the very temple of our art. Such representation as we advocate would add to government the intelligence which is all that is needed to wreck the wreckers themselves.

We hope that both the profession and the public in the district concerned will take advantage of the opportunity now offered to suspend partisan considerations, where such exists, to the ends for which we plead.

Editorial Notes and Comments

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RACE SUICIDE.

The commission which has been investigating the causes of infantile mortality in Great Britain recently handed in its report. This document is interesting because, while it draws no hard and fast conclusions, it allows it to be understood that the members incline to the view that the main cause of the falling birth rate is the artificial means taken to prevent conception. This is, in effect, what is known as race suicide. The war in Europe, with the appalling slaughter of its most virile and energetic men, at the time of life when their physical and mental powers are at their height, has concentrated attention on the generally declining birth rate and on the best means for preventing its continuance. The phase of the situation of especially alarming import is that it is the flower of the race that is being killed, maimed, and crippled on a wholesale scale. Those who are left are, as a rule, not the best stock with which to propagate the species. In fact, physically and mentally they are inferior, and their progeny will be of a lower standard than the former generation.

In the *Hibbert Journal* for July, 1916, the Countess of Warwick discusses "race suicide," and although she deals with it mainly from the economic standpoint, she makes some exceedingly good points. She attributes its increasing prevalence in civilized countries to the methods of life that soften women and make childbearing a terror. Primitive and hardy agricultural people are not troubled by fear of childbearing. They raise large families and retain their good looks as well as their health. Luxurious living and ostentation are largely responsible for the small families among the very class which should be the bulwark of a country. The most prolific people are those who are usually regarded as the least desirable elements, that is to say, the least intellectual, the most ignorant, and those who have in them the most of the animal and the least of the spiritual.

Lady Warwick points out what now seems to be a more or less obvious truth, that the solution of the problem, whether the educated and skilled classes, that is, the skilled artisan and working classes, are going to propagate the race in such a way that they may not be swamped by an inferior people, is in the woman's hands. It lies with her to decide, to a very large extent, the destiny of the white race, for it must be borne in mind that the black and yellow races are extraordinarily prolific.

Father Vaughan, writing in the *Nineteenth Century* for September, 1916, referring to the decrease of births among the better elements of the population, notes that M. Jacques Bertillon, the eminent French statistician, gives a table showing the annual births of 1,000 women, aged from fifteen to thirty years, in different quarters of Paris, Berlin, Vienna, and London, representing six grades, from the very poor to the very rich. In all these four capitals, fertility is greatest among the poorer classes, while it gradually diminishes as comfort and luxury increase.

Thus the situation with regard to the declining birth rate in the majority of civilized countries, appears to be somewhat as follows: The birth rate has declined and is declining most quickly among the professional classes and the skilled working classes. The fertility of the poorer classes has not been appreciably affected. According to many authorities, and their views appear to be borne out by the recent investigations of the British Commission on the Decline of the Birth Rate, the decrease in childbearing is largely brought about by artificial means.

Obviously, conditions in this country cannot be compared with those in Europe, as the war by decimating the male population has rendered the situation there peculiarly acute. The birth rate in America, however, has declined among the professional classes and to a lesser extent among the working classes, and presents a serious problem of our own, the solution of which will tax the brains and energies of the thoughtful of all classes, especially of members of the medical profession. Malthusian doctrines may be all very well as far as they go, or when they work out as intended, but not when their results are to check population among the professional and skilled working classes, while the teachings are not known, and have no effect upon the poorest members of the community.

Whatever may be the causes of a progressively declining birth rate, the matter should be thoroughly probed, so that at least we may know how and where we stand.

> Ill fares the land, to hastening ills a prey,
> Where wealth accumulates, and men decay.

THE FINDING OF ACTIVE LESIONS AND SPIROCHETES IN CLINICALLY INACTIVE OR CURED SYPHILIS.

The frequency of latent syphilis of the heart, aorta, and nervous system is known to all pathologists. Whereas previous to the discovery of Spirochæta pallida, pathologists diagnosed syphilis post mortem by certain characteristic lesions, especially of the myocardium, aorta, and testicle; since the recognition of the cause of the disease, they have no right to declare that a certain lesion discovered post mortem is syphilitic unless the spirochetes are found. It is right, therefore, that Warthin, of Ann Arbor, in an instructive paper on The Persistence of Active Lesions and Spirochetes in the Tissues of Clinically Inactive and Cured Syphilis (*American Journal of Medical Sciences,* October, 1916), should plead that "the methods for the demonstration of this organism in the tissues should be made a part of the routine autopsy microscopic examination," he himself advocating the Levaditi method for the demonstration of spirochetes.

It is advisable that the tissues be removed from the body, within one to two hours after death, that they be immediately fixed in ten per cent. formol for not less than twenty-four hours, but preferably for three days, and that they then be put through the Levaditi method and blocked in paraffin. For hardening purposes a formaldehyde solution neutral in reaction that has not been kept in wooden casks should be employed.

The facts recited by Warthin are so significant that they will bear recital. In the pathological service of the University of Michigan, from 1912 to 1914, forty-one autopsies were performed; one third of the adult cases presented active lesions of syphilis microscopically, as evidenced by the presence of spirochetes or characteristic tissue lesions. In the latter group (those with characteristic tissue lesions, but apparently without spirochetes), Spirochæta pallida, as the result of more systematic and thorough examinations, is now being found with increasing frequency, and the work is still in progress.

In a majority of cases there had been no suspicion that lues existed in latent form, the history being negative; in a certain proportion in which lues had been suspected or even diagnosed the treatment previously instituted had apparently been considered sufficient; and in a small group even the most modern methods of treatment were instituted with the ultimate announcement of a clinical cure. It may be mentioned with regret that the Wassermann test was not done in all of these cases, since, as the author informs us, it was only during the past year that a routine test was done on all patients entering the hospital. Of the cases cited in this report, Warthin found eleven with a clinical diagnosis of lues regarded as clinically cured, five with active lesions and under treatment for manifestations, and twenty-five with luetic infection excluded clinically owing to the absence of symptoms and the denial of infection.

In all these cases, no matter what the exact clinical diagnosis or condition had been, the lesions of active syphilis discovered post mortem by histological examination, were essentially of the same nature. Active lesions of syphilis were reported in the heart in thirty-six cases, in the aorta in thirty-two, in the testes in thirty-one, in the liver in four, in the adrenals in six, in the spleen in one case, in the pancreas in six cases, and in the central nervous system in five; and this in spite of the fact that in the majority examination of the brain and spinal cord was not permitted. Furthermore, Warthin found twenty-three cases in all of nephritis; just how many of these were due to lues cannot be stated. It is well to remember, as Warthin tells us, that, pathologically, "the triad of interstitial myocarditis, aortitis, and orchitis fibrosa may be taken as a pathological complex indicating the occurrence of a syphilitic infection in the male." In the female he examined for lesions in the heart, aorta, pancreas, and adrenals.

The astounding general propositions as a result of Warthin's findings are that in about one third of adult cases lues was found post mortem in persons who had entered the hospital for other conditions, especially cardiovascular-renal syndromes. Furthermore, although most of the lesions found are to be considered as healed or fibroid syphilitic areas, yet, if the microscopic search is thorough, active areas of inflammation can be found in all, with the same histological lesions, of the same degree and extent, and in the same organs.

Warthin's final conclusions are decidedly interesting. He believes that we must regard lues in the same light as tuberculosis. Concerning syphilis we may say that it is a great factor in destroying the health and hindering the progress of the race, that myocardial insufficiency and cardiovascular-renal diseases are due to latent syphilis as one of the chief factors, and that spirochete carriers are persons with a latent infection of very low virulence, and as such are bad insurance risks.

As regards possible reinfection, Warthin does not believe that this plays any role in the cases he has reported, and reminds us that the chancre may recur in late active and treated cases of lues. Some of the latent cases are due to congenital or familial lues, clinical symptoms of which may be entirely absent throughout the lifetime of the carrier of the spirochete. In addition, a negative Wassermann does not necessarily mean the absence of latent syphilis.

Finally, it is important to know the conditions that are responsible for the renewal of the activity of inactive spirochetes. From the standpoint of treatment this means that "the syphilitic must be treated as a germ carrier," and general hygiene is of as great importance for the spirochete carrier as for the subject of latent tuberculosis.

Warthin's conclusion that even the most modern methods of treating syphilis probably do nothing more than render the infection latent and do not really cure, strikes a positively pessimistic note to the clinician. Warthin speaks as a pathologist. If he states the truth, we must face it and recognize it as such. It is well known, however, that the clinician is more apt to be optimistic than the pathologist, and it would be interesting to hear an authoritative expression of opinion from the other side. The problem under consideration is of sufficient importance to demand this.

THE ORIGIN OF LIFE.

If there is any theory of the origin of living things which seems to have a semblance of truth, it is that of a spontaneous chemical beginning. What conditions were in the primeval earth we do not know, but they were certainly more conducive to elaborate chemical changes than now. There were higher temperature, more substances in solution, and less stability generally.

It is only two centuries since many scientists believed that eels developed from dew, but that large animals or plants arise spontaneously has now become unthinkable. As we approach the lower forms of life, however, our assurance in this matter certainly becomes less strong, and especially does the spontaneous origin of life which is neither animal nor vegetable seem possible. The discovery of the filterable bacteria seems to bring us nearer to a beginning of life, for not only must the first living things have been simple in form, but they must have been extremely minute. These filterable organisms are certainly not larger than the particles shown by the ultramicroscope in the protoplasm of living cells, and which by some are called "giant molecules." Certainly there seems little about them to justify the application of the term, organic. Again, some bacteria have made their appearance suddenly, or at all events have come to influence human life in a brief time, and then have as abruptly passed from the scene or at least changed their nature decidedly. Diseases in the past have arisen suddenly and disappeared as mysteriously. Poliomyelitis seems hardly to have been known before 1840.

The development of epidemics shows us that there is much to be learned about conditions affecting living things, especially bacteria. If we knew these secrets, we could check or prevent epidemics, and we should come much nearer knowing the origin of life.

Some thinkers have gone so far, though it is not very far after all, as to believe that all matter is, in a way, living; that it contains within it the energy which, when displayed under certain forms, we call life. Certainly if we except mental phenomena, there is no form of energy put forth in the living thing that is not obtained from "dead" matter, and even mental phenomena depend upon that dead matter. Is it going too far to attribute to matter the inclusion of that which we call mind?

A RAPID AND EFFECTIVE TREATMENT OF TRENCH DISEASE.

Trench disease is a name given, by the French at least, to the severe and often infected dermatoses of the lower extremities following long standing in the battle trenches. These lesions are often surprisingly resistant, ordinary ointments having no effect, and simple aseptic dressings delaying results till patience is exhausted. In the *Journal de médecine de Paris* for September, 1916, Dr. L. Chastanet tells how he manages such cases. After removing scabs with cotton swabs sterilized by boiling, he cauterizes deeply with silver nitrate, which is not especially painful, and applies a simple water dressing. As long as the surrounding tissue retains its dark color, he continues with the nitrate, but when a pink or flesh colored tint appears, he makes one last, deep, and extensive application, including the lips of the wounds, and follows this up at once with an application of tincture of iodine, ten per cent. Immediately a "dazzling" precipitate of silver iodide appears. The wound is dried and covered with a sterile compress. In the great majority of cases, the wound will be found quite dry twenty-four hours later; if not, Chastanet begins all over again. As soon as the wound is found dry, it shows that cicatrization is proceeding under the protection of the pellicle of silver iodide, which is easily detached once the integrity of the epidermis is restored. The whole process never takes longer than a fortnight.

The precipitate spoken of is in reality an albuminoiodide of silver; it is supple, elastic, and extremely adherent to the subjacent tissues. White in the nascent stage, it quickly turns yellow; daily it is thickened by the drying of the underlying secretions, until finally it peels off of itself, or is easily detached. Wounds treated in this manner are clean and look as if they were covered with a skin graft. A minor advantage is economy, as changes of dressing become unnecessary after the first satisfactory application.

THE DESTRUCTION OF HOUSE FLIES.

Formaldehyde and sodium salicylate are the two best muscicides, according to Earle B. Phelps and Albert F. Stevenson (*Public Health Reports*, November 3, 1916); both are superior to arsenic from many viewpoints. For household use, according to the writers, solutions of these agents may be prepared by the addition of three teaspoonfuls of either the forty per cent. solution of formaldehyde found on the market or the powdered sodium salicylate to a pint of water. Nearly fill a glass tumbler with the solution, place over this a piece of blotting paper cut to circular form and somewhat larger in diameter than the tumbler, and over this invert a saucer. Invert the whole device and insert a match or toothpick under the edge of the tumbler to allow access of air. The blotting paper will remain in the proper moist condition until the entire contents of the tumbler have been used, and the strength of the formaldehyde solution will be maintained. A little sugar sprinkled upon the paper will increase the attractiveness of the poison for the flies. Either of these preparations may be safely used where there are young children, although the addition of the sugar is not recommended in such cases. The formaldehyde, unlike arsenic preparations, has an unpleasant taste, and in the concentrations recommended a harmful dose could not conceivably be taken. No bad effects would result from the consumption of a considerable quantity of the salicylate.

THERE ARE EXCEPTIONS TO ALL RULES.

An anonymous correspondent of the *Lancet* for November 4, 1916, acknowledges that there is a popular and widely known belief that where there are twins of opposite sex, the girl is invariably sterile; in fact, he had been asked about his own marriage in that respect. Although his wife, however, is such a twin, she has thus far presented him with five healthy children.

News Items

Changes of Address.—Dr. Leo V. Rosenthal, to 954 South Broad Street, Trenton, N. J.

Dr. Frank R. Starkey, from Walnut and Seventeenth Streets, Philadelphia, to the David Whitney Building, Detroit, Mich.

Dr. Joseph A. Mendelson, from 3302 North Broad Street, Philadelphia, to 4012 Georgia Avenue, N. W., Washington, D. C.

Harvey Society Lectures.—The third lecture in the course will be given on Saturday evening, November 25th, by Dr. Paul A. Lewis, of the Henry Phipps Institute for Tuberculosis, the subject being Chemotherapy in Tuberculosis.

Anniversary Address of the New York Academy of Medicine.—This address was delivered on Thursday evening, November 16th, by the Hon. Chauncey M. Depew, his subject being the Art of Growing Older, and the Value of an Interest in Public Life.

The Narcotic Evil in Philadelphia and Pennsylvania.—Under this title the Philadelphia Narcotic Drug Committee has issued the report of its findings. Copies of the pamphlet may be obtained from the secretary of the committee, Dr. John H. W. Rhein, 1732 Pine Street, Philadelphia.

Northern Medical Association of Philadelphia.—At a meeting of this association, to be held in Philadelphia on Friday, December 8th, Dr. Max Einhorn, of New York, will read a paper on the Diagnosis and Treatment of Gastric and Duodenal Ulcer. The discussion will be opened by Dr. John B. Deaver, Dr. David Riesman, and Dr. Martin Rehfuss.

Columbia Wants $12,000,000.—In his annual report as president of Columbia University, Mr. Nicholas Murray Butler asked for an endowment of $12,000,000 in order to create a great medical centre. He also asked for an endowment of $6,000,000 for the dental school which was established this year, and for other endowments for the engineering departments, making a total of $30,000,000 needed by Columbia University.

Endowment Fund for Henry Street Settlement.—Announcement is made by the chairman of the finance committee of Henry Street Settlement, that plans are being made to raise a fund of $1,000,000 to enable the settlement to increase its facilities, particularly in caring for children who have been crippled by poliomyelitis. Nearly $600,000 of the fund has been raised, and several persons have promised annual contributions.

A Scientific Expedition to the Amazon Valley.—A party of scientists, headed by Dr. Alexander Hamilton Rice, left New York on Wednesday, November 15th, for South America, for the purpose of making a topographical survey of portions of the Amazon Valley and interior districts and studies of the diseases of the natives in that section. Dr. William T. Councilman, professor of pathology at Harvard University, is a member of the party.

Yorkville Medical Society.—At a meeting of this society, to be held on Monday evening, November 20th, at the Aschenbroedel Club, the program will consist of a symposium on acute anterior poliomyelitis, as follows: From the laboratory, by Dr. A. L. Garbat; Pathology and Diagnosis, with lantern slide demonstration, by Dr. Marcus Neustaedter; from the pediatrist, by Dr. Godfrey Pisek; from the orthopedist, by Dr. Henry Keller. Dr. Henry Heiman will open the discussion.

Medical Association of the Greater City of New York.—A stated meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, November 20th, at 8:30 o'clock. The evening will be devoted to a consideration of poliomyelitis, its diagnosis and treatment. Papers will be read as follows: Tonsillectomy in Poliomyelitis Based on Rosenow's Bacteriological Investigations, by Dr. Joseph C. Roper; Aftertreatment of Poliomyelitis, by Dr. Henry W. Frauenthal; Diagnosis and Serum Treatment of Anterior Poliomyelitis, by Dr. Abraham Zingher.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, November 20th, Clinical Association, Blockley Medical Society, Society of Normal and Pathological Physiology, Medical Society of the Woman's Hospital; Tuesday, November 21st, West Branch of the County Medical Society, Section in Medical History of the College of Physicians; Wednesday, November 22d, County Medical Society; Thursday, November 23d, Pathological Society, Northwest Branch of the County Medical Society; Friday, November 24th, Neurological Society, South Branch of the County Medical Society, Northern Medical Association, Medical Club (directors).

Lectures on Health Insurance.—The American Association for Labor Legislation has arranged a series of four lectures on health insurance, to be given Monday evenings, in the Evans Memorial Hall, Boston. The first of the series was given on Monday, November 13th, by Professor Irving Fisher, of Yale University, on the Need for Health Insurance. Other lectures in the course are: The Practice of Health Insurance in Europe, by Miles M. Dawson, on November 20th; on November 27th, the subject will be the Physician's Part in Health Insurance; on December 4th, Dr. John B. Andrews, secretary of the American Association for Labor Legislation, will speak on Health Insurance Legislation Now Proposed in the United States.

Poliomyelitis Clinics in Boston.—Announcement is made that the Massachusetts State Department of Health has joined with the Harvard Infantile Paralysis Commission in providing a series of clinics, to be situated in Boston and in points outside the city where physicians may bring their patients for consultation and advice as to treatment. The work of the clinics will be under the supervision of the Harvard Infantile Paralysis Commission, with skilled surgeons in attendance at the clinics, together with nurses specially trained for the work to assist at the clinics, to care for the follow up work in the homes and to instruct patients and their parents as to exercise and treatment advised. The members of the commission are Roger Pierce, Dr. F. M. Peabody, Dr. R. W. Lovett, and Dr. M. J. Rosenau. The Boston clinic will open about November 20th.

Compulsory Health Insurance.—A public meeting will be held at the New York Academy of Medicine on Thursday evening, November 23d, under the auspices of the Committee on Medical Economics of the Medical Society of the State of New York, to discuss the question of compulsory health insurance. The symposium will be opened by the chairman of the committee, Dr. S. J. Kopetzky, and papers dealing with various phases of the question will be read as follows: The Relation of Health Insurance to Preventive Medicine, by Dr. B. S. Warren, of the United States Public Health Service; the Labor Man's Point of View, by Mr. Hugh Frayne, of the American Federation of Labor; the General Medical Practitioner's Point of View, by Dr. Eden V. Delphey; the Advantages of Compulsory Health Insurance, by Mr. Miles M. Dawson, insurance expert. The discussion will be opened by Dr. Lee K. Frankel, Dr. Alexander Lambert, and others.

Health Insurance to Be Discussed in Washington.—The International Association of Industrial Accidents Boards and Commissions, a quasiofficial organization of the official bodies charged with the duties of administering compensation laws in the United States and Canada, has called a meeting to be held in Washington, D. C., December 8th and 9th, to consider the question of health insurance. The discussions have been arranged under four heads, as follows: Workmen's compensation, sickness (health) insurance and benefits, invalidity and old age insurance, and social insurance applying especially to women. The conference does not expect to adopt resolutions relating to particular policies or methods, but to define clearly the various problems demanding solution at the hands of legislators. The fee for membership in the conference, which entitles the holder to participate in the discussions and to receive a copy of the *Proceedings of the Conference*, is two dollars. Applications should be addressed to Royal Meeker, secretary-treasurer, United States Commissioner of Labor Statistics, Washington, D. C.

Red Cross Christmas Seals.—Twenty-five millions of these seals were sent out on Monday, November 13th, from the State Charities' Aid Association, 105 East Twenty-second Street, New York, for distribution throughout the State, and the sale of the seals began on Wednesday, November 22d. Buffalo has ordered 4,500,000, Syracuse and Elmira 1,000,000 each, Albany 800,000, and Troy 500,000. Last year New York won first place in the national competition among the larger States for the highest per capita sale of seals.

Mortality Statistics of New York.—According to figures given out by Acting Health Commissioner John S. Billings, the death rate for the week ending November 11, 1916, was 0.35 lower than the corresponding week of last year.

There were only seven deaths from poliomyelitis in the entire city during the past week. The total number of deaths reported during the week was 1,315, equivalent to a rate of 12.28, compared with 1,324 deaths and a rate of 12.63 for the corresponding week of 1915.

The death rate for the first forty-six weeks of 1916 was 13.96, compared with 13.91 for the corresponding period of last year. According to Doctor Billings, this is really a remarkable showing in view of the 2,000 deaths from poliomyelitis this summer and the 2,000 deaths during the grippe epidemic last January.

Industrial Medicine.—The fourth annual industrial welfare and efficiency conference will be held in the hall of the House of Representatives, Harrisburg, Pa., November 21st, 22d, and 23. On Thursday, November 23d, the medical session will be held, with Dr. Francis D. Patterson, chief of the division of hygiene and engineering of the State Department of Labor, in the chair. Dr. B. S. Warren, of the United States Public Health Service, will read a paper on Health Insurance, which will be discussed by Mr. John B. Andrews, secretary of the American Association for Labor Legislation, New York. Other papers on the program are: Medical Supervision of Workmen and Its Relation to the Prevention of Industrial Accidents, by Dr. Loyal A. Shoudy, of the Bethlehem Steel Company; Relation of the Industrial Physician to the Problems of Modern Industry, by Dr. J. W. Schereschewsky, of the United States Public Health Service; Industrial Eye Injuries and Their Prevention, by L. A. De Blois, of Du Pont, de Nemours & Co., Wilmington; Tuberculosis as It Affects the Worker, by Mr. A. P. Bowers, vice-president of the Pennsylvania Federation of Labor.

Eleven and a Half Million Dollars for Chicago University Medical School.—The General Education Board has announced that that board and the Rockefeller Foundation have jointly appropriated $2,000,000 which would be added to money and property worth $9,000,000 for the founding of a medical department at the University of Chicago. Julius Rosenwald, a Chicago merchant, has added $500,000 to the endowment of $2,000,000 which must be raised by the university under the terms of the gift from the Rockefeller Foundation. It is expected that the endowment will be brought up to the sum of $15,000,000. Dr. Abraham Flexner said that Chicago had been chosen, rather than New York, for the reason that the University of Chicago had no department of medicine now, that branch of science being taught by arrangement with the Rush Medical College: "So we will begin at the beginning of Chicago, without reorganizing an existing institution. The schools in New York, Philadelphia, and Boston, for instance, already have staffs consisting of eminent physicians and surgeons who spend part of their time in practice. It would be very difficult to reorganize them so that the staff of teachers would devote all their time to the work of the institutions. The General Education Board is in favor of the full time plan. The University of Chicago made a proposal to us which we considered favorably." It is understood that the object is to provide advanced teaching which will obviate the necessity for foreign study by American students. It is understood that the Rush Medical College will go out of existence when the new school is ready to open. The school will be erected on the Midway Plaisance and the laboratory building will be near the Presbyterian Hospital which will be part of the school.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-fourth Communication.

CATARRHAL GASTRITIS.

Inasmuch as by far the greater number of cases of catarrhal gastritis are caused by dietetic errors, it follows that the first and principal mode of treatment should be the correction of these errors. To this end the immediate necessity is to stop *all* food and thus give the inflamed surface of the gastric mucosa a period of rest from irritation. If the motility of the stomach is so diminished that food is remaining there, fermenting and decomposing, removal of this material by the quickest, shortest route is urgently demanded; for this purpose a simple emetic like ipecacuanha in abundant water is usually satisfactory. More often, however, there may be increased reflex motility with discharge of undigested material into the duodenum; especially is this likely to be the case when the acid secretion is above normal, inasmuch as increased acidity tends toward inhibition of the pyloric sphincter. The leading indication, then, is to remove all irritating substances from the mucous membrane, thereby affording the mucosa a season of rest. This rest period may well be prolonged from twenty-four to forty-eight hours, or more in severe cases; permitting only very warm water to enter the stomach.

In some cases, where the inflammation of the mucous membrane is severe, it may seem feasible to protect the surfaces, in which case it is customary to use some of the relatively nontoxic preparations of bismuth.

A not inconsiderable number of these attacks occur with that class whose sole aim in life seems to be the pampering of their appetites. With this class, relapses and recurrences are frequent until such a time as the afflicted acquire a wholesome interest in some object outside of themselves, and set out to do something really worth while with such faculties and endowments as they may possess. With such an awakening the reflexes along both vagus and sympathetic distributions become more nearly normal, simpler food is eaten, morbid introspection is reduced, and the general tone of the whole system, including, of course, the stomach, is greatly improved.

In the convalescent stage of gastritis practically all authors recommend the administration of the proteolytic ferments, pepsin and pancreatin, apparently with the tacit assumption that a deficiency of these enzymes must exist and that an outside supply must be furnished. But in no case has it been satisfactorily demonstrated that apepsia or hyperpepsia ever exists; we have no convincing evidence that there is at any time a deficiency of pepsin in the gastric secretion or of the several enzymes of the pancreatic secretion; in fact, our present evidence is that a given food is to a large measure its own stimulant of the particular enzyme needed for specific digestion; or that satisfactory secretogogues, like meat extracts, may be administered for their inciting power. Concerning pancreatin, especially, it would seem as if its administration was useless, as in the absence of succus entericus the tryptic ferment would be inactive, and in any case it would not act in the acid medium of the stomach; hence it would probably be hydrolized by the gastric enzyme in the same manner as would any other nitrogenous body. If either of these ferments is to be used at all, the best plan would be to place it in suitable food material for some time before alimentation is demanded, and thus permit of partial predigestion; such a reduction of the proteins to peptones, or even further to the amino bodies, might readily be conceived a reasonable procedure, thereby saving the stomach and duodenum so much work, and affording an extended period of rest while yet maintaining adequate nutrition.

(*To be continued.*)

Radiotherapy in Peripheral Tuberculous Adenopathy.—E. Albert-Weil (*Paris médical,* September 23, 1916) asserts that by virtue of recent improvements in x ray technic, through which treatment can be restricted largely to the more penetrating rays of short wave length and much larger doses used without exciting dermatitis, there is now no form of tuberculous adenopathy in which x ray treatment is not indicated. The x rays melt down and cure the largest lymphatic masses, even without the aid of general treatment or heliotherapy; very rapidly when the glandular masses are semihard or recent, less rapidly but with equal certainty when they are hard and confluent. In closed suppurative cases, aspiration with a fine needle should preferably precede to remove the pus which forms an obstacle to the rays. In suppurating cases with sinuses and skin ulceration, the pus and necrotic tissue should likewise be withdrawn beforehand, the bridges of skin separating sinus openings sometimes cut through, and iodine applied from time to time to combat superadded infection. The x rays remain, however, the main therapeutic factor. Weil divides the skin over the affected glands in as many districts as are required, so that each unit of surface treated shall receive approximately the same dose of rays. Over each area hard rays are passed through a four mm. aluminum plate, measuring eight or nine on the Benoist radiochrometre. The sittings in each region are repeated until every portal of entry has received ten, twelve, or even fourteen H units of rays. The total amount is administered in five or six consecutive days. Marked reactions with high temperature do not follow such a procedure, except occasionally in certain soft, rapidly developing gland involvements. Neither is there ever noted a rapid growth of the lymphatic masses, or a general spread of the tuberculous process; such results as these, sometimes noted formerly, signify insufficient doses. Weil reports a number of cases, with photographic reproductions, illustrating the excellent results obtained from the use of rays in cervical adenitis.

Radium in Cancer of the Uterus.—John G. Clark (*Annals of Surgery,* November, 1916) states his views on the foregoing subject in the following words: Removal of the uterus in cases of cancer of the fundus has yielded such good results that I do not feel we are justified in taking any chances with radium, not even in the border line cases. Our attitude toward the cervical and fundal growths is diametrically opposite. In border line cases of cancer of the cervix we invariably employ radium. In advanced cases of cancer of the fundus we invariably perform a hysterectomy. A pessimistic view dominates our outlook in the surgical treatment of cervical growths if the pathological process is at all advanced, whereas fundal growths may be viewed with a cheerful optimism even when the cancerous process is extensive. As a palliative agent, we may assert with full assurance that we have never obtained results with any other method that have even approached in beneficence those secured by radium. The cloud, however, that hangs over the remedy is the danger of unbridled optimism.

Major Surgery under Minor Anesthesia.—Joseph Wiener (*Annals of Surgery,* November, 1916) sums up as to the question of performing major operations under local anesthesia thus: Are there any inherent objections to operations under local anesthesia? Surely there are: First, is the fear of causing pain. With increasing experience, with proper technic, with proper selection of cases, and by combining local with brief general anesthesia, pain will in large measure be eliminated. And even if pain were not entirely eliminated in some cases, the lessened danger of the operation, the fewer postoperative complications, the wonderful difference in postoperative comfort, would weigh heavily in favor of such procedure. That operation under local anesthesia takes more time is true; but if we figure ten or fifteen minutes tc get the patient under ether, the difference in time for many operations will not be marked. Wiener has several times done a double inguinal hernia operation under local anesthesia in an hour. One objection is a real one. It is more trying for the surgeon to operate under local than under general anesthesia. There is the additional mental strain of encouraging the patient to keep quiet and to keep up his courage. The cooperation of an intelligent patient is a great help. In any case we can arrange our day's work so that not too many operations under local anesthesia are done at one sitting. Even if it is much more trying to do major operations without general anesthesia, should we not sacrifice our personal comfort for the great advantages to the patient? The answer to that question will in large measure determine the field of usefulness of this procedure at the hands of each individual surgeon.

Medical Treatment of Stenosis of the Pylorus.—E. W. Mitchel (*Ohio State Medical Journal,* November, 1916), in treating this disorder in infants does not change from mother's milk to artificial foods. In the mild cases the period of feeding is prolonged to four hours and the stomach is washed out previous to each feeding. In the severe cases from a dram to half an ounce is administered every hour or two, with lavage two or three times in the twenty-four hours. If artificial foods have to be used, they should be the first selection. Sodium bicarbonate should be added to the wash water. Normal salt solution should be given per rectum. Rectal feeding, except the giving of glucose in the five per cent. solution is of little value. To relieve pain and allay spasm opium and belladonna should be used.

Diagnosis of Ulcer of the Stomach and Duodenum.—Robert Dahl (*Hygiea,* September 30, 1916) reports forty-one cases in which the diagnosis of ulcer was verified by operation. The site varied between the lesser curvature, the pylorus, and the duodenum. The pains appeared with regularity, the same length of time after the same meal, earlier after a light repast, and later after a full meal. Sensitiveness to pressure is often present only at the time that the patient suffers the pain. Hypersecretion was present in only eight cases. In twenty-three cases there was no vomiting. Four cases had been x rayed without result as regards locating the ulcer. The author concludes that many cases of ulcer manifest themselves only by pain, but this is always more or less tardy, never immediately after meals.

Light in the Treatment of Tuberculosis.—V. Malmström (*Hygiea,* September 30, 1916) states that he has, since February, 1914, treated over a hundred cases of external and internal tuberculosis with the quicksilver quartz lamp. The patient's nude body was exposed daily for one hour to the light bath at a distance of seventy-five cm. from the lamp, the beginning dose being somewhat smaller, by shorter time and longer distance from the lamp. Paper screens covered with chalk were used as reflectors to intensify the light. The pulmonary cases were mostly in the advanced stage. After a beginning reaction in many cases, in which the sputum findings were abundant, a decided improvement occurred, the rales having uniformly diminished in number and extent, taking on a dry character; most noteworthy was the favorable effect upon the general condition of the patient. Large tuberculous glands completely disappeared or were reduced to insignificant nodules. An empyema fistula of two years' standing was healed by three and a half months' light treatment. Tuberculous affections of bones, joints, nose, pharynx, larynx, and peritoneum, as well as lupus vulgaris, were cured or much improved. The cases of external tuberculosis likewise showed a temporary reaction followed by a very marked improvement in the general as well as the local condition. The author believes that light therapeutics is destined to become a valuable adjuvant to the hygienic dietetic treatment of external and internal tuberculosis, and raises the question of its possible application in tuberculosis of the bronchial glands.

Hæmangeioma cavernosum.—William E. Lower (*Surgery, Gynecology and Obstetrics,* November, 1916) states that the usual treatment of hæmangeioma cavernosum is its complete extirpation, although Carl Beck has devised an ingenious method by which the masses of vessels are gradually transformed into connective tissue by a subcutaneous spiral ligature. "In this manner the circulation is shut off within the tumor. . . This procedure is repeated until the tumor has been diminished to the smallest possible nodule of connective tissue, and the healthy skin enlarged to the utmost. Then the hard connective masses are excised and the borders united in fine linear union. It is necessary to ligate the largest afferent vessels."

The Application of Anociassociation to Obstetrics.—Carl L. Hoag (*Surgery, Gynecology, and Obstetrics,* November, 1916) concludes as follows on this subject:

1. He wishes to emphasize that his experience, brief as it is, is in accordance with that accumulating rapidly on all sides today; that nitrous oxide-oxygen analgesia is safe to both mother and child.
2. The use of limited amounts of scopolamine during the first stage is a distinct advantage, shortening the time during which gas is required and making the analgesia more complete.
3. The work done so far has encouraged him in the belief that the injection of the perineum is a distinct help in securing relaxation of the outlet. This point gained, gas-oxygen, in experienced hands, will do as well as either chloroform or ether. The lack of any complication whatsoever resulting from the perineal injections should encourage those who feel timid about its used.
4. The combined use of scopolamine, nitrous oxide-oxygen, and local infiltration offers a practical and efficient means of conducting labor, and extends anociassociation, in its broadest sense, to the obstetrical field.

Management of Arterial Hypertension.—H. F. Stoll (*Medical Record,* Oct. 28, 1916) divides cases for treatment into two classes; those coming to the office and those confined to their homes or the hospital. The first group should be forbidden to hurry at any time, relaxation periods should be lengthened especially after the midday meal, and stairs should be ascended slowly if at all. Patients with moderate hypertension, free from morning headaches, eliminating fifty per cent. or over of phthalein in two hours should not be put on a milk diet nor forbidden meat. Meat in moderate amount once a day is desirable. The heaviest meal is best eaten at midday and supper must be simple. Several warm baths a week are advisable with a daily bowel movement, and a cathartic once or twice a week. Too active catharsis must be avoided as it may cause weakness and faintness. Vasodilator drugs are not usually indicated and often do harm, but in very high tension cases venesection may be lifesaving. Relief from sleeplessness, nervousness, and headaches by the use of potassium iodide and mercury may often be obtained even where the Wasserman is negative. The second group should be put to bed, and given digitalis, if indicated, irrespective of blood pressure. Fears of a higher tension therefrom are unfounded. Digitalis and potassium iodide often work better together than singly. A low phthalein output and an increase in blood nitrogen are found in this stage of the disease, and the diet should be low in protein and sodium chloride. If the patient is very edematous only 800 c. c. of milk should be allowed in twenty-four hours. Carefully regulated exercises should be begun when compensation returns. The distressing dyspnea in the final days can be controlled only by morphine and it should not be withheld when the end is near.

Hand Disinfection.—W. Burk (*Medizinische Klinik,* September 24, 1916), in an endeavor to find a substitute for rubber gloves, tried several substances as coatings for the hands, but each was found untrustworthy. These included solutions of celluloid, of cellulose, and of the product resulting from the interaction of phenol and formaldehyde. Each of these preparations sufficed to coat the skin with an impervious and insoluble layer without damage to the skin, but in the course of operations it was found that they all cracked about the joint flexures. From these observations, however, the author was led to test the disinfecting power of a suspension of bolus alba in acetone and found it to be extremely effective. The bolus served the useful purpose of filling up the pores and preventing the escape of the contained organisms. The technic finally adopted was to wash the hands thoroughly for five minutes with soap and warm water, to clean the finger nails, and then to apply the bolus suspension and allow it to dry. The fine powder remaining was removed with a sterile towel and the hands were ready for the operation. This technic gave results superior to those of other and more drastic methods.

Treatment of Gas Gangrene.—Franz (*Medizinische Klinik,* September 24, 1916) expresses the opinion that a considerable proportion of cases which have been cured by simple surgical antisepsis have not been cases of true gas gangrene. He supports this view by the citation of several confusing cases in which the appearance of gas in the tissues was due to the mechanical introduction of air by the missile which caused the wound, or by the growth of simple saprophytic organisms. In cases of true gas gangrene there is only one form of treatment which is reasonably successful. namely, early amputation through healthy tissues. In a few cases, seen early and showing relatively sharply localized infection, cure has resulted from multiple free incisions with excision of the affected muscle masses in their sheaths. The use of oxidizing agents and of oxygen itself gave no satisfactory results in the author's cases. In cases in which the diagnosis was doubtful it was his practice to dress the wound lightly after excision of all destroyed tissues and to make observations of the wound at intervals of a few hours, day and night. Upon the first indication of gas gangrene amputation was performed. In every case in which there was a fracture complicating the gas gangrene, amputation was performed at once. Even amputation was found to fail of cure in cases in which it had been delayed for more than twelve hours after evidence of infection had become certain.

Wounds of the Chest.—C. P. Howard (*American Journal of Medical Sciences,* November, 1916) says that the great majority of wounds of the chest received in battle, when the wounded are removed from the battlefield and eventually taken to a base hospital, need no treatment apart from absolute rest and a bland nutritious diet, as the bloody exudate usually is absorbed at the end of fourteen days after the reception of the wound. Of course, many such wounds received in battle may be fatal within a short time. Occasionally bloody fluid persists after the expiration of two weeks, and then removal by aspiration may be indicated. Less than seven per cent. of his cases ended fatally. Convalescence is slow, but the flattening of the chest almost disappears in the course of several months, and it is not uncommon to see such patients return to the firing line.

Management of Poliomyelitis.—Robert W. Lovett (*Medical Record,* Oct. 21, 1916) states that in the acute phase, from the onset to the disappearance of tenderness the treatment should consist of rest, and absence both of irritation and of meddlesome therapeutics. Splints should be used to prevent deformities while blood serum of immune patients may do good if given early. In the convalescent phase the question of muscular care and development arises when the tenderness has disappeared. Lovett considers that it is better to get the patient on his feet about two to three months after the attack. The use of braces is governed by the rule that if the patient cannot walk without them or if in walking or standing he does so in a deformed position then apparatus should be worn. With the patient up and supplied with braces, if necessary, three measures are indicated; massage, electricity, and muscle training. Massage promotes the circulation of blood and lymph, removing waste products and retarding muscular atrophy and atony. Electricity, whether faradic or galvanic, should not be relied upon too much. Muscle training is an effort to reconnect a cerebral motor impulse with a peripheral muscle contraction. It aims at two things, first at forcing the efferent impulse to develop a new path around the disordered nerve centre in the cord, and second at securing contraction of the desired muscle which is the best treatment of the muscle itself. The third or chronic stage begins about two years after the onset and here comes in the question of operative interference. Tendon transplantation should not be deferred too long, although the more destructive bone operations are better deferred to three or four years.

A Method of Augmenting the Resisting Powers of the Infected Organism.—Fernand Barbary (*Bulletin de l'Académie de médecine,* September 26, 1916) recommends, after extended trial since 1912 and lately in an auxiliary hospital in which 767 wounded soldiers and 797 other patients were treated, the induction of increased resistance to bacteria in infectious cases by injections of cholesterin and camphor. The use of camphor is based on the antitoxic and roborant power it has been shown to possess by Siebert, Lafon, and Baudet; and that of cholesterin, on the work of Chauffard, Guy-Laroche, Grigaut, and others, who credit cholesterin with antihemolytic and antitoxic properties, and have shown that the establishment of immunity is accompanied by a hypercholesterinemia, which seems to preside over the formation of antibodies. In septicemia, infectious cachexia, gangrene, paratyphoid, and tuberculous infections, Barbary found a distinct diminution of the cholesterin in the blood. He finds infection in general rapidly attenuated by injections of camphorated oil in large doses and of cholesterin. The amount of cholesterin in the blood is quickly increased, probably by excitation of the cholesterin forming function of the adrenal glands. Results clinically obtained—only four of the 767 wounded patients succumbing, and one of these through an accidental fall—lead Barbary to advise that this method be applied in all cases of dangerous wounds, both in the hours immediately following the time of injury and when operative work is to be performed. The preparation used consists of chemically pure cholesterin, 0.2 gram; camphor, 0.5 gram, and strychnine sulphate, 0.0005 gram, in five grams of olive oil, previously washed with alcohol and sterilized. In infected wounds, one to three such ampoules are injected daily until the temperature recedes, after which one ampoule a day suffices. A series, each of ten daily injections, is subsequently given. In operative cases, one or two injections are given on the eve and on the day of operation, and later, a series of injections.

Hand Disinfection with Hypochlorites.—Dubard (*Bulletin de l'Académie de médecine,* September 26, 1916) recognizes the necessity, in a solution employed for this purpose, that it shall do no harm to the surgeon's epidermis. He now uses a solution made by dissolving 150 grams of strong chlorinated lime (one hundred chlorometric degrees) in five litres of water, then adding 180 grams of magnesium sulphate, thus converting most of the lime to magnesium hypochlorite. A little of the lime, with these proportions, remains unneutralized, but this is not sufficient to injure the skin, and has the advantage of increasing the chlorine value of the solution. In preparing for operative work, the hands are first washed with sterile water, brush, and soap, then immersed for four minutes in the solution. Next they are dried in strong alcohol, wiped with a sterile towel, and rubbed together with a little sterile oil. The final step is to prevent the hands from becoming moistened when in contact with the body tissues and secretions, thus affording additional asepsis and protection. It consists in the application of a mixture of sterile olive oil, sixty-five parts; essence of camphor, thirty parts, and oil of origanum, thyme, or mint, four parts. Ninety-eight operations, including thirty-three gastroenterostomies, were performed with this method of hand disinfection, without the least sign of infection, in spite of the fact that much septic surgery was being done at the same time without any protection for the hands other than that afforded by the procedures mentioned. Bacteriological tests showed this method to be distinctly superior to the use of tincture of iodine. No irritant action was exerted by the ungloved hand.

Treatment of Syphilis.—W. T. Wootton (*Medical Herald, October*, 1916) points out the futility of trying to bring a syphilitic under the fullest possible influence of mercury by the oral administration of the drug, and holds that the intramuscular method is little if any more effective. He further emphasizes the fact that the spirochetes invade the system very early in the infection and that treatment must be started at the earliest possible moment. His practice in all cases is to give repeated short courses of the most intensive treatment, using mercury by inunction to the point of saturation, and salvarsan by vein at five day intervals for two to six doses during the course of inunctions. Following each course there is a rest of three to six months without any form of treatment and the course is then repeated irrespective of the serological findings. Iodides are also given to meet special indications and in appropriate doses. This form of treatment must be adjusted to each individual case and it is not possible to state in advance just how much of each drug the patient will require for saturation. The treatment has given quite as good results in the author's hands in cases of tabes and syphilis of the central nervous system as has the intraspinal injection of salvarsanized serum. In such cases he advocates lumbar puncture several times during each course of treatment to promote the passage of the drugs and of antibodies into the nervous tissues. Although this method is intensive it has not caused any greater harm to the kidneys than the usual milder but more prolonged methods employed, and has given decidedly better results.

Experiments with Soldier's Foot.—Harold D. Corbusier (*Military Surgeon*, November 1916) suggests the following rules: 1. Two or more months before going to camp make a careful inspection of your feet. If there are corns, whether large, small, or soft, your shoes are not of the right shape.

2. Look for ingrowing nails and bunions, or any tender or inflamed spots.

3. Look for badly shaped toes, lapping over, hammer toes, or "claw" toes.

4. See if the arches are painful or obliterated on standing, or if the foot turns outward too much, causing the angle to roll inward.

5. If you have any of these troubles, seek treatment *at once*, from an orthopedic or a general surgeon, *not* from a chiropodist.

6. *Always* wear a broad toe shoe and one which is sufficiently long in the heel to ball measurement; also, the fit of the heel must be good, not loose, as commonly found in most broad toe civilian shoes. Obtain the camp shoe recommended by proper authority—it must be broad at the toes; thick soled, with well fitting heel; made of oiled leather; pliable throughout, especially in the sole, and without lining; the upper of sufficient height to bring it well above the ankle bones, laced with eyelets only. Wear your camp shoes at least a few hours each day before going to camp, if you have the proper shoe. This is to adjust your foot to the new shape, which is probably different from what you have been wearing.

Treatment of Phagedenic Tropical Ulcer.—Boucher (*Presse médicale*, October 5, 1916) reports good results from formaldehyde treatment in fourteen cases of phagedenic ulcer of spirillar origin. A cotton tampon dipped in forty per cent. formaldehyde solution was applied over the ulcer, causing a local necrosis. A dry bismuth dressing was thereafter applied, and renewed every week, until healing was complete. The simplicity and rapidity of action of the treatment commend it to the practitioner.

Paratyphoid Infections. — Jay D. Whitham (*Military Surgeon*, November, 1916) emphasizes certain points concerning paratyphoid infections: 1. The disease is more common than is generally supposed; many cases with typhoidal symptoms, but negative Widal reactions, being paratyphoid fever.

2. Paratyphoid infections are extremely variable in their manifestations.

3. Carriers probably play the most important role in the transmission of the disease.

4. Endemics resembling food poisoning, due to paratyphoid bacilli, must be much more commen than is generally supposed. The trench diarrhea of Europe is an example.

5. The disease, though usually mild, may cause extremely severe complications, even death.

6. Considerable evidence has been submitted by competent observers to show that antityphoid vaccination does not sufficiently protect against paratyphoid infections and that a polyvalent vaccine should be used if such protection is necessary.

7. The fighting forces in Europe have suffered greatly from paratyphoid infections which, it is possible, might have been prevented had polyvalent vaccine been used.

Present Status of Röntgen Therapy.—Samuel B. Childs (*Colorado Medicine*, October, 1916), in a review of the therapeutic value of x rays, states that at least ninty-five per cent. of superficial epitheliomas without glandular involvement can be cured by the rays. Epithelioma of the lip and of the mucous surfaces is less amenable to the effects of the rays, but good results can often be obtained in cases without glandular involvement. Contrary to the common belief the results in rodent ulcer are not as good as in epithelioma. Carcinoma of the breast or uterus when inoperable should be given the benefit of x ray treatment and a number of such cases have been cured, while others have been rendered operable. The rays should always be used over a wide area after the surgical removal of carcinoma in any portion of the body. The beneficial action of x rays in inoperable carcinoma can be greatly enhanced by combining them with fulguration or other form of thermal destruction. Sarcoma responds more satisfactorily to the rays than does carcinoma and cures occur in about fifty per cent. of such cases when properly treated. Among the nonmalignant conditions amenable to the influence of x rays are acne vulgaris, acne rosacea, ringworm, psoriasis, chronic eczema, pruritus, lupus vulgaris, and keloid. Some benefit may be derived from their use also in the leucemias and Hodgkin's disease, but the acute forms of leucemia do not respond favorably.

Miscellany from Home and Foreign Journals

Perithelioma and Endothelioma of the Uterus.—W. A. Newman Dorland (*Surgery, Gynecology and Obstetrics,* November, 1916) draws the following deductions from a pathological and clinical review of these conditions: 1. Endothelial tumors of the uterus develop late in life—much later than sarcomata—the peritheliomata generally occurring at the most advanced age.

2. These growths are especially prone to occur in a preexisting neoplasm—a myoma or a fibromyoma.

3. While showing a high degree of local malignancy they but rarely give rise to metastatic deposits elsewhere.

4. It is probable that endothelial uterine tumors occur more frequently than would appear. Hence the importance of early removal of all uterine growths, which should always be subjected to a careful pathological examination.

Regeneration of Agar Culture Medium.—Philalethes Kuhn and Marzell Jost (*Münchener medizinische Wochenschrift,* September 26, 1916) state they have devised a method for the regeneration of used agar. The agar mass which is to be regenerated should be neutral in reaction, if possible, and, after it has been liquefied, eight grams of barium peroxide are added for every 1,000 c. c. Under constant stirring the mass is kept boiling until it is colorless. Then an aqueous solution of seven grams of sodium sulphate is added. This solution should be hot. Twenty grams of animal charcoal are now added to the solution and the entire mass is brought to a boil. The precipitate is allowed to form and the remainder is cleared in the customary manner with egg albumin. Before clearing, 6.5 grams peptone Witte and 6.5 grams of Liebig's meat extract are added for every 1,000 c. c.

Use of the Cochleoorbicular Reflex in the Diagnosis of Organic Deafness. — F. Gault (*Presse médicale,* September 25, 1916) states that in examining in a military hospital a large number of cases of complete, partial, or doubtful deafness, he found the ordinary subjective tests of hearing, based on the patient's own statements, often unsatisfactory, and the objective tests, consisting in determinations of the nystagmic reflex upon rotary, thermal, or galvanic excitation of the labyrinth, likewise insufficient, yielding information only concerning the vestibular apparatus and not the organ of Corti. The cochleoorbicular reflex, on the other hand, gave good results, especially in the latter. A strongly acting bicycle horn was operated at a distance of two metres from the patient by an assistant, while Gault carefully watched for contractions of the orbicularis palpebrarum of each side through a strong hand lens. The patient's opposite ear was plugged with cotton covered with petrolatum, and his sight of the horn was prevented by a suitably placed piece of cardboard or wooden board. The patient was often required to count out loud during the tests, to distract his mind from the reflex itself. In normal ears, sounding the horn was regularly followed by a marked or slight orbicular contraction, with corresponding movement of the eyelids. This implied that the cochleoacousticobulboorbicular reflex arc was open and in working order. In cases of total organic deafness following cerebrospinal meningitis or scarlatina the test was negative. In cases of complete or almost complete deafness from war traumatism, generally labelled "deafness from concussion of the labyrinth," some slight orbicular contraction was usually noticed, and often upon explaining the test and its result to the patient and referring to a mere "torpid condition" of the auditory nerve, surprisingly rapid improvement in hearing was obtained—which leads Gault to consider most of these cases as instances of cortical deafness by inhibition rather than of labyrinthine concussion. In some cases of partial deafness through middle ear disease, the cochleopalpebral reflex, after the subjective tests have been made, permit of a prompt conclusion as to the exact amount of hearing remaining, and of rapidly overcoming any voluntary or subconscious exaggeration of the deafness by the patient. In the case of malingerers, fraudulent claims of total deafness are promptly eliminated.

Spontaneous Liberation of Epinephrine from the Adrenals.—G. N. Stewart and J. M. Rogoff (*Journal of Pharmacology and Experimental Therapeutics,* September, 1916) report an experimental study on the spontaneous liberation of epinephrine in the cat by means of action on the denervated iris and on the blood pressure in the same animal, when blood from the adrenals is permitted to pass into the circulation from a pocket of the vena cava in which it has been artificially collected. The amount of epinephrine spontaneously liberated in cats varied in different experiments from 0.0003 to 0.001 gram a minute for each kgm. of animal. After section of both sympathetic trunks in the thorax near the diaphragm, including the major splanchnics, this spontaneous liberation of epinephrine was completely abolished. No increase in epinephrine liberation was detected when sensory nerves were stimulated.

The Recent Epidemic of Grippe.—Joseph A. Capps and A. M. Moody (*Journal A. M. A.,* November 4, 1916), in reporting a study of a large group of cases occurring during the epidemic of last winter, show that the disease varied from a very mild "cold" to a severe illness. In the majority of patients a leucocytosis was present, ranging from slightly hypernormal to 15,000. Pneumonia was a frequent complication of the disease. A study of the bacteriology in a large number of cases revealed a predominance of the streptococcus and pneumococcus in various portions of the country, with only extremely rare occurrence of the influenza bacillus. The question was thereby raised as to whether the so called influenza bacillus really had anything to do with the epidemic, and in connection therewith it was interesting to find that the records of the great pandemic of grippe of 1889-1890 showed a similar great preponderance of the streptococcus and pneumococcus.

Myasthenia gravis with Thymoma.—W. A. Jones (*Journal A. M. A.*, November 4, 1916) reports a case of this uncommon condition occurring in an adult otherwise apparently well. In this patient at necropsy there was found a smooth, soft, encapsulated thymic tumor which consisted of fetal thymic tissue. The literature of myasthenia gravis showed seventeen instances of persistence of the thymus and ten of thymic tumor in a total of fifty-six necropsies. All of the tumors were benign except one. It would seem that the presence of thymic tissue was closely related to the occurrence of myasthenia gravis.

X Ray Diagnosis of Tumors of the Large Intestine.—H. Schlecht (*Medizinische Klinik*, September 24, 1916) states that in a considerable proportion of cases of tumors of the large intestine diagnosis by means of the x ray and bismuth or barium meal is an easy matter, but there is a small proportion of cases in which the passage of the meal is not obstructed or may even be abnormally rapid, and in which there are no shadows suggestive of neoplasm. In these cases the diagnosis may be renredered easy by the use of a bismuth or barium enema, and the x ray observation of its course. Where a tumor is present there will usually be an obstruction to the passage of the enema at the site of the growth with overfilling and dilatation of the distal portion of the large intestines and the desire to expel the enema. The occurrence of these three symptoms is very characteristic of tumors of the large intestine, so much so, in fact, as to be almost pathognomonic of their presence. If they are combined with the passage of blood, either occult or gross, a malignant neoplasm is almost certainly present.

Multiple Myelomata.—B. M. Vance (*American Journal of Medical Sciences*, November, 1916) reports a case of this nature, with special attention to the pathological findings at autopsy, and studies their relationship to the diseases of the lymphatic hematopoietic system. He concludes that multiple myelomata are multiple primary tumors of the bone marrow, which occur mainly in elderly persons, and are manifested during life by deep seated pain in the bones, characteristic deformities of the skeleton, spontaneous fractures in many bones of the body, severe secondary anemia, and emaciation. The presence of Bence-Jones protein in the urine is characteristic of many cases, but is not a pathognomonic sign of the disease, as it is occasionally found in the urine of other bone conditions. At post mortem cases of multiple myelomata show the presence of soft, homogeneous tumor masses which replace the cancellous tissue of the bones of the trunk, vertebræ, ribs, and sternum, and less often of the ends of the long bones of the extremities, the diploe of the skull, and the small bones of the hands and feet. The multiple myelomata are confined to the bones, though a few cases have been reported of extraskeletal growths. The multiple myelomata are composed of cells practically identical with the myeloblasts of the bone marrow or their derivatives. Five different groups have been described: Myeloblastoma, neutrophile myeloma, erythroblastoma, lymphocytoma, and plasmocytoma. The first three are true multiple myelomata. The lymphocytoma is a distinct tumor type, but as there is considerable doubt regarding the relation of the tumor cell to the myeloblast, it cannot be unquestionably classified as a true myeloma. The plasma cell tumor cannot be considered as a pathological entity until more is known about the origin and mode of development of the plasma cell. Multiple myelomata belong to that group of tumors which are composed of cells derived from the primary mesenchymal wandering cells, and are closely related to the leucemias, chloromas, and other diseases of the lymphatic hematopoietic apparatus.

Use of Carbonic Acid Powder in Treatment of Vaginal Conditions.—Felix Mendel (*Münchener medizinische Wochenschrift*, September 26, 1916) recommends the use of carbonic acid powder prepared from sterile, chemically pure carbonate of sodium in the treatment of vaginal conditions. This powder when blown into the vagina by means of a bellows gives off nascent carbonic acid which has great bactericidal power. Instead of acting as an irritant as most other powders used for this purpose do, it acts as an anesthetic. It also has an antiphlogistic action. Thick discharges are rendered more fluid and are expelled more easily, and secretions are diminished. The treatment is given one to three times daily. The patient may carry out the treatment herself, either in the erect or the recumbent position. No douches are necessary with this method of treatment. The treatment is of far greater value than other forms—such as irrigations or tamponing.

Spasdomic Stricture of the Rectum.—L. J. Krouse (*Lancet-Clinic*, October 28, 1916) asserts that spasmodic rectal stenosis, though frequently held to be imaginary by writers, is really a clinical entity. It is uncommon and of but short duration, but while it lasts it interferes with free passage of the feces. It is easily detected by digital exploration, the rectum imparting that peculiar sensation felt when the finger is grasped by the circular muscle fibres. Relaxation soon occurring, the finger is then introduced up the bowel, but recurrence of the spasm can be repeatedly induced by simply irritating the affected area. The spasm is usually situated about one and a half to two inches above the anus. Krouse believes the lower Houston valve to be the part usually involved. The condition is not a disease *per se*, but a symptom of some rectal disease, or occurs reflexly through disease in one of the adjacent organs. A rectal ulcer is the most important factor. Whatever be the cause, its removal brings about a cure. Krouse agrees with those writers who believe that spasmodic stenosis may be a forerunner of organic rectal stricture, but holds that such a sequence of events is practically limited to cases in which the exciting cause is rectal inflammation in the vicinity of a valve. Curing a rectal ulcer causing stenosis in its early stage will lessen the chances of a subsequent fibrous stenosis. The author reports two cases of spasmodic stenosis, and one of annular fibrous stricture, with an ulcer below which is believed to have been responsible for the stricture.

Obscure Fever in Infancy.—Edgar P. Copeland (*Journal A. M. A.*, November 4, 1916) states that many cases of fever of obscure origin are encountered in infancy and early childhood, and seeks to point out the possible causes for some of these occurrences. One of the commonest forms is that associated with nervous instability, and apparently due to an abnormal response of the organism to ordinary conditions. These cases are very irregular, have nothing in common except the occurrence of fever without demonstrable cause, and occur in neurotic individuals. They are particularly common in rhachitic children, and in those with tendency to laryngismus stridulus or tetany. Among the more definite, but little recognized causes of obscure fever the author has observed dental caries, obscure forms of otitis media which are often recognizable only by the discovery of a drop of pus oozing from the mouth of the eustachian tube, and deep inflammation of the tonsil.

Typhus Fever.—H. da Rocha-Lima (*Münchener medizinische Wochenschrift,* September 26, 1916), as a result of experimental work, concludes that lice are very seldom carriers of typhus infection beyond the first generation. In only one instance in thirteen did the second generation prove to be capable of carrying infection. Lice cannot be infected from the bodies of convalescents. Because of this fact there are no healthy typhus carriers comparable to diphtheria or typhoid carriers. The virus is so sparingly present in the blood during and after the defervescence of the fever that, as a rule, lice cannot become infected during this period. In order to become infected it is only necessary for the louse to bite a typhus patient a single time. Lice which suck the blood of a patient on the fourth day of his disease will show the polar staining bodies described by Ricketts and Prowacek. Whether this is also true during the first three days of the disease has not been determined. The virus can be demonstrated to be present as early as the fourth day following the sucking of the blood either microscopically or by animal experimentation. For animal experimentation guineapigs are as valuable as monkeys.

Retroperitoneal Rupture of the Duodenum by Blunt Force.—Robert Talbott Miller (*Annals of Surgery,* November, 1916) concludes with regard to this accident as follows: 1. Subcutaneous rupture of the duodenum forms ten per cent. or more of the total number of subcutaneous ruptures of the bowel.

2. About one third of the subcutaneous ruptures of the duodenum occur in its retroperitoneal portion and do not communicate with the peritoneal cavity, as a result of the primary injury.

3. In one third of the reported cases, the lesion was not recognized at operation, though operation was undertaken on a diagnosis of probable rupture of the bowel. In contrast to this stands the fact that the findings at operation are distinct and practically pathognomonic.

4. The presence of a retroperitoneal hemorrhagic extravasation, occupying the root of the transverse mesocolon and more or less of the adjacent region, with a peritoneal cavity which is macroscopically clean, is practically pathognomonic of traumatic retroperitoneal rupture of the duodenum, and with the presence of subperitoneal petechial hemorrhages and fat necroses over the ascending colon, transverse colon and mesocolon, presents a typical picture.

5. There is a mortality of ninety per cent. or more in this group of cases, contrasted with an estimated mortality of seventy per cent. in subcutaneous rupture of the bowel in general.

6. The symptoms of such a rupture differ from those of intraperitoneal rupture very slightly except that the onset of severe urgent symptoms is somewhat slower.

7. In the fatal cases, extensive retroperitoneal extravasation is constant, and together with the effects of duodenal fistula and duodenal toxemia is, in part, responsible for the high mortality rate.

Intestinal Parasites in Foreign Students.—Edward J. Van Liebe (*Journal A. M. A.,* November 4, 1916) states that it is well known that intestinal parasites are very common among the Chinese and Japanese, and it has been found that a very large proportion of the Japanese of the working classes in San Francisco harbored one or another parasite. The present study was undertaken to discover the prevalence of such parasites among the higher classes of foreigners, and includes the examination of twenty foreign students. In the stools of ten of these, intestinal parasites were found. The commonest parasite was the ascaris, but hookworm, Trichocephalus dispar, Hymenolepis nana, and Schistosoma japonicum were also found. These findings indicate that there is some danger of infection from the average foreign student coming from a country in which intestinal parasites are common.

Smoke and Powder Gases in Naval Warfare.—D. N. Carpenter (*Military Surgeon,* November, 1916) summarizes the results of investigation of this question as follows: 1. That there is danger to the personnel from the powder gases in naval action from the enemy's explosive shells. This danger is greater in closed gun compartments than in turrets, and the gases may be distributed to all parts of the ship through the ventilating system. Owing to the positive internal pressure in the turrets and the gas ejectors on the guns there is no contamination of the turret air from our own gun fire.

2. Owing to the possibility of fires being started from shell impact and explosion, there is a danger from smoke gases.

3. Perforated funnels, ventilators, etc., may cause smoke contamination of any part of the ship with serious effect on the personnel.

4. The fireroom force is not only exposed to the gases from powder and smoke received through ventilating conduits, but it is possible that there may be some contamination from the furnace fires and coal bunkers.

5. To prepare for this danger it will be advisable: To provide a liberal supply of a simple type of respirator to be used in gun compartments, handling rooms, fire and engine rooms, turrets, etc.; to provide suitable helmets for the repair party to fight fires; to provide additional electric fans and blowers in closed gun compartments to be used in emergencies; and to provide oxygen cylinders.

Proceedings of National and Local Societies

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The President, Dr. G. Hudson-Makuen, in the Chair.

(*Continued from page 973.*)

A Résumé of One Year's Work with Suspension Laryngoscopy.—Dr. Robert Clyde Lynch, of New Orleans, said that, to prevent fracture of the alveolus, he placed a strap under the occiput and clamped it into the angles of the pear shaped ring, thus relieving the pressure of the tooth plates against the teeth. In order to prevent other tooth injuries, he used dental impression spoons filled with moulding compound which offered complete protection to the teeth, facilitated the introduction of the spatula, and made it easier to keep the spatula in the middle line. He also described the table, which could be raised twenty inches, the top tilted and moved in a circle. There were foot and shoulder braces. Regarding intrinsic epithelioma of the larynx, his experience had been exceptionally good with endolaryngeal removal, but he felt that his experience was not large enough to reach definite conclusions. Dissection under suspension was not difficult, and could be done without permitting an instrument to touch the tumor mass. Nineteen cases of papilloma had been successfully operated on, dissecting well below the base, curetting, and painting with alcohol. Pedunculated fibroma, vocal nodules, a cyst of the arytenoepiglottic fold, pachydermic laryngitis, perichondritis of the thyroid, fracture of the thyroid cartilage, tuberculous laryngitis, abscess of the epiglottis, and foreign bodies in the trachea and esophagus were all cared for by means of the suspension apparatus.

Dr. Emil Mayer, of New York, remarked that there was one phase of suspension that had not been mentioned by the writer of the paper, which had worked splendidly in his hands, and that was in the treatment of stenosis of the larynx and trachea. In one instance, that of a little boy who was on his service at Mt. Sinai Hospital, and who had tracheal stenosis, postoperative, it became necessary to intubate, and the only way possible was under general anesthesia. It was his hope that they could keep the trachea widely open with the wearing of the intubation tube. With the capable assistance of his associate, Doctor Yankauer, this boy had been anesthetized, and they intubated a number of times. He had been wearing the intubation tube for a matter of two years now, and they were in hopes that he would be able to do away with it eventually by the interesting method of transplanting fascia in cicatricial tissue. In this case he did not know what he would have done without being able to put the child under general anesthesia and use the suspension apparatus; first of all, to distend the web of cicatricial tissue, and then to intubate.

The second case was that of a man with syphilitic stenosis of the larynx. It became necessary to do a tracheotomy on account of the stenosis. He then received regularly, about three times a week, a distention of his larynx by means of Schrolter's tubes of increasing diameters, so that by the time he was ready for the intubation tube, his larynx was fairly well distended. He also received some salvarsan injections. The speaker felt that they were able to do something for him in a good deal quicker time than ever before. The man was given a hypodermic of morphine and told what they wanted to do, and without any general anesthesia whatever they put in the intubation tube. This remained *in situ*, and about ten days afterward he coughed out the tube. The amount of breathing room was so much greater directly after this that they were willing to do without the intubation tube. In this exceedingly short space of time, by this means and the treatment of salvarsan and mercurial injections, he had been almost cured. The suspension apparatus helped them materially in this case.

Dr. Robert Levy, of Denver, observed that in the treatment of tuberculosis of the larynx he had been pleased with the apparatus in removal of the epiglottis; the special feature in its favor here was that they had perfect control of the hemorrhage following the excision of the epiglottis. Before the advent of the suspension apparatus, in an attempt to remove the epiglottis, he had rather serious hemorrhage upon two occasions. In several cases of epiglottectomy since the suspension work had been in vogue, hemorrhage had had no terrors whatever for him. He had seen an artery spurt from both sides of the stump, of sufficient size to be easily seen by a class of students at some distance from the operation. The artery spurted into the mouth, and they controlled the hemorrhage with the greatest ease by means of artery forceps. In curettage or cauterization of the larynx for tuberculosis the apparatus was of great value because they could do so much more in one sitting than by the direct method. With these cases it had been his practice to use scopolamine and morphine, although in one case he had a death on the table, which he attributed to the highly unstandardized preparation of scopolamine. Tumors of the larynx had been exceptionally easy of removal with this method. This fairly sized malignant tumor was removed by suspension. It sprang from the posterior wall of the larynx and came over by its attachment on the external surface, so that it was partially extrinsic. It was placed in such a position that when the patient sat erect it flopped into the larynx and produced dyspnea. On two occasions the patient was picked up on the street and sent to the hospital, so that any prolonged operation by direct method would have been impossible, but by suspension it was removed with the greatest ease

In the dissection of a venous cyst with large veins that bled freely into thehypopharynx, the method was particularly valuable, because he could make a wide dissection. This case was one in which removal had been attempted on several occasions without success. He made two attempts, a cautery had been used several times, and one consultant injected it with iodine.

It recurred always until they were able to make a wide opening under suspension.

Dr. Harris P. Mosher, of Boston, when Doctor Lynch began his work, especially the work of removing malignant disease of the larynx, withheld his judgment for a time, waiting to see what his results would be. In the paper read this morning he was pleased to see that he had gone on carefully with a great deal of judgment, and that he had come to the conclusion which many felt that he would come to—that is, that the removal of malignant disease by suspension was not a final success, but that thyrotomy was better. For himself, he felt that he much preferred thyrotomy to suspension removal in malignant disease.

Dr. Robert Clyde Lynch, of New Orleans, considered that the chief essential of the suspension apparatus was to obtain relaxation of the parts. Whether the anesthetic was morphine and scopolamine or another, was left to the individual judgment in each case. He had used only cocaine anesthesia, and preferred it. He gave one or two doses of morphine, one fourth grain one or one and a half hour before the operation, and one eighth grain one half hour before the operation was to be done. For surgical work, he much preferred general anesthesia in cases where it was not definitely contraindicated. Under general anesthesia they got the proper amount of relaxation of the parts, and were able then to suspend the patient until they got the proper view. They must understand, suspension was not an easy proposition so far as the patient was concerned. It was not painless, and for that reason patients must be put in shape that would not interfere with the work after it had once been started.

Pathogenesis of the Nasal Neuroses.—Dr. Charles P. Grayson, of Philadelphia, reintroduced the subject because of the fact that during the past few years some very important additions had been made to their knowledge of the causes and consequences of certain disturbances of metabolism, the effects of which should arouse particular interest because of their bearing upon the genesis of the nasal neuroses; namely those that were exerted upon the cerebrospinal and sympathetic nervous systems. Reference was intended only to the vasomotor and secretomotor neuroses of the nose, and not to the functional disorders of the olfactory nerve, nor the neuralgias of intranasal or accessory sinus origin. The treatment of these affections had not been rational, in the sense of having been directed against their cause rather than their effects. It had been too largely local. Loss of vasomotor equilibrium was almost invariably due to a greater or less degree of nervous exhaustion. Anaphylactic reaction might explain a moderate number of cases. The basic condition of almost all of these patients was one of neurasthenia due to metabolic derangement occasioned by persistent violation of the laws of personal hygiene. The studies of Abderhalden, Fanser, Kafka, and others, of the physics and chemistry of the colloids and of the effects of ferments, toxins, and hormones upon the sympathetic nervous system had a close relation to the etiology of the nasal neuroses. No strict pathogenic analogy existed between these diseases and the angioneuroses of the nose, but it required no great stretch of the imagination to discern a possible or even probable relationship between the metabolic processes concerned in each. It was almost a certainty that in dealing with the nasal neuroses they were dealing with phenomena that were the outcome of some perversion of metabolism. Its exact nature might vary in different cases, involving at times some glandular dysfunction, at others toxemias of intestinal origin, and at still others the presence in the blood plasma of certain ferments or hormones, but in all cases the symptomatic result was due to the same intermediate cause—a toxic action which expressed itself through the sympathetic or autonomic nervous system. To be successful in suppressing the neurotic type of nasal disorder, they must abandon their fruitless search for specific remedies and apply themselves to the hygienic instruction of their patients and to the development of an internal treatment founded upon a recognition of the essential nature of the disease.

Dr. Greenfield Sluder, of St. Louis, averred that the entire text of Doctor Grayson's paper was so at variance with the work he had done, beginning in 1909, that he felt impelled to recall some of the things that were within this discussion. He realized then, and did now, that there were many elements, all of which Doctor Grayson had cited, which must be considered. Patients were sometimes highly neurotic and neurasthenic, and all of the various features he had mentioned were there, but if they traced some of these patients back to the beginning of their symptoms they would find that up to a certain time they were in good health and supposed to be normal; that they began with a violent coryza, with a terrific headache, and in the wake of that there followed pain in the neck, chest, etc., conceived by the neurologist to be pathognomonic of neurasthenia. The pain in their necks and stiff necks was transferred to a "dislocated vertebra," and for twenty years they were spoken of as neurasthenic. Watching these cases from time to time, it had been his opportunity to make out that preceding these symptoms was a sphenoidal postempyema, and in the wake of that remained a subacute inflammation, sometimes localized sharply to the sphenoid palatine formation or the membrane which overlay the nasal ganglion. The membrane overlying the nasal ganglion was a sharply inflamed patch of redness, clear as one of the lamps on the wall, and an application of cocaine to that particular point would relieve all the symptoms—the pain in the neck would vanish, the eyes become normal, etc. It seemed very difficult to work out that such a case in an able bodied normal man, hard worked and responsible in life in every way, should point to the fact that the subject had suddenly become neurotic. He would not say anything more about it other than that his observations were in direct diametric variance with those of Doctor Grayson.

Dr. Burt R. Shurly, of Detroit, thought that they all erred in taking care of this class of cases because of the fact that they did not classify them where they properly belonged. In his opinion these cases should at least come under three large classifications: 1, Cases which were sensitized to some particular condition, a food sensitization perhaps; 2, a so called pollen sensitization; 3, a sensitization to some other chemical substance.

They were just beginning to understand a few of the phenomena which might give rise to these devious motor disturbances. When they carried this subject deeper and farther, he thought that these three classifications would include cases which Doctor Sluder had mentioned, where they had termination in a purely localized condition; again, where they had a sensitization; and still again, where they had what had been so beautifully demonstrated in the laboratory with the carrier pigeon—a condition of early nerve fatigue in the granules in the giant cells of the spinal cord. They could take a carrier pigeon that had been on a long flight and examine histologically the giant cells of the spinal cord and find it completely changed from the picture of another pigeon's cells histologically. The granules in the first pigeon were absolutely used up, and the whole problem of nerve fatigue following that long flight of the carrier piegon could be absolutely seen under the microscope. It was very remarkable—the change which the nerve cells showed. It would, therefore, seem very easy for that class of neurasthenics whose vasomotor function was less under hereditary disability, to have nerve fatigue develop under the slightest exercise. It seemed to him that they must be very much broader in their consideration of this subject.

Dr. George A. Leland, of Boston, believed for a long time that they had an autointoxication in these cases. Why were some patients so highly susceptible to nascent proteins? Was it not because they were so hypersensitive to all proteins? That meant that they were overfed in a nitrogenous way. If a patient was highly sensitized to nitrogen, if he had autointoxication from hyperacidity of his blood, shown by the hyperacidity of the urine, then it was reasonable to suppose that a nascent protein in its most harmful state coming from a germ of pollen should set up these nasal neuroses. He did not consider it altogether a case of neurasthenia, but the last straw broke the camel's back. The patient was hypersensitized and therefore affected by these proteins.

He cited a case of a fashionable young lady, about thirty years of age, who came into his office one day, very indignant because she had been treated for a long time in various ways without obtaining relief. So he asked about her general condition, and in the course of the questioning it developed that previous to four years before she saw him, she had been a stenographer, living very simply in a cheap boarding house and taking a normal amount of exercise each day. For the past four years she had been married to a wealthy man, and since that time had been living at a fashionable hotel in Boston, eating heavy and rich foods, drinking regularly, and not exercising at all. When she had finished the story he told her, "Back to the simple life for yours!" and put her on a proper diet, and in less than three months she had no more hay fever and had had no more since.

Dr. Lewis A. Coffin, of New York, had had some satisfaction in his treatment of this class of cases, which had been direct general treatment of the patient, particularly in regard to diet, elimination and cleaning up of the bowel.

Dr. J. S. Solis Cohen, of Philadelphia, had enjoyed the paper under discussion, because it confirmed the opinion he expressed more than a generation ago in one word—"coddling."

Dr. Joseph L. Goodale, of Boston, thought there was undoubtedly a psychic effect in some forms of this condition. They knew that the outbreak of hay fever in certain cases frequently occurred on exactly the same day every year, notwithstanding the great seasonal variations and the fact that the pollen did not appear always on the first of August. There were certain cases in which the hay fever appeared on the first of August regularly, and that was the result of a psychic expectancy. The man who went into the barn to set the broken leg of his friend was not thinking about his hay fever, and that was another reason why it probably did not develop. His mind was not fixed upon the fact that he might develop hay fever.

Dr. Charles P. Grayson, of Philadelphia, did not intend to teach anything new in his paper. His only intention was to refer to and emphasize certain facts of comparatively recent discovery or elaboration. He thought Doctor Shurly's classification of these different cases was a thing they ought to be particularly cognizant of in every new case they examined. There was no question of the occurrence and existence of cases such as those referred to by Doctor Sluder, but they were in a class by themselves. If he meant to imply that it was a very large and extensive class, he had his doubts. Of course, there were a great many in the aggregate, but the proportion to all others was comparatively small.

Sarcoma of the Nose—Report of a Fatal Case, with Metastases in the Cervical Glands and in the Brain.—Dr. J. Payson Clark, of Boston, told how a female, sixty-four years old, noticed a swelling on the nose for four months. When first seen it was about the size of a small marble. For a month there had been a slight bloody discharge from the nose. There was a dark purplish tumor visible on the outer wall of the left nostril just above the vestibule. The growth was completely removed. The microscopic diagnosis was either carcinoma or sarcoma. In two months a gland was felt under the left side of the jaw. This was excised and proved to be a spindle cell sarcoma, thus determining the nature of the original growth. Seven weeks later a gland was palpable under the left sternomastoid muscle. Coley treatment was tried, without apparent success, for two months. At the end of this time a small recurrence was found in the nose and removed, and a month later a complete glandular dissection of the left side of the neck was successfully performed. Three weeks later, the patient had mental symptoms, incoherent talk, convulsive attacks, motor aphasia, and dysphagia. At times she was very drowsy, and then restless and irritable. She soon lost power of locomotion and control of sphincters. She became very comatose and hard to rouse, and ate practically nothing for the last ten days of life. An autopsy showed three metastases in the brain. The most interesting features of this case were the metastases in the brain and cervical glands. The speaker could find but eight reported cases of sarcoma of the nose in which metastases were said to have occurred. Six of these cases were somewhat doubtful, leaving only two (beside the case here reported) in which metastases occurred in the cervical glands, and only one other case in which they occurred in the brain.

Dr. Robert C. Myles, of New York, found the question of sarcoma of the nose and accessory sinuses an interesting one because of his optimistic feeling with regard to it. A few years ago he had two cases of sarcoma in the frontal sinuses, and by a complete operation removing the bone extensively and all the periosteum he was able to get a good result. One of the cases had invaded the orbit. It was now more than seven years ago and neither of them had recurred. Twelve to fifteen years ago he reported a case where the whole of the nose was involved, in which everything was removed very deeply, without recurrence.

About two years ago he had a case of extensive carcinoma, which first appeared to be sarcoma, involving the external wall and ethmoid, in which everything was removed—the antrum freely taken away with extensive removal of the periosteum. That patient had had no recurrence, and since that time had developed remarkably physically and in every way. So that he did not know what it was that caused such dread of these cases. Personally, he thought the good results must be something more in relation to the periosteum than to the bone. If that was thoroughly removed, even if they had to leave the bone, as they did especially when one of the orbital plates was involved, there was still a lot of hope. They ought not to let these cases go on. He remembered the case of a woman who had sarcoma of the septum, and because they did not remove her septum to the cribriform plate, she died of metastases in the brain. With that idea of conservatism they did not remove the whole septum, and he thought it was a mistake.

Dr. J. Payson Clark, of Boston, said they had all seen a great many cases of sarcoma which had become well after thorough removal, but in this case he felt that there was no question that the glands of the neck and metastases in the brain had already occurred before he operated. He was led to that view from the fact that, apart from the slight recurrence in the nose, there was nothing to suggest the probability of extension of the growth. This was not a direct extension of the growth to the brain, but the growth was carried through the lymphatics.

Brain Abscess from Chronic Suppuration of the Frontal Sinus.—Dr. T. Passmore Berens, of New York, reported a case, of a male, aged thirty years, who was operated on, January 16, 1913, under gasether anesthesia, by a radical external frontal and sphenoidal operation and opening of the antrum of Highmore through the nasoantral wall. Convalescence was slow. In December, 1913, pus in the nose. Old wound reopened through the nose and washed out. This had to be repeated in July of the following year. In December of the next year recurrence of discharge, and on January 5, 1916, there was a large swelling of the cicatrix in the right frontal region and headache, and the old wound was opened under anesthesia. Much pus flowed from the wound, and also from the antrum, which was opened. Granulations in the roof of the sinus hid a perforation which led to a cavity two and one eighth inches from the roof of the sinus. This opening was gently enlarged, and a horse hair drain placed therein. Finally, a soft rubber drain was inserted, and the discharge continued for five weeks. The wound was not allowed to heal for some weeks thereafter. Culture from brain showed Streptococcus hæmolyticus in pure culture, and the same was found in blood culture in small numbers the day after the operation. Recovery complete, except that there was still considerable discharge of pus from the left nostril.

Operations on Tonsils and Adenoids in Diphtheria Carriers.—Dr. Thomas Hubbard, of Toledo, said that local treatment was very unsatisfactory, as most of these patients had enlarged tonsils and adenoids, and crypts could not be reached by antiseptic applications. However, it should be added that certain cases must be treated in this manner until in condition for the radical surgical method, and occasionally it would be successful. Thorough tonsillectomy and adenoidectomy were proving very efficient in cleaning up carriers. Operations—that is, tonsillectomy and adenoidectomy—could be undertaken with confidence that the person was perfectly immune. In spite of the fact that false membranes appeared in tonsillar fossæ, these patients recovered in a reasonable time. It must be borne in mind that the immunity was not certain. Each case must be studied carefully. The immunity test of Schick, made before the time of operation, would aid decision. In all of these cases exhibiting transient immunity the question of antitoxin naturally came up. Anaphylaxis must be taken into consideration, tests of sensitization, etc., and all precautions taken in administration of serum at such intervals. The physical condition, together with the skin reaction tests, should decide whether or not the patient was in condition for operation.

Dr. Stanton Friedberg recalled that this problem of carriers was called to their attention several years ago by the fact that they had patients who, on account of having positive cultures in their throats, were compelled to remain in the hospital for weeks, sometimes fifty to sixty days. As they had only a limited capacity (thirty to forty beds), this was a serious problem, for here they had clinically well patients occupying beds which were needed for others. They experimented along various medical lines without any particular effect in some of the cases, and it was then that nasal complications occurred. In spite of all the local treatment they found that there were a number of cases that would not clear up, but had to remain in the hospital forty or fifty days. In these cases he would urge nasal cultures as well as pharyngeal, for they frequently found that they had positive nasal cultures when there were no positive pharyngeal cultures.

A certain class of these cases would clear up under medicinal treatment. They had tried out vaccines without particular effect. The feasibility of medical treatment in some of these cases they could illustrate in this way: They knew that they found the bacilli in the depths of the crypt, where it was impossible to reach the condition. It was here also discovered in the epithelium, and that perhaps explained why they did not get any effect from local applications of medicine.

As to those cases which involved the nasopharynx and the nasal accessory sinuses, as Doctor Hubbard had mentioned, the accessory sinus cases were the hardest ones to deal with. To illustrate the futility of the use of the staphylococcus spray, he would cite a case in which they were deterred from using this method—a case where meningitis followed its use.

In the case of a child between two and three years of age, who had nasal discharge, a mixed infection, staphylococcus unilateral with diphtheria bacilli constant, there were repeated cultures which were always positive. The house physician looked into the nose and found a shoe button which was keeping up the local infection, and upon removing the shoe button it cleared up immediately. They had had other cases where the culture removed remained positive in chronic rhinitis, which might possibly have been some ethmoid involvement. There were a number of points which might be brought out that were most interesting. One condition which they ought to consider was the occurrence of the postdiphtheritic paralyses. He did not know whether any work had been done in these cases or not. There was a question in his mind as to whether or not the constant harboring by the tonsil of toxins thrown out continually did not produce these paralyses. It would be interesting to investigate peripheral neuritis. He would like to do it if he got the cases, for he thought it would be an interesting fact to determine. They had made it a practice to give medication a thorough trial. They took the Schick skin reaction, operating only in six cases in which the reaction was negative. They had not used anything after operation. They had taken the nasal cultures and other cultures afterward, so that their results would not be influenced by any application made to the throat. It was common in large hospitals for cultures to be taken after an application to the throat, and in the event of securing three negative results to let the patient go out. They determined to eliminate that factor entirely. The results after operation had not differed in any respect from those seen ordinarily. He reported several months ago six cases in which they had removed the tonsils and adenoids, where the results were startling. The next day after operation, without any application at all, the cases cleared up. They took cultures for five days afterward, and each time they were negative, except in one case, in which the nasal cultures remained positive. The whole question was very important, and a simple reference to the literature would show a gradual wave in the curve of the amount of work contributed to the study of carriers in recent years.

Dr. Robert Clyde Lynch, of New Orleans, said his experience in this direction covered twelve or fourteen cases, and there were a few points he would like to bring to their notice. First of all, there were twenty or more varieties of pseudopathic bacilli in which the microscopist appeared almost unable to absolutely and faultlessly tell the difference between the true organism and the pseudo variety. He thought this was important, for frequently they might be dealing with a pseudo variety. The second point was in relation to a little matter of technic in the administration of antitoxin in patients who had been previously sensitized by the administration of horse serum. The patient was given a small dose just above the ankle, and there was a constrictor ready for application above the knee; three or four drops were injected just under the skin above the ankle, and the constrictor ready. Sufficient time was allowed for the development of the anaphylactic symptoms, and if they did not develop in one half to three quarters of an hour, the injection could be made. If they should develop, the constrictor was applied.

He would like to report a case of a medical student who had rather a virulent attack of diphtheria, which yielded to twenty thousand units of antitoxin. The patient gradually got well and finally had two negative cultures, with a normal temperature four days, and was ready for discharge. Suddenly there was a rise of temperature to 99° F. and the appearance on the surface of the tonsil of acute follicular inflammation, which gave a culture of probable diphtheria. This was fourteen days after the first injection of antitoxin. They proceeded again to give him 20,000 units, and he was discharged. Six weeks later he came walking in on crutches, just able to get about, with paralysis of the soft palate and extensor muscles of the extremities, and suffering from constipation, which he had never had before. This man's cultures were taken and shown to be positive from the tonsils. He was treated locally without result. Tonsillectomy was done, and in two weeks after the tonsillectomy the paralysis entirely disappeared without further medication.

(*To be continued.*)

Letters to the Editors

A BRIEF PRELIMINARY REPORT OF THE EFFECT OF SEXUAL SECRETIONS WHEN ABSORBED BY THE OPPOSITE SEX.

New York, *November 11, 1916.*

To the Editors:

Below is a brief preliminary report of some extremely interesting and valuable tests I have been conducting during the past few years. I have talked this subject over with so many physicians that I believe it is well at this time to send in a brief report of this nature to forestall claims from other sources. On these simple tests I have amassed some valuable information, that I will publish shortly.

When the male sexual secretions obtained at the height of the orgasm are passed through a Berkefeld filter and the filtrate injected subcutaneously into a female or otherwise absorbed into her body tissues, they greatly stimulate sexual desire.

When the female sexual secretions obtained at the height of the orgasm are passed through a Berkefeld filter and the filtrate injected subcutaneously into a male, they act as a powerful aphrodisiac. These tests have been carried out on human subjects.

After coition both the male and female are profoundly stimulated sexually by absorbing the secretions from the opposite sex, hence there is a desire for a quick renewal. This is one of Nature's safeguards in propagating the species.

Charles H. Duncan, M. D.

Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Nerve Injuries and Shock. By Wilfred Harris, M. D. (Cantab), F. R. C. P. (Lond.), Physician to St. Mary's Hospital, London, and to the Hospital for Epilepsy and Paralysis, Maida Vale, Captain R. A. M. C. (T.), 3rd London General Hospital. Oxford War Primers. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. 127. (Price, $1.25.)

The occasion for this little work arose from the large number of cases of nervous exhaustion and functional paralyses of various kinds encountered in the present European war. The book belongs to the Oxford War Primers, and as such is designed especially to be of assistance to military surgeons under whose care such cases fall, though many contingencies arising in civil practice are likewise referred to. Under suggestive treatment many of the cases of nervous shock clear up rapidly or even immediately. Part I deals with the direct effects of injuries of the nervous system, such as cranial nerve paralyses, concussion, Jacksonian epilepsy, spinal fractures or hemorrhages, and paralyses of the branches of the brachial plexus and of the nerves of the lower extremity. Remote effects are included in the field covered. The author is convinced of the truth of the view that such spinal conditions as progressive muscular atrophy and tabes dorsalis are sometimes excited by injuries or blows upon the back; the necessity of previous syphilitic infection in tabes is, of course, not denied. He has seen harmful effects from splints in wrist drop due to musculospiral paralysis, and much prefers a leather wrist strap with elastic bands leading to the bases of the three inner fingers. In Part II, nervous shock following cerebral injury is discussed. This involves consideration of such conditions as traumatic neurasthenia, general paralysis of the insane, psychasthenia, nervous exhaustion, and hysteria. Suggestions for the detection of a hysterical element in nervous shock cases are given. In the treatment of hysterical anesthesia Harris recommends strong local faradism, to break down the psychic autoinhibition causing the anesthesia, i. e., the stimulus is made so powerful that the patient is forced to admit that he feels. Suggestion soon completes the cure.

The Backward Baby. A Treatise on Idiocy and the Allied Mental Deficiencies in Infancy and Early Childhood. By Herman B. Sheffield, M. D., New York, Fellow of the New York Academy of Medicine and the American Medical Association; Author of Modern Diagnosis and Treatment of Diseases of Children, Pediatric Memoranda, and the Baby's Record and Health, etc. Awarded the Alvarenga Prize of the College of Physicians of Philadelphia, July 14, 1914. With Twenty-two Original Illustrations in the Text. New York: Rebman Company. Pp. vi-184. (Price, $1.00.)

As the author suggests, too little attention has so far been paid to the early stages of idiocy and related conditions in infancy, at a time when there may be still some chance of improving the child's condition before underlying lesions have permanently destroyed cerebral functions. In this small book, awarded the Alvarenga prize of the College of Physicians of Philadelphia, a survey is presented of the etiology, pathology, diagnosis, and treatment of mental deficiencies as they are met with in children less than five years of age. Much of the text is based alone on the author's personal observations, the literature of the subject being as yet scanty. In Chapter I is taken up the general etiology of mental deficiencies, including the influence of heredity, syphilis, alcoholism, consanguinity, uterine disease, ductless gland involvements, traumatism, and febrile diseases. Chapter II deals with the physical examination of the patient and the stigmata and diminished mental standards through which deficient brain functioning can be early recognized. In the third chapter the features of the various special affections, such as microcephalus, hydrocephalus, paralytic amentia, amaurotic family idiocy, mongolism, cretinism, infantilism, and retarded mentality from other causes, are taken up, with numerous photographic illustrations. Prophylaxis, discussed in Chapter IV, is considered rich in potentialities, and includes all conditions and regulations tending toward complete fitness for marriage and procreation, together with judicious management of pregnancy and labor, inherent strength of the infant—not procurable after birth—being one of the most essential factors in the prevention of debility. Licensing of midwives is advocated. A definite plan of simple mental training for infants, beginning when they are about three months old, completes the prophylaxis. Active treatment of amentia, described in the last chapter, comprises measures hygienic, pedagogic, physical, dietetic, medicinal, and surgical. Definite directions are given, which will prove a help to the practitioner, sometimes at a loss in these cases. Organotherapy and thyroid transplantation are referred to. A bibliography and index conclude this original and valuable little work.

Lead Poisoning. From the Industrial, Medical, and Social Points of View. Lectures Delivered at The Royal Institute of Public Health by Sir Thomas Oliver, M. A., M. D., M. R. C. P., Consulting Physician, Royal Victoria Infirmary, and Professor of the Principles and Practice of Medicine, University of Durham College of Medicine, Newcastle-upon-Tyne, etc. New York: Paul B. Hoeber, 1914. Pp. x-294. (Price, $2.)

Before taking up the symptomatology and preventive and curative treatment of lead poisoning, the author discusses thoroughly the various occupations in which the poisoning may be acquired, such as lead smelting, the manufacture of red lead and white lead, painting, the manufacture of china, earthenware, and electric accumulators, printing and type founding, plumbing, dyeing, glass making, diamond cutting, etc. The particular susceptibility of women to plumbism is emphasized. At the author's recommendation female labor in the dangerous processes of white lead manufacture has been prohibited in Great Britain, with gratifying results. In the course of his description of the symptoms of lead poisoning, he also notes a marked liability of females exposed to lead to miscarriage and stillbirth, even without previous signs of plumbism. Many cases of obscure illness, characterized chiefly by headache, anemia, gradual mental and physical enfeeblement, insomnia, depression of spirits, and forgetfulness, are to be ascribed to drinking water contaminated with lead, which may be detected upon chemical examination of the urine. In the treatment of lead colic the author recommends sodium monosulphite in half to one grain doses and calcium permanganate in one quarter grain doses. He also praises highly the double electric bath which, since it removes lead from the body, can be used both for therapeutic and diagnostic purposes. The book closes with a large appendix containing the British official factory and workshop regulations in various industries involving the use of lead, such as file cutting, the manufacture of electric accumulators, paints and colors, and pottery, and the smelting of lead containing materials.

A Guide to the Use of Tuberculin. By Archer W. R. Cochrane, M. B. (Lond.), F. R. C. S. (Eng.), Major, Indian Medical Service, Medical Superintendent, King Edward VII Memorial Sanatorium, Bhowali, United Provinces, and Cuthbert A. Sprawson, M. D., B. S. (Lond.), M. R. C. P., Major, Indian Medical Service, Professor of Medicine, King George's Medical College, Lucknow, etc. New York: William Wood & Co., 1915. Pp. vi-181. (Price, $2.25.)

The authors are dissatisfied with previously issued books on tuberculin, on the ground that none of them give sufficiently definite instructions, the practitioner not being relieved of doubt, whether, in a given case, tuberculin should be used at all, and as to what doses should be given. The aim in this work is to formulate rules, hitherto unwritten, which inform the practitioner sufficiently how to proceed in spite of the well recognized and very marked variation in the sensitiveness to tuberculin in different cases. The authors are convinced of the actual therapeutic value of tuberculin. "Clinical experience," they state, "shows that closed cases of the disease never become open if treated with tuberculin." The results to be expected from tuberculin comprise a stimulation of the diseased area to heal (early diagnosis being essential for this), and a prevention of the spread of the disease. The action of tuberculin is held to consist of a stimulation of antibody production at the focus of disease. Excessive amounts, however, temporarily neutralize and remove all bacteriolysin from the neighborhood of the bacilli, unneutralized tubercle toxin consequently entering the circulation and causing the characteristic tuberculin reaction. In successive chapters are discussed in detail the relative dose of the various tuberculins, the technic of treatment, the tuberculin reaction, the general principles and rules for estimation of the dose in the individual case, the use of tuberculin in diagnosis, the differences between tuberculin treatment in children and adults, the contraindications to tuberculin treatment, and the use of tuberculin in nonpulmonary tuberculous involvements. Eighty-four illustrative temperature curves are interspersed in the text. The value of the work as a whole is increased by the fact that it is based on a definite working hypothesis, justified by the clinical experience of the authors, which permits of the formulation of definite principles and rules to guide those who adopt the treatment.

Muscle Training in the Treatment of Infantile Paralysis. By WILHELMINE G. WRIGHT, Boston Normal School of Gymnastics, 1905; Chirurg.-orthopäd. Klinik of Prof. Dr. A. Hoffa, Berlin, 1908; Assistant to Robert W. Lovett, M. D., Boston. Boston: Ernest Gregory, 1916. Pp. 30. (Price, $0.25.)

In a pamphlet of thirty pages the author presents a comprehensive schedule of exercises designed to develop the latent muscular power of partially paralyzed muscles. The exercises are grouped to cover individual sets of muscles and, taken together, include all the voluntary muscles of the body. She points out the need for careful grading in the employment of these exercises so as not to overtax the weakened muscles, and lays special emphasis on the need for guiding the patient and encouraging his persistence in the development of strength and control. In her opinion the best results are to be secured by having the parents execute the exercises under the guidance of the attending physician, and it is for the instruction of all three that her pamphlet was written. It should meet with a favorable reception by those for whom it is intended, as it carries with it the results of the author's long experience and careful study of this problem.

Interclinical Notes

What we call the "lay papers" are known to French medical editors as the "political journals." The French is a very accurate language.

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A photographic portrait of Dr. Alexis Carrel adorns page 461 of *Leslie's* for October 26th; there is a statement that motion pictures have been taken in France of various operations by this extremely deft surgeon to be used throughout the United States for teaching purposes.

* * *

One of those remarkable handlers of English, an advertisement writer, speaks of Alexander the Great cutting the Gordian knot "in twain." If the celebrated knot was as complicated as history says, a single stroke of the conqueror's sword probably cut it into considerably more pieces than twain.

* * *

A strong little story about an American boy who enlisted in the Canadian forces in order to get a glimpse of the great war, is told in *Leslie's* for October 19th, by Kellogg Speed, M. D., under the title of The Spirit of the Breed. The youthful hero died of gas gangrene after losing an arm by amputation.

* * *

A remarkable paper in the *Survey* for November 4, 1916, is Ourselves and Europe, by Edward T. Devine, in which the writer begs us to take to heart the lessons already learned by the combatants. The work of T. Everit Macy as superintendent of the poor in Westchester county is the subject of a telling essay by Winthrop D. Lane. Another good paper our readers will enjoy is The Mind of a Boy, a psychological study by Helen Thompson Woolley.

E. F. Benson, in his story in the November *Century*, The Sea Green Incorruptible, states that Lord Whittlemere "developed pneumonia." We wish he had allowed the pneumonia to develop, as it is its nature to, and not made of his lordship a sort of conjuror, who might "develop" rabbits from eggs. On page 28 of the same beautiful magazine, St. John G. Ervine, in his Story of the Irish Rebellion, in view of the terrible fate of Sir Roger Casement, which he records, might have used a happier expression concerning his own sentiments than to say "I got tired of *hanging* about O'Connell Street."

* * *

Of special interest to physicians in the November *Current Opinion* are Wherein the Pathological Liar Is Superior to the Truthful Man; The Best Safeguard Against the Dangers of the Sexual Instinct; A Plan to Make All Children Immune to All Acute Infections; A Step Beyond the X Ray in Surgery; An Embryologist's Warning against the Fantastic Tendency of the New Science; and Industrial Miracles Wrought by the Chemist. Perhaps we should add, What Makes a Rubber Tire Blow Out?

* * *

There is a tremendous amount of politics in the *North American Review* for November, some of which no doubt will make curious reading after election day. There is an essay of distinguished quality, however, in Pure Asepsis, by Paul M. Chapman, M. D., a dialogue between a surgeon and a cardinal. There is some verse by the dean of American writers, not very good verse, either, we fear; at all events we like his prose best. There are several essays germane to the United States and her present problems, which are well worth careful reading.

* * *

Current Opinion for November has its usual fascinating budget of good things. It gives an act of *Mr. Lazarus,* but as that drama has exploded or fallen again into the "provinces," the excerpt is merely an aggravation. It summarizes from another magazine the secret of the good health of Admiral Dewey; it seems that this man has attained his seventy-eighth year by never attending banquets, funerals, theatres, or moving pictures, and by being always in bed at least one hour before midnight. Why *Robinson Crusoe* is perennially popular is another interesting chapter in this issue.

* * *

Dialect, in story or drama, is really a very simple matter; the Yorkshireman, the New Englander, the Westerner, the Irishman, always mispronounce the same vowel sounds or diphthongs in the same way. The Irishman's dialect is largely a survival from the time of Queen Anne; he pronounces ea like long a. He says say, tay, playsure, for sea, tea, pleasure; but he does not say thay for the, bare for beer, kåne for keen etc. All dialects can be reduced to tabular form and used with perfect accuracy, if writer or speaker will only take the necessary trouble. We are moved to these observations by Dr. Walter M. Brickner's Ignatius Phelan at the Hospital, in the *Survey* for November 4, 1916. Mr. Phelan uses a dialect of his own, that was never heard on sea or land, and is scarcely more Irish than it is Chinese. This is a pity, for Mr. Phelan is distinctly humorous; if his speech was right, the sketch would be a genuine work of art and worthy of its witty author.

* * *

Prior to the establishment of schools for training nurses, every physician had to instruct his own special assistants when he had any. Now the instruction is largely in the hands of graduate nurses, who from their own experience speak more authoritatively than the physician ever could. Consequently nursing and its teaching have taken on an evolution of their own, and the physician may with profit take an occasional look into the courses followed by the intelligent young women who now make a profession of nursing. In no way can he ascertain more quickly and accurately the vast number of interesting and important matters acquired and discussed by the intelligent nurse than by consulting the pages of the *Nurse,* published at Jamestown, N. Y. Conducted with enthusiasm restrained by good taste, beautifully illustrated, ably edited, the *Nurse* is producing a new literature of its own, of a kind that no thoughtful physician can afford to ignore and from which he is sure to gather from time to time some hint of great value.

Meetings of Local Medical Societies

Monday, *November 20th.*—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Elmira Clinical Society; Psychiatric Society of Ward's Island.

Tuesday, *November 21st.*—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Owego Academy of Medicine; Medical Society of the County of Westchester (annual); Federation of Medical Economic Leagues of New York.

Wednesday, *November 22nd.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

Thursday, *November 23rd.*—Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

Friday, *November 24th.*—New York Society of German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

Saturday, *November 25th.*—New York Medical and Surgical Society; West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 8, 1916:

Bahrenburg, L. P .H., Surgeon. Detailed to deliver three lectures on public health subjects before the Texas School of Civics and Philanthropy of Houston, Tex., during the period February 6-10, 1917.

Bolton, Joseph, Assistant Surgeon. Granted two days' leave of absence on account of sickness, November 2 and 3, 1916.

Brooks, S. D., Senior Surgeon. Bureau letter dated October 5, 1916, amended to grant seven days' leave of absence from November 1, 1916.

Derivaux, R. C., Assistant Surgeon. Detailed to present a paper on the relation of the Public Health Service to the control of malaria at the meeting of the Southern Medical Association at Atlanta, Ga., November 13-16, 1916.

DeSaussure, R. L., Assistant Surgeon. Bureau letter dated October 3, 1916, amended so as to grant eleven days' leave of absence from October 20, 1916.

Freeman, A. W., Epidemiologist. Detailed to attend the meeting of the New Jersey Sanitary Association at Lakewood, December 8 and 9, 1916.

Frost, W. H., Passed Assistant Surgeon. Ordered to proceed to Little Rock, Ark., to investigate the prevalence of paralysis among dogs and to secure specimens for laboratory study.

Leake, J. P., Passed Assistant Surgeon. Detailed to deliver an address on poliomyelitis at the meeting of the Baltimore City Medical Society, held on November 3, 1916.

Lombard, M. S., Assistant Surgeon. Bureau letter dated September 12, 1916, amended so as to grant nine days' leave of absence from October 20, 1916.

Oakley, J. H., Surgeon. Detailed to deliver an address on infantile paralysis at the meeting of Ohio Valley Medical Association at Evansville, Ind., November 15-16, 1916.

Rucker, W. C., Assistant Surgeon General. Granted three days' leave of absence from October 30, 1916.

Stiles, Charles Wardell, Professor. Will proceed to New Hanover, Robeson, and Columbus Counties, N. C., to make studies of methods and results of sanitation in those communities.

Wheeler, G. A., Assistant Surgeon. Detailed to attend the meeting of the Southern Medical Association at Atlanta, Ga., November 13-16, 1916.

Willets, D. G., Assistant Epidemiologist. Detailed to attend meetings of the Southern Medical Association at Atlanta, Ga., November 13-16, 1916.

Wilson, R. L., Surgeon. Granted two days' leave of absence, November 1-2, 1916, under paragraph 193 Service Regulations.

Boards Convened.

The following officers of the Service have been detailed as members of Coast Guard retiring boards, convened November 8, 1916, as follows: Marine Hospital, Stapleton, N. Y., Senior Surgeon G. W. Stoner and Surgeon A. D. Foster; Custom House, Charleston, S. C., Surgeon W. J. Pettus and Assistant Surgeon P. J. Gorman; Marine Hospital, Baltimore, Md., Surgeon C. W. Vogel and Assistant Surgeon J. D. Stout; Marine Hospital, Boston, Mass., Passed Assistant Surgeon W. M. Bryan and Passed Assistant Surgeon R. A. Kearny.

Board of commissioned medical officers convened at Boston Quarantine Station and other necessary places to investigate fatalities on board steamship *Devonian* in Boston Harbor on November 1, 1916: Detail for the board, Surgeon H. S. Cumming; chairman; Passed Assistant Surgeon W. M. Bryan; Assistant Surgeon F. M. Faget, recorder.

Board of medical officers convened at the Marine Hospital, Cleveland, Ohio, for the reexamination of a detained alien, October 24, 1916: Detail for the board, Surgeon J. M. Holt, chairman; Acting Assistant Surgeon T. S. Keyser, member.

Births, Marriages, and Deaths

Married.

Dolan-Chagnon.—In Artic, R. I., on Monday, October 30th, Dr. James E. Dolan, of Randolph, Mass., and Miss Estelle P. Chagnon.

Ellis-Winter.—In Colorado Springs, Ky., on Wednesday, October 25th, Dr. Charles Arthur Ellis, of Denver, Col., and Mrs. Minerva Cooley Winter, of Mayfield, Ky.

Mackechnie-Janes.—In West Somerville, Mass., on Wednesday, November 1st, Dr. Horace P. Mackechnie and Miss Gertrude M. Janes.

Mackechnie-Perry.—In West Somerville, Mass., on Thursday, November 2nd, Dr. Ernst H. Mackechnie and Miss Aurelia Doris Perry.

Died.

Dolley.—In Manila, P. I., on Saturday, October 21st, Dr. Gilman Corson Dolley, aged thirty-seven years.

Eichberg.—In French Lick Springs, Ind., on Wednesday, November 1, Dr. Julius H. Eichberg, of Avondale, Ohio, aged fifty-nine years.

Freis.—In Brooklyn, N. Y., on Monday, November 6th, Dr. Eugene A. Freis, aged fifty years.

Gosling.—In Washington, D. C., on Wednesday, November 1st, Dr. Henry L. Gosling, aged sixty-one years.

Irby.—In Laurens, S. C., on Thursday, October 26th, Dr. William C. Irby, aged sixty-eight years.

Keiser.—In Columbus, Ohio, on Wednesday, November 1st, Dr. Romeo O. Keiser, aged forty-five years.

Leake.—In Dallas, Tex., on Sunday, October 29th, Dr. Henry Kern Leake, aged sixty-nine years.

Lex.—In Irvington, Ky., on Thursday, October 26th, Dr. Edwin A. Lex, of Hardinsburg, aged thirty-nine years.

McMahon.—In Courtland, Ala., on Monday, October 30th, Dr. William J. McMahon, aged seventy-eight years.

Masson.—In Cape Vincent, N. Y., on Thursday, October 26th, Dr. Thomas Masson, aged sixty-five years.

Roberts.—In Glencoe, Ohio, on Thursday, October 26th, Dr. Silas F. Roberts.

Schauffler.—In Kansas City, Mo., on Sunday, October 29th, Dr. Edward W. Schauffler, aged seventy-seven years.

Smith.—In Hampton, N. H., on Wednesday, November 1st, Dr. Marvin F. Smith, aged sixty-four years.

Weyant.—In Philadelphia, Pa., on Thursday, November 2nd, Dr. Harry W. Weyant, aged forty-seven years.

New York Medical Journal

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Original Communications

THE AFTERTREATMENT OF INFANTILE PARALYSIS.*

By Reginald H. Sayre, M. D.,
New York.

After an attack of anterior poliomyelitis, the result depends largely upon the amount of damage done to the spinal cord while the inflammation was in progress. In the fortunate cases perfect recovery may take place, so that no paralysis is apparent, but in the majority more or less permanent impairment remains, certainly for a long while. We must realize also that children who recover full or nearly full function of the muscles, have nevertheless been through a very severe illness, and for several months should be guarded against too much work, either physical or mental, as careful examination will show hyperexcitability of the nervous system in many, who, at the first glance, appear to be normal.

There is a tendency to recovery in cases in which the damage to the cord has not been permanent, which continues for a long period of time, much longer than used to be imagined, extending over years in fact, and this must not be lost sight of in making a prognosis.

The question of prognosis is a most difficult one. Years ago, I felt that if we had reaction of degeneration, it seemed useless to persevere, as no improvement would be secured in such a muscle. I know now, however, that this is not so, and that some of these apparently paralyzed muscles are capable of much regeneration, and therefore I urge the parents to persist in treatment for years, as I know the results thus to be secured will be infinitely better than if we adopt the pessimistic view that muscles that can improve, will make such improvement as they are capable of whether we help or not, and that the other muscles will not improve no matter what we do, and so there is no use doing anything. Until we can tell which muscles will, and which will not improve, which I do not now believe we are capable of doing, the results will be better if we encourage the patient to try, and not remove the prop of hope by an absolutely black prognosis.

Can we do anythng to improve the condition of these paralyzed patients? Many appear to think that we cannot, and if we assume this attitude, it is very certain that we cannot, but my own experience leads to a very different conclusion, and in cases where the cooperation of the parents can be secured for a sufficient time, improvement is often possible. It must be recognized at the outset that different means must be adopted in different cases, and that persistence in carrying out the treatment is absolutely essential for success. By persistence I do not mean persistence for a week or so, but for several years. The treatment may be divided into medical, electrical, manipulative, instrumental, and surgical. Strychnine, I believe, is distinctly helpful in these cases, and should be exhibited in increasing doses until some result is produced, or the toleration point reached. The intramuscular injection of strychnine which was advocated in former years, was, I believe, so advocated because observers had seen benefit from its employment. This benefit was probably due to the fact that a larger dose of strychnine was given to the patient than in the routine administration of the drug by the stomach, and that it was the increase in quantity rather than the local injection of the drug which was responsible for such improvement.

In regard to the benefits of electrical treatment, the pendulum has swung from the side of enthusiastic advocacy to absolute denial of benefit. Personally I am very sure that I have seen great benefit from the use of faradism and galvanism in these cases. I have had practically no experience with high frequency currents, but some observers report wonderful improvement by their employment. There is no question that cold blue extremities are rendered warm and pink by the use of electricity. I have seen subsequent improvement in the patient which I do not believe would have come without its use. The strength of current which I advocate, is the smallest which will produce muscular contraction. I do not believe that painful applications of electricity are wise. They serve to frighten rather than to benefit the patient.

Manipulations are absolutely essential in the aftertreatment of this disease. They ought never to be employed as long as tenderness of the peripheral nerves exist, but after the limbs have become tolerant of movement. Manipulations of the muscles, deep kneadings, rubbings, and superficial strokings are some of the most essential parts of treatment. It is of the utmost importance to encourage the patient to make voluntary efforts of the paralyzed muscle. If the muscles are too weak to respond to the will, the masseur should make the limb go through the required motions while the child endeavors to make the limb do the work which the masseur is doing for it. Just as concentration of the mind on the normal nerve and muscle stimulates the development of that nerve and muscle, just so does this concentration stimulate the growth of the paralyzed muscle. It seems hardly necessary to say that the amount of exercise given a paretic muscle must be very slight lest the muscle be overfatigued, and harm rather than good result, and in the case of little children resort must be had to games to interest their minds and secure their cooperation in the exercise.

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*Read before the Orthopedic Section, New York Academy of Medicine, October 20, 1916.

In addition to rubbings and handlings, heat applied to these extremities by the electric light oven is of great service, and artificial congestion of the paralyzed extremity by immersion in a vacuum cup is beneficial.

The question of instrumental support comes up in many cases. In the upper extremities it is of comparatively little value, but in the lower extremities it is frequently essential. It should be light and should girdle the limb as little as possible. The muscles are extremely feeble at best, and often are incapable of movement if weighted down with a heavy apparatus. There is also a great tendency on the part of both physician and patient to feel that if they have applied an apparatus, they have done all that is necessary, and to neglect the measures of which I have just spoken, which are essential to the restoration of function, forgetting that the apparatus is merely serving as a crutch for the purpose of assisting locomotion and preventing deformity.

When a growing bone is subject to stress in an abnormal manner, as is the case when one set of muscles is paralyzed and the bones are left under control of the opposing muscles, the direction of growth is very much altered and we frequently see in infantile paralysis knockknees accompanying all sorts of foot deformities. It is essential that these growing bones should be held in as nearly a normal position as possible, and these deformities prevented in order that the skeleton may be straight, and articulate in a normal manner whether we succeed in restoring power to the muscles or not. In adapting any apparatus to the deformed leg it is necessary that the joints of the apparatus be moved in the same axis as the joints of the leg. We frequently find, in untreated cases of infantile paralysis, that the angle is strongly averted, and in order to fit the apparatus to the leg, the ankle joint must be turned out at an angle of forty degrees or so to the knee joint in order to avoid twisting the foot. This fact is often overlooked by both surgeon and instrument maker, and an effort is made to force a crooked leg into a straight splint. The brace should be looked upon always as a temporary affair, and as soon as the patient is able to balance and walk without it, it should be discarded. I feel strongly that braces without joints are a great deterrent, the only possible excuse for their employment being that the patient cannot afford to procure one which has controlled motion.

In cases in which the muscles of the trunk have been affected, there is great danger of curvature of the spine if the patient is allowed to sit up without support before the muscles regain their power. Such patients should be kept recumbent on a hard bed with a very small pillow which should go under the head only and not under the shoulders. The parents and the nurse will be very anxious to prop the patient up with pillows as soon as possible, or to set him up in a chair, but this must be absolutely prohibited, as the soft growing partly cartilaginous vertebræ can be quickly distorted so that all future efforts to straighten the spine will be unavailing.

If the lower extremities and spine are both involved, and the paralysis persists for months, the children are best treated in a wire cuirass in which they can be carried about much like an Indian papoose, and get air and outdoor life while deformity of both limbs and body is prevented. If the paralysis continues in spite of treatment, the question of a corset and leg braces and crutches comes up for consideration.

If the paralysis involves the neck or upper dorsal muscles, a jury mast should be added to support the head and relieve the feeble muscles of undue fatigue. It will be objected to as unsightly, but I tell the parents it is better to see a removable iron over the child's head for a few years than to gaze upon an irremovable hump on its back all its life.

These supports must be removed for the daily exercises, as their constant use tends to cause atrophy of muscles, and the fact that they are a necessary evil to be rid of as soon as possible must not be forgotten.

The number of cases of infantile paralysis which are amenable to surgical treatment is comparatively small, and the majority are better treated by mechanical support, but a certain number derive wonderful help from surgical intervention. Surgery enables some cases to dispense with the use of apparatus altogether, and makes it possible for others to use a much lighter form of support. Surgery may be required either for the muscles, tendons, fascia, bones, or nerves.

In many cases certain groups of affected muscles become shortened, especially the flexor muscles when they are unopposed by the constant stretching action of the extensors. This shortening may at times be overcome by manipulation and mechanical stretching, and at other times will require surgical intervention; but can we decide which means to employ? If when the tissue is stretched to its utmost extent, and point pressure applied to it, a reflex spasm is produced, this tissue has been elongated as far as it is possible to elongate it by stretching, and if it is desired to make it permanently longer this must be done by a surgical operation. This point was insisted upon by the late Lewis A. Sayre, and, I feel sure, is a most valuable guide in determining when to stretch and when to cut. I believe in stretching contracted tissues which are capable of being permanently elongated, but know it is worse than useless to attempt this when tissues cannot be stretched. In the majority of cases where we are called upon to elongate contracted muscles, it is possible to do this by subcutaneous tenotomy. If the tendon is cut subcutaneously the deformity should be corrected immediately, and if a proper dressing is applied, there need be no fear of nonunion of the tendons. I have seen as much as three inches of the Achilles tendon reproduced after subcutaneous tenotomy. In operating upon the tendo Achillis for example, after the separation of the ends of the divided tendons, a distinct gap is felt between them. This should be covered by a stout piece of adhesive plaster or some dressing firm enough to keep the bandages from occluding the gap between the tendon ends. The space between the tendon ends will be filled with lymph into which new tendon cells will grow until the gap is filled up by new tendon which in a few months time cannot be distinguished under the microscope from the original. If, however, the gap is closed by a tight bandage, it is possible to get nonunion of the tendon, and failure to observe that the gap is thus occluded has caused nonunion in some cases, and led observers to condemn this method of treatment and advocate other modes of tendon elongation. In the great majority of cases these methods are unnecessarily tedious and much more complicated than subcutaneous tenotomy and productive of no better results. In some instances, however, as in contractures of the long flexors of the fingers, open operation of the forearm tendons is advisable. A number of different operations have been suggested, the best being the splitting of the tendon longitudinally, cutting the slit loose on each side and sliding the flaps on each other. The Z shaped incision with the opening out of the legs of the Z has also been practised. In operating upon the hamstrings open incision is usually advisable, as operators have been known to mistake the external popliteal nerve for the biceps tendon and to divide it. When operating by the open method at the knee, it has been my custom simply to divide the tendons and close the wound with sutures, making no attempts at sliding elongation. I have never seen failure of the tendon to reform after this operation. The psoas and iliacus should be divided by open operation, as their proximity to the femoral artery makes subcutaneous division dangerous.

The question of transplantation of the force of an unparalyzed muscle to a paralyzed one, was first suggested by Nicoladoni, and independently in this country, by Dr. B. F. Parrish, formerly of this city. At the time, 1892, that I showed a patient before the Orthopedic Section of the Academy of Medicine, on whom I had operated at Doctor Parrish's suggestion, by transferring the live tendon of the extensor hallucis to the paralyzed anterior tibial, we both supposed the operation original with Doctor Parrish, and it was not until some months afterwards that Doctor Whitman drew the attention of the section to the fact that Nicoladoni had suggesed it ten years previously. Nicoladoni operated by transplanting the peronei into the tendo Achillis, while Parrish suggested sewing the extensor proprius hallucis to the tibialis anticus.

Tendon transference has been of great benefit in cases of paralysis and will often enable a patient to dispense with apparatus. In order to be practicable a strong muscle is necessary whose force can be diverted and made to do the work of its paralyzed neighbor. Unfortunately this condition very frequently does not exist, and all the muscles in the limb are so feeble that it is useless to endeavor to borrow strength from any. Occasionally it is possible by electricity and massage, and gymnastics to develop the feeble muscle into a vigorous one, and subsequently operate. Certain details of technic must be observed in order to get the best results in tendon transplantation. If sepsis takes place or if we have pressure necrosis from sutures which are too tight, the result will be a failure. Unless the foot is put in plaster of Paris in a position to relieve the newly attached tendon from strain, the result is apt to be a failure. All the slack must be taken up at the time the tendon is sutured in position, else when the muscle contracts insufficient force will be exerted at the point of attachment. In some cases we may divide the tendon of the strong muscle completely, and attach it either to the tendon of the paralyzed muscle, or in suitable instances to the periosteum of the bone upon which we wish to make traction. It may be wise to drill a hole in the bone and pass the tendon through it to make sure of a firm union. Some writers prefer to split the tendon of the strong muscle, using part of it in the way just described, and leaving the rest to perform its own function. In case the tendon is too short to reach the desired point of implantation, it can be lengthened by means of a silk cord. In order to be of great use the muscle which is transplanted must be powerful enough to take the place of the one which is paralyzed, and one reason that operations for muscle transference in cases of talipes calcaneus have been so unsatisfactory is because the peronei and the tibials are absolutely inadequate to do the work of the gastrocnemius and soleus. The flexors and the extensors of the forearm have been interchanged, and the sartorius and the hamstring muscles, sometimes one and sometimes all, have been transplanted to the patella to overcome paralysis of the quadriceps extensor femoris, with great success. Care should be taken to leave enough muscle behind the knee to balance the extensor power of the transplanted muscles or hyperextension of the knee may result, with most disastrous consequences to the patient. Galle has changed the tendons of paralyzed muscles into ligaments for the purpose of holding the ankle joint firm, by cutting canals in the tibia and fibula subperiosteally and then, after imbedding the tendons in these canals, sewing the periosteum over them. In suitable cases this operation gives good results.

The question of nerve transference has been investigated extensively in the last few years, especially since the papers of Spitzy and Young, before the American Orthopedic Association, in 1904. The results of nerve transplantation and nerve splicing after traumatic paralysis, have given such remarkable satisfaction that investigators have hoped for brilliant results in cases of infantile paralysis. The theory upon which operations have been based, is, that if a healthy nerve coming from a healthy part of the spinal cord, is attached to the distal extremity of a paralyzed nerve, the latter will still be capable of regeneration and become able to transmit impulse and sensation. Many elaborate demonstrations of the technic of the operations have been made, some of the observers insisting upon the necessity of an end to end anastomosis, and others believing that it is sufficient to cut a slit in the nerve and insert in this the end of the divided nerve, retaining it in position by two or three stitches. I have seen only a few cases where I thought operation was indicated, and the results in all I have done so far have been failures. A number of observers have reported brilliant successes, but the results in the cases which I have personally seen, have not appeared as good to me as they did to the gentlemen who had operated upon them, and the failure of exact statement as to the amount of paralysis present before operation, has made comparison of the conditions before and after operation extremely difficult. I feel personally that the operation should be tried in suitable cases, but do not feel that it has yet been shown that a nerve which has been paralyzed for a long time can be regenerated by splicing it to a live one. The question of nerve suture and nerve transplantation in paralysis is of vast importance. It is necessary in discussing its possibilities to recognize that the different kinds of paralysis as we see them in young children have different origins, and unless this is borne in mind operations will be undertaken which have little promise of success.

The results of immediate suture of nerves which have been divided either accidentally or on purpose, and the bridging of the defects where the nerves could not be approximated, have given such brilliant results that it was to be expected that in cases of traumatic paralysis, like the brachial palsy of Erb, benefit might follow the removal of scar tissue and suturing nerve trunks. In anterior poliomyelitis, however, the condition is different, and the results which are obtained by the experimental transplantation of healthy nerves in animals and of nerve suture after injury in man should not be relied upon as giving hope that an equally favorable result will follow a similar operation on a diseased nerve.

We now come to the bone operations that may become necessary in paralysis.

When a growing bone is compelled to bear weight while imperfectly supported, as is the case in infantile paralysis affecting the lower extremity, it frequently becomes deformed, and bone operations are sometimes necessary in addition to operations on the soft parts. When the extensor muscles of the thigh and leg are paralyzed, it is often the case that after a clubfoot has been restored to its normal relation with the leg, it will be found to be everted forty-five or fifty-five degrees on account of a twist which has taken place at the knee, so that the knee and ankle joints work no longer in the same plane, but at a marked angle to each other, and in such cases an osteotomy of both bones of the leg is sometimes necessary to bring the knee and ankle joints into line. At other times a pronounced genu valgum results from the paralysis of the quadriceps femoris and an osteotomy or osteoclasis of the femur is necessary to put the foot under the body and restore the centre of gravity. At other times the lower articular surface of the tibia is not parallel with the ground and an osteotomy must be done just above the ankle joint to remedy this condition and prevent eversion or inversion of the foot. By thus restoring the balance of the body, many patients dispense with apparatus.

In connection with dangle foot, or with talipes calcaneus bone operations have been of marked use. Arthrodesis, or the formation of an artificial ankylosis is of great use in many of these cases. It is by no means so easy to produce a stable artificial ankylosis as would be imagined, and a large variety of operations have in consequence been devised to keep the foot firmly against the leg at a right angle.

The majority make an incision behind the outer malleolus running forward below it and into the instep, dividing the external lateral ligaments and dislocating the astragalus so as to gain access to its top and sides, which are then denuded of cartilage. In the great majority of cases it is also necessary to obliterate the joint between the astragalus and os calcis, and many operators prefer therefore to remove the astragalus altogether.

In order to facilitate the operation, Goldthwaite divides the fibula a few inches above the joint and does this also in order that the divided fibula may be more certainly brought into contact with the astragalus.

The front part of the foot is apt to be unstable in these cases unless the mediotarsal articulation is also obliterated at the same time that the arthrodesis is effected at the ankle joint.

In talipes calcaneus the operation devised by Whitman has given most excellent results. The astragalus is removed, a thin section of bone is then cut from the outer surface of the os calcis and cuboid. On the inner side the sustentaculum tali is cut away and the calcaneonavicular ligament is partially separated from its attachments. The cartilage is then removed from the two malleoli and if necessary they are reshaped to permit accurate adjustment. The foot is then displaced backward as far as possible so that the external malleolus may cover the calcaneocuboid junction, while the inner malleolus is forced into the depression behind the navicular. The peronei tendons which were divided at the first stage of the operation are then attached to the insertion of the tendo Achillis and to the os calcis by strong silk sutures. The object of the removal of the astragalus is to assure stability and to prevent lateral deformity by placing the leg bones directly on the foot. The object of the backward displacement of the foot is to direct the weight upon its centre and thus remove the adverse leverage which induces dorsal flexion.

In cases of flail knee, arthrodesis has been advised and in selected cases, is undoubtedly a useful operation. It has various objections, however, which do not hold good in the case of the ankle. A patient with a stiff knee is much hampered in sitting down, and in the majority of occupations is more comfortable when supplied with an apparatus which allows flexion while sitting down than if the leg is held rigidly in extension all the time. The operation is advocated by some on the grounds that it is too expensive for a poor man to use a splint, but it seems to me that this position is illogical. If a man's joint is resected, he is incapacitated from work for a period of three months. Supposing he earns ten dollars a week, this is a loss of one hundred and twenty dollars. The cost of his support in any hospital during this period would be two dollars a day, in a great many hospitals a larger sum. This will make one hundred and eighty dollars. The cost of the surgeon's time during the operation should be taken into account, as it is fair to presume that even if we make no charge for the operation—it being done in the hospital—nevertheless the time consumed might be put to a profitable account elsewhere by the surgeon, so let us charge twenty dollars for the surgeon's time, making three hundred and twenty dollars in all. This sum invested at 4.5 per cent. would bring in fourteen dollars and forty cents per annum, more than enough to purchase the original splint and keep it in repair during the patient's life. I believe that many operations which are advocated on the grounds of economy are really more costly than conservative measures if we examine the situation with care. Provided that an operation is to be done on the knee, obviously it should be deferred until after the cessation of bone growth, as early resections of the knee are apt to result in great permanent shortening from the interference with the epiphyseal cartilage. In the hip, when the gluteal muscles are completely paralyzed, it may be wise to perform an arthrodesis, cutting off the upper edge of the femoral head and gouging out the acetabulum, thus allowing two raw bony surfaces to come in contact and so form a secure union, as suggested by Albee in painful arthritic conditions. Here again the question of the usefulness of an ankyloid hip must be considered.

These cases of gluteal paralysis give the most difficult problems with which we have to deal, and present the most unfavorable prognosis.

Many patients walk quite well who have almost no power in the quadriceps femoris, but have a well balanced knee joint, but the patient with paralyzed glutei is in most unstable equilibrium and can rarely do without apparatus if the paralysis is bilateral.

To summarize the treatment, I would say: Do not do too much at first, give the patient absolute rest for many weeks. Prevent deformities by opposing contracting muscles. Later on, use gentle massage movements, active, passive, and restrictive. Endeavor to reestablish the path of nerve control to the muscle. Aid this by electric stimulation in suitable cases. If necessary, employ support to prevent undue stretching of muscles, or ligaments, or deformity of bones. Later on, if deformities have developed, do such surgical operation as may be necessary to put the skeleton in a position best to support weight, and to balance the opposing force of muscles so as to preserve equilibrium. By these means many patients who otherwise would be hopelessly bedridden, will be enabled to go about in comparative comfort.

14 West Forty-eighth Street.

Operative Procedures Employed in the Treatment of the Residual Paralysis of Poliomyelitis.—Berard Bartow and William Ward Plummer (*American Journal of Orthopedic Surgery*, October, 1916) make a brief report of 154 operative cases of poliomyelitis in which many surgical methods were used. The majority of the cases showed improvement.

EPILEPTOGENOUS ZONES IN ORGANIC EPILEPSY.

By Alfred Gordon, M. D.,
Philadelphia,
Neurologist, Mount Sinai, Northwestern, General, and Douglass Memorial Hospitals.

Review of the literature on organic epilepsy reveals a wide diversity of opinion concerning the pathological findings. While each of these views has its *raison d'être*, yet none is totally satisfactory for a general conception concerning all varieties of epilepsy. Apart from Marshall Hall's theory of the medullary origin of epilepsy, in which there is supposed to be a sudden stimulation of bulbar centres followed by a stasis of cerebral circulation, or, as Brown-Sequard explains it, there is anemia of the cerebrum leading to unconsciousness; apart also from Fritch and Hitzig's experimental investigations demonstrating convulsive seizures by the stimulation of certain cortical areas; apart from Meynert's sclerosis of the cornu ammonis as being an epileptogenous centre; apart from Chaslin's and Bleuler's gliosis of the cortex; apart from all these important anatomical findings, which are only a few among many alleged to be the direct causes of epilepsy—Hughling Jackson's views appear to conform most with the underlying physiological condition of the disease.

He considers organic epilepsy as a three level affection. According to him the central nervous system is composed of three superimposed levels representing degrees of evolution more and more advanced. In the lowest level cases epilepsy is caused by an involvement of the upper spinal system, medulla, pons, and the cerebellum. There the pontobulbar convulsions originate. Laryngismus stridulus belongs to this group of cases. In the middle level type the cortical motor and sensory areas, also the corpora striata, are the direct cause of epilepsy. Here loss of consciousness may or may not be present; the latter is not essential. In the superior level epilepsy the lesion lies in the prefrontal lobe. Here unconsciousness is an inevitable phenomenon and its presence is an indication that an epileptic discharge begins in the highest centres. This level presides over epilepsy proper.

Jackson's conception of epilepsy, therefore, shows a great variety of localizations as the origin of convulsions. On the other hand, if we recall the case cited by Gowers (*Epilepsy and Other Chronic Disorders*, London, 1881), in which an epileptic suddenly had an attack of apoplexy with hemiplegia, and the convulsions disappeared on the paralyzed side; also if we consider the case of Prus (Ueber die Leitungsbahnen und Pathogenese der Rinden-Epilepsie, *Wiener klinische Wochenschrift*, 38, 1898), in which painting of the motor cortex with cocaine prevented generalized convulsions; if we consider these cases, we are led to admit that the cells of the motor cortex play a predominant role in epileptic seizures, and that of the three levels in the classification the middle level zone is the most acceptable, as it corresponds more accurately with the clinical facts.

While H. Jackson's views apparently embrace a very large pathological field of epilepsy, nevertheless they do not cover all anatomical occurrences, such as the above mentioned lesion of the cornu ammonis, the superficial cortical gliosis of some writers (especially Southard), degeneration of cells in the second cortical layer (Bevan Lewis, Clark, and Prout), lesions of the uncus, of hippocampal and temporal gyri (Southard), and lesions of the meninges and calvarium.

Beside these manifold epileptogenic zones found in cases of organic epilepsy, there is one which, although not frequent, is nevertheless of sufficient importance to be considered here. I mean the ventricular walls of the brain. (See also E. C. Fischbein's excellent monograph in the *Proceedings* of the Association for the Study of Epilepsy, etc., 1914.) D. Ferrier in Part VI of his book, *Functions of the Brain*, 1886, says: "I have found that electrical stimulation applied to the surface of the ventricular nucleus of the corpus striatum in the monkey, cat, dog, jackal, and rabbit causes precisely the same results, viz., a condition of pleurosthotonus, or general muscular contraction on the opposite side of the body. The head is drawn strongly to the side, and the body bent in the form of an arch with the concavity to the opposite side; the facial muscles are thrown into spasmodic contractions and the limbs are rigid in the position of equilibrium between the flexors and extensors, the flexors predominating. . . . There is no differentiation of movement from any point of the ventricular aspect of the ganglion, all the actions differentiated in the cortical centres being simultaneously called into play." Ferrier's results had been corroborated by the experiments of Corville and Duret. Ventricular surfaces are covered by ependymal lining membranes consisting of columnar and ciliated epithelium. In the ventricular cavity in a state of suspension lie the choroid plexuses with their villi, which are constantly brought into contact with the ependyma of the ventricular walls. Should the latter be in a state of inflammation or otherwise abnormally disturbed, there will be sufficient cause for the villous processes of the choroid plexuses to produce an irritation in the brain, and, through the process of diffusion of stimulus to the cortex along association fibres, to lead to reactions such as epileptic convulsions.

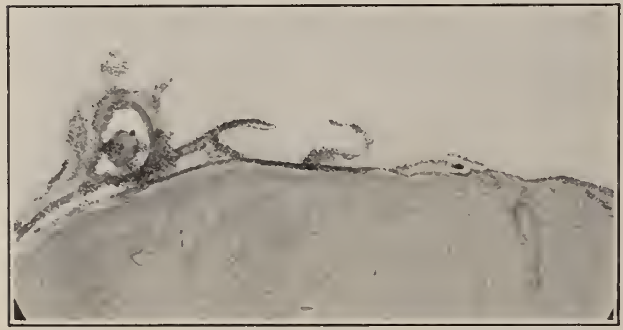

FIG.—Ependyma of anterior cornu of lateral ventricles. It is thickened and covered with nodules of various sizes and form. Cellular infiltration in nodules and in enlarged bloodvessels.

An epididymitis has the same reacting value as the above mentioned general gliosis or sclerosis of the cornu ammonis, or other lesions in the brain which have been found in cases of organic epilepsy. In fact, a lesion of any portion of the brain may be accompanied by epileptic seizures and therefore may be considered as an epileptogenous zone. The multiplicity of lesions observed in cases of organic epilepsy warrant such a conclusion. It seems therefore logical to infer that stimulating surfaces may be localized in any portion of the central nervous system, and the reception of the stimuli and the discharge of motor power are the province of the motor cells of the cortex. Not one of the lesional foci described can lay claim to pathognomonicity.

The present case is one of those infrequent occurrences which gave place to a focal epilepsy, as if the primary pathological condition had been situated directly in the Rolandic area of the cortex. It adds a new document to those already existing which concern a vast variety of foci found in organic epilepsy. It has no pretension to solve the intimate physiological mechanism of an epileptic attack, which remains as obscure as ever, but it warrants being placed on record on account of its unusual localization, of the very peculiar character of the lesion, and of being corroborative of the foregoing contention, namely, that a multiplicity of lesions in the cerebrum may be considered as epileptogenous zones.

Ventricular primary foci in organic epilepsy have been very rarely reported. The lesion in the present case was confined to the anterior cornua of the lateral ventricles exclusively, more in the right than in the left. The entire surface of the right cornu was covered with miliary nodules thickly crowded. In the left corner there were but a few nodules. As this was the only material lesion in the brain (as proved histologically), it is evident that it behaved like an active epileptogenous focus. It acted as a receptive surface, which transmitted its powerful stimulation to the cells of the motor area and produced convulsive discharges.

An analysis of this case, as well as of cases with lesions elsewhere in the brain, leads to the conclusion that the mechanism of epileptic convulsions lies fundamentally in the disturbed function of the cortical motor cells the impulses of which are influenced by morbid foci in any region of the cerebrum The above mentioned cases, in one of which painting of the motor cortex with cocaine and in the other supervening hemiplegia—suspended convulsions on one side—throw the entire burden of epileptic impulses upon the cortical elements. Therein lies the main station to which flow the abnormal nervous currents originating from any irritated source in the brain, and in which abnormal activity is initiated with the result of abnormal muscular movements. The following case presents interesting features from the standpoint of epileptogenous areas in organic epilepsy:

CASE. Ch. T., colored, aged forty-two years, was admitted to the Douglass Hospital November 7, 1914, in a state of hebetude. His left arm was subject to constant twitchings even when the limb was at rest. These movements became accentuated upon voluntary acts and were markedly evident in finger to nose movements. The grip of the left hand was much weaker than that of the right. The biceps and triceps reflexes were not obtainable on both sides. The knee jerks were difficult to obtain on both sides. No ankle clonus on either side. Stroking the sole of the left foot gave no response, but on the right side there was a distinct Babinski.

There was a distinct deviation of the lower face toward the right. Astereognosis was present in the left hand, but not in the right. The sense of position was abolished in the left hand, so that when he was asked to find it he was unable to do it, and when asked to carry a glass to the mouth he could not do it correctly with the left hand. The pain sense was diminished, but touch and temperature senses were preserved in the left arm.

During the two weeks spent in the hospital the patient had six convulsive attacks with loss of consciousness. In each the convulsive movements were confined exclusively to the left arm and the head was turned to the left side. In the interval the arm showed a tremor, especially upon voluntary movements during the first eight days, but tremor disappeared during the latter eight days. Doctor Appelman noted that the ocular movements seemed limited, being unable to rotate far to the left of the median line; upward, downward, and right rotation being normal. Pupils were equal and reacted to direct light. Visual fields to the left in each eye seemed impaired. Media were clear in both eyes, discs were oval, outline and color were good, and there was no lesion of the retina or bloodvessels. Vision of both eyes was 10/200.

The patient's condition pointed to a right sided lesion in the brain. In favor of it, spoke the convulsive movements with and without loss of consciousness confined to the left arm; the turning of the head to the left during the convulsive seizures; the ataxia and astereognosis of left upper extremity, and the left sided hemianopsia. An exploratory or decompressive operation was declined by the patient's relatives. Three days before he died there was a sudden rise of nocturnal temperature to 103.3° F. with a diurnal fall to 97° F.; the convulsions became very frequent and in one of the seizures the patient died.

AUTOPSY.

At autopsy all the abdominal and thoracic viscera were found apparently normal. The brain, after being hardened, presented on transverse anteroposterior section most unusual findings confined exclusively to the anterior cornua of the lateral ventricles. The lesion was pronounced in the right horn and only slightly evident in the left horn. There was an unusually large quantity of fluid in both cornua.

The ependyma had lost its uniform smoothness and was covered by numberless miliary nodules. Histologically the latter presented cells of partly necrotic material, some of them under the ependyma, some had destroyed it, and some were on its surface. Their relative size was not equal, some of them being larger and longer than others; some were very close to the surface, others were loosely attached to the surface, and formed thick branches at a certain distance from the surface. They consisted of crowded round cells which followed the branches of the original nodules. In the vicinity many vessels had mononuclear cells similar to those of the nodules. Some bloodvessels were thrombotic and very much dilated, and had thickened walls. In the latter the inner layer was shriveled and torn in some places. The ependyma itself immediately beneath the miliary nodules was much thickened, and covered thickly between the nodules by round cells. In some areas there was solution of continuity of the ependyma, which solution continued deep in the subependymal tissue. The inner walls of the separated portions were covered with round cells.

As to the nature of the ependymal nodules, it is difficult to say. They do not have the histology of tubercles. It would seem reasonable to call them miliary gummata, in which opinion Dr. A. G. Ellis fully concurs. This view is substantiated, I think, by the fact that many vessels in the vicinity have mononuclear cells in their walls.

1812 SPRUCE STREET.

Value of Quinoidine in Malaria.—E. E. Waters (*Indian Medical Gazette*, September, 1916) says that when properly administered quinoidine is at least as effective as quinine and causes no cinchonism or gastric trouble.

INJURIES TO THE SPINAL CORD PRODUCED BY MODERN WARFARE.*

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Wounds of the nervous system occurring in war are similar to those incident to civil life. The difference is quantitative not qualitative. Organic injuries to the nervous system may be grouped under: 1. Concussion; 2, contusion or laceration; and, 3, compression. The peripheral nerve trunks[1], because of their structure and the nature of the tissues surrounding them, are not susceptible to concussion Therefore injuries to the nerves and plexuses are in the main, contusions and lacerations. Compression from scar tissue formation produces a comparatively small number of nerve injuries

Nerve contusion, in which continuity is not severed, recovers slowly, but complete restoration of function may occur. Contusion of greater severity, which severs continuity, produces a lesion, the outcome of which is unfavorable. The character of these wounds is doubtless responsible for the unfortunate results. They are all infected and a month or more elapses before the purulent discharge ceases and a clean surface is offered for operation. By that time the severed nerve ends have not only retracted, but have become imbedded in scar tissues of great density. The peripheral segment may, also, have degenerated.

The difficulty of approximating the severed ends is often further increased by loss of substance. This necessitates nerve extension and the use of bridging devices to hold the cut ends in contact. During ten months with the American ambulance in France I observed no improvement in cases of nerve suture. On the other hand, compression of nerve trunks due to bone callus and scar formation causes paralysis which gradually disappears if the offending tissue is removed early.

Wounds of the central nervous system are either benign and result in comparatively early recovery, or they are fatal. The prognosis in lacerations of the brain and spinal cord is almost hopeless. Such cases show little improvement after the initial shock disappears. Upward of ninety per cent. of lacerated wounds of the brain are infected, and the victims acquire meningitis and die. The few who recover usually exhibit residual paralysis. When the injury to the brain is one of compression due to depressed fracture, early removal of the displaced bone yields favorable results, provided that the infection in the wound does not invade the meninges. When the injury to the brain is simple concussion, recovery is remarkably rapid and is usually complete in from two to four weeks.

Laceration of the spinal cord causes paraplegia, quadriplegia, or cauda equina symptoms. The patients manifest cystitis, pyelonephritis, and general sepsis with a fatal termination within nine months.

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*Read at the meeting of the American Neurological Association, Washington, D. C., May 9, 1916.

[1] Injuries to Peripheral Nerves Occurring in War was discussed October, 1915, before the joint meeting of the Neurological Section of the New York Academy of Medicine and the New York Neurological Society. To appear in the *Am. Jour. Medical Sciences*

If we except the amaurotic, the paraplegic are the most dejected group of wounded. Their presence has a very depressing effect upon the less seriously wounded. They are a great problem in a military hospital where beds are in demand for those who can be benefited. The expedient of putting them all in one ward was tried at the American ambulance. This facilitated nursing, but served to increase their depression. Incurable from the outset, they dragged out the most miserable existence possible for human beings. In the meantime, their agony was beyond description. Those wounded low down in the spinal cord invariably suffered pains in the lower extremities and bladder which seldom left them, lancinating in type and comparable to the most severe pains of tabes. Incontinence of bladder and bowels always existed and despite the greatest care, multiple bedsores developed. As catheterization was always necessary in these cases, cystitis invariably developed, and when the infection extended to the kidneys, it marked the beginning of the end.

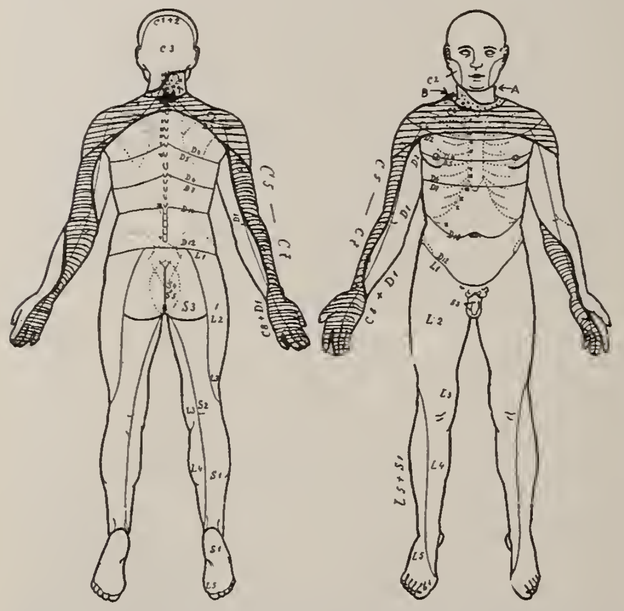

FIG. 1.—Collar of hyperesthesia, band of hypesthesia across the chest and shoulder, and anesthesia of the arms. Spinal canal not penetrated. A, wound of entrance; B, exit.

Concussion of the spinal cord presents a brighter picture. Concussion with hematomyelia, causing paraplegia or quadriplegia, may follow the impinging of a bullet or shell fragment upon the vertebra without producing fracture of the latter. Such cases present all grades of sensory and flaccid motor paralysis and usually end in entire recovery. The degree and the rapidity of recovery are in some instances amazing.

This article is based upon a study of thirty patients. From these I have selected thirteen typical cases which, I believe, illustrate the types of spinal cord lesions resulting from gunshot wounds.

CASE I. Concussion of the spinal cord and hematomyelia; lesion extending from the third cervical to the first dorsal segment; complete paralysis below the neck, recovery in two months. A well developed muscular man of twenty-one years was struck in the left shoulder by a rifle ball June 6, 1915. He fell and lost consciousness immediately. He recovered consciousness ten hours later. He was admitted to Doctor Blake's service in the American ambulance two days later. Examination showed the wound of entrance to be a circular perforation, one cm. in diameter, in the left sternocleidomastoid, seven cm. below the tip of the mastoid. The slitlike wound of exit, was in the right trapezius just above the scapula. A line connecting the two passed between the fourth and fifth cervical vertebræ. The cervical spine was exquisitely sensitive and the neck was held rigidly. There was a complete flaccid motor quadriplegia. A collar of hyperesthesia about two cm. wide encircled the base of the neck. Below this was an area of hypesthesia extending across the chest and back down to the second rib anteriorly, and to the first dorsal vertebra posteriorly, and out across both shoulders; there was anesthesia over the radial half of the right arm and including the hand. An anesthetic band wound, spirally from the shoulder down the back of the left arm crossed at the elbow, and involved the ulnar half of the arm, front and back. The remainder of the arm apparently retained normal sensation. The superficial and tendon reflexes were abolished. X ray examination showed an intact spinal column and no foreign body. He complained of tingling and numbness in the hands and arms, more pronounced in the latter. It was evident from the sensory examination that damage had been done the spinal cord, involving the segments from the third to the eighth cervical. On the left side the lesion included the first dorsal. It involved, of course, the descending motor tracts of the legs as well as the arms.

Twenty-four hours later, the patient began feebly to move the feet and arms; after another interval of three days he began to flex the fingers of the right hand, and movements of the legs showed increased strength. He could not pronate and supinate the right forearm. By June 15th, the area of hypesthesia had cleared up remarkably, although still distinguishable. The tendon jerks of the arms were absent, those of the lower extremities lively. There was no clonus or Babinski phenomenon. The superficial reflexes were absent. The infected wound was draining satisfactorily, the patient's temperature averaging 102° F.

The patient improved day by day so that by June 28th the wound of entrance was entirely healed and the exit wound was healthy and granulating. He no longer had fever. The movements of the right arm and hand had become fairly complete, though feeble, and he could feed himself. The movements of the left arm had also returned, but the only movement possible with the left hand was feeble approximation of the thumb and index finger. The tendon reflexes in both arms had returned. The lower extremities showed complete return of motion, and nearly

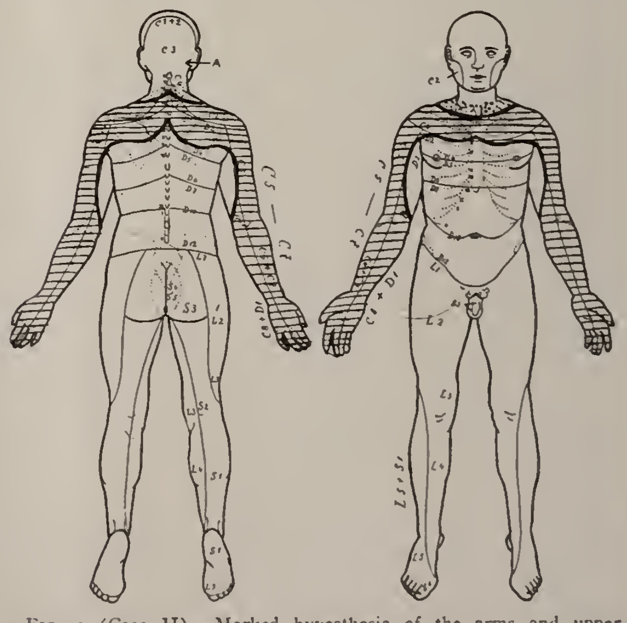

FIG. 2 (Case II).—Marked hypesthesia of the arms and upper thorax, with collar of hyperesthesia above. Spinal canal not penetrated. A, wound.

complete recovery of strength, but the reflexes were very lively. The fourth and fifth cervical spines were still tender. Within a month he regained use of the left upper extremity, was discharged, and returned to service.

CASE II. Concussion and hematomyelia involving the cervical cord from the third to the eighth segment inclusive, complicated by transient aphasia; wound just below the occipital bone; paralysis of both arms; recovery practically complete in eight weeks. This patient, a man twenty-three years old, wounded April 27, 1915, was admitted to the hospital in Dr. Du Bouchet's service, two days later. He was struck by a shell which exploded seven to ten metres behind him and two or three metres in the air. He was blown from a sitting posture five or six metres forward and fell upon his face. He was unable to move, save the head and neck. He experienced no pain, but was unable to speak for ten minutes. He then began to stammer, and after half an hour could speak without difficulty. He was also able to move his legs feebly. After lying four hours he was able to get up and walk, tremblingly and with very short steps. When upright both arms hung limply at his sides.

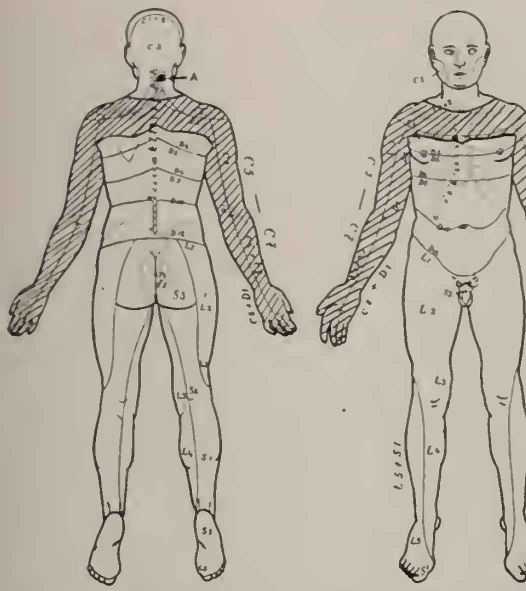

FIG. 3 (Case III).—Area of pronounced hypesthesia due to hematomyelia without penetration of the spinal canal by the missile. A, wound of exit.

Examination at the time of admission showed a small penetrating wound just to the right of the first spinous process and just below the border of the occipital bone. There was an area of hypesthesia extending from the clavicle to the second intercostal space in front, and from the sixth cervical to the second dorsal spinous process posteriorly. This area continued over both shoulders and involved the outer surface of both forearms and hands. Above this was a narrow collar of hyperesthesia around the base of the neck. The arms lay at the sides, but the patient could raise them feebly, and flexion and extension of the fingers and hands and arms could be performed feebly. Such effort was not accompanied by pain. The muscles of the arms and hands were tender to pressure. The lower extremities could be moved freely. The sphincters of the bladder and bowels functioned, although he did not urinate for twelve hours after he was injured. The tendon reflexes in the arms and legs were present. Those of the right leg were slightly livelier than those of the left. Motor power in the legs was good. The superficial reflexes were normal.

An x ray examination showed some extremely small fragments of shell about the size of grains of wheat close to the vertebra upon the right lamina. On May 3d these were removed by Doctor Chauveau with an electric magnet, as were also two small fragments of spinous process. It seemed probable that the offending missile had struck the spine and ricocheted out of the wound, leaving only small fragments behind.

The patient improved rapidly, although he continued to complain of numbness in the hands and feet, and by May 15th considerable strength had returned in the left arm and hand. Tested for astereognosis, large objects were named correctly, but not small ones. By May 31st, the tenderness had disappeared from the arms, and there was no pain on movement. Disability in naming objects held in the hand was less, and the reflexes which were at first sluggish, were now lively. A fair degree of strength had returned to the left hand, but the right was still feeble, the extensors being weaker than the flexors. Sometimes when lying quietly a sensation like an "electric shock" would pass from his feet to his head, and the entire body "jumped." There was also a sensation as though the arms and legs were incased in rubber tights. The area of hypesthesia persisted, but was less pronounced.

Improvement continued rapidly, the wound healing without check. By June 22d, practically all movements could be performed by the hands and arms. The grip of the right hand, which was the last to recover, was still weak, and he could not retain a pen in writing. The narrow band of hyperesthesia still persisted around the neck, although the area of hypesthesia could not be mapped out with certainty. He was discharged as convalescent and returned to service in three weeks.

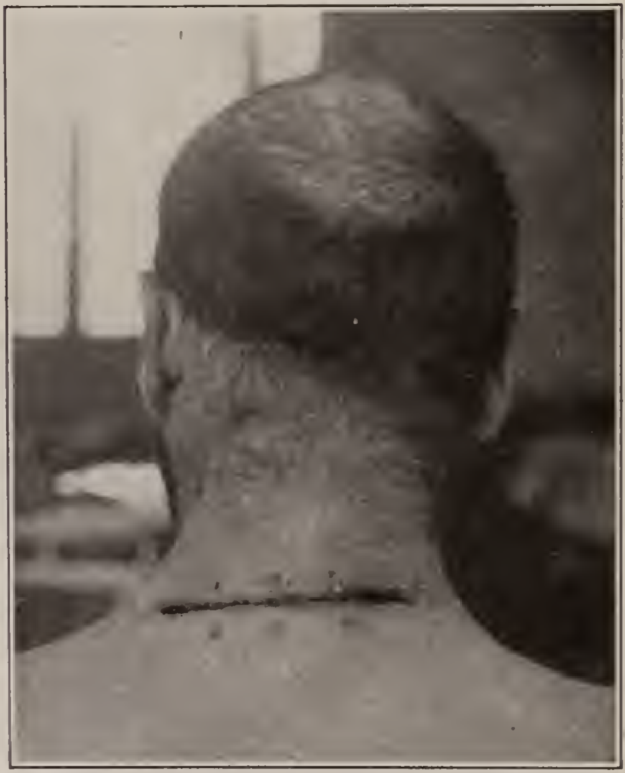

FIG. 4 (Case IV).—Concussion and hematomyelia.

CASE III. Concussion of the spinal cord and hematomyelia extending from the third to the eighth cervical segment. Paralysis of the arms associated with transient aphasia. Recovery in five weeks. Patient was a well developed man of twenty-two years, wounded by a bursting shell May 25, 1915. A fragment struck him in the neck. He fell and was unconscious for an hour. On regaining consciousness he was unable to speak for half an hour. He was able to move only his head, and his body was tingling all over. After several futile attempts he got upon his feet and walked sixty metres to the trench, where he rested for seven hours. He was unable to stand again and was carried to the rear and admitted to Dr. Joseph Blake's service in the American ambulance the following day. There was a small wound of entrance in the right side of the neck just below the angle of the jaw, with wound of exit three cm. in diameter on the same side of the fifth cervical spine, accompanied by marked induration of the right side of the neck. His hearing, sight, and ability to speak and swallow were not impaired. Although he complained of numbness and tingling in his feet, he could move the lower extremities quite well and had good strength in them. The arms and hands lay quite motionless at his side. He complained of pain throughout the arms and hands, which were extremely tender. The tendon reflexes were barely obtainable. The arms and a band across the chest from clavicle to the third rib in front, and from the seventh cervical spine to the third dorsal posteriorly showed a very marked degree of hypesthesia, but no anesthesia. X ray examination was negative, and surgical exploration showed the absence of fracture.

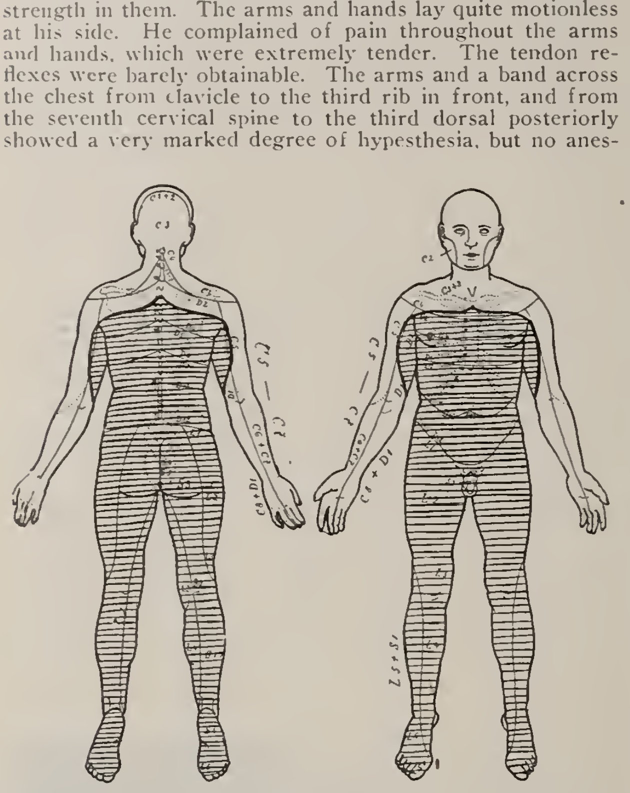

Fig. 5 (Case VIII).—Complete anesthesia from transverse myelitis; lesion at the first thoracic vertebra.

On May 28th, slight flexion in the fingers of the left hand was possible. Strength returned rapidly during the next few days. In three days he could raise the left arm from the bed and could close his hand. The numbness had disappeared, except in the band across the chest, and both here and over the arms the hypesthesia was much less marked. Reflexes in the arms were still diminished, those in the legs were normally active, and there was no Babinski sign. The superficial reflexes were also present. June 13th, he was able to feed himself with his left hand and could flex and extend feebly the right wrist. Feeble flexion of the fingers of this hand and feeble pronation and supination were possible. There was also slight movement in the deltoid, biceps, and triceps. The numbness persisted across the chest. By July 1st, the movements of the left arm and hand were quite lively. He could perform all movements with his right arm, but could not yet completely close that hand. The hypesthetic band across the chest became hypersensitive. Two week later, his motor recovery was practically complete; there was some weakness in the grasp of the right hand, although the hypersensitive band across the chest was still present. His wound had healed promptly and he was dicharged, fit for service.

Case IV. Concussion and hematomyelia limited to the eighth cervical segment of the spinal cord. Weakness and pain in the arms; recovery in six weeks. The patient was a muscular man of thirty-two years, wounded December 21, 1914, and admitted the following day to the service of Doctor Migniot in the American ambulance. A piece of shell had passed across the nape of the neck, producing instantaneous sharp pain in both forearms and the palms of both hands. Upon receipt of the wound he searched in vain for his point of injury; as there was no pain in his neck his attention was not called to the wound itself. He was able to remove his sack from his back, but great weakness in both arms ensued, so that he could lift them with great difficulty. He concluded, therefore, that he had been wounded in the shoulders.

At the time of admission he was still having pain in both forearms and in the palms of both hands. The arms felt heavy, but he could move them awkwardly. He could not perform dexterous movements with his fingers and was unable to write because the pen fell from his grasp. The fingers felt cold, and there was a numbness in the ulnar border of both hands. A large, gaping, furrowed wound extended almost across the base of the neck posteriorly, passing between the sixth and seventh cervical spinous processes. After two days the paresthesia passed from the left hand, but persisted in a diminished degree in the right. There was also weakness of the right hand grasp and of flexion of the fingers and thumbs. There was considerable tenderness on pressure of the thenar eminences and on compression of the right ulnar and median nerve trunks. In the course of a month, the wound had completely healed, although he was still having pain in the ulnar muscles just below the elbow, sufficiently severe to waken him at night. The strength in his arms gradually returned, and six weeks after receipt of his wound, he was able to write and perform other movements with his fingers requiring dexterity.

The sharply limited lesion in this case was comparable to an experimental one. The eighth cervical segment, the site of the lesion, partook in the supply of both the median and ulnar nerves, hence the symptoms referable to these nerves in both arms.

Case V. Concussion of the spinal cord and hematomyelia at the level of the fifth thoracic segment; paraplegia; recovery in three months. Patient was a vigorous man of twenty-three years, wounded September 7, 1914, by a shrapnel ball while he was on the ground upon his abdomen. He felt a sharp, girdling, cutting pain around the lower thorax, and especially in the epigastrum. He found himself unable to move his legs, but could move his toes. There was a wound to the left of the fifth dorsal spine, but no point of exit. He suffered from obstinate constipation. The legs were powerless for three weeks; he then began to move his feet, and at the end of six weeks could stand. Improvement continued slowly, so that at the end of three months he could walk unsupported. It was at this time, March, 1915, that he was admitted to Doctor Blake's service in the ambulance.

The patient showed a belt of acute hyperesthesia around the thorax, 3.5 cm. wide, lying between the third and fifth intercostal spaces anteriorly, and the fifth and seventh spines posteriorly. The epigastric reflexes were absent, right abdominal was active, and left fatigued easily; the right cremasteric only was present. Both knee jerks were exaggerated and showed inexhaustible clonus of the patellæ. The ankle jerks were also exaggerated, and there was inexhaustible clonus on the left and an ex-

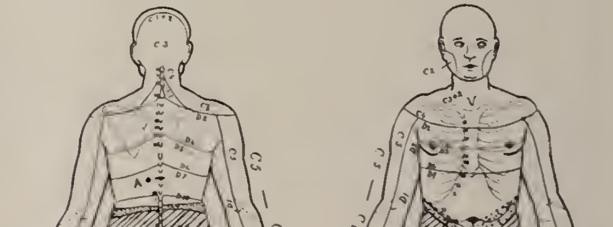

Fig. 6 (Case IX). Area of hyperesthesia, dotted; area of anesthesia to touch, pain, and temperature, diagonal lines; A, point of entry.

haustible one on the right, with double Babinski sign, more pronounced on the left. There was no Romberg sign, and the patient's gait showed no spasticity. The reflexes in the arms were active, and sensation above and below this hyperesthesia was apparently normal; the fifth and sixth dorsal spinous processes were tender on pressure. An x ray showed a round shrapnel ball lying to the left of the spinous processes between the fifth and sixth dorsal, resting upon the lamina close to the spines. The bones were apparently intact. Inasmuch as the ball was doing no further damage, it was not removed. The belt of hyperesthesia and the clinical signs of pyramidal tract involvement were the residual evidence of the former paraplegia.

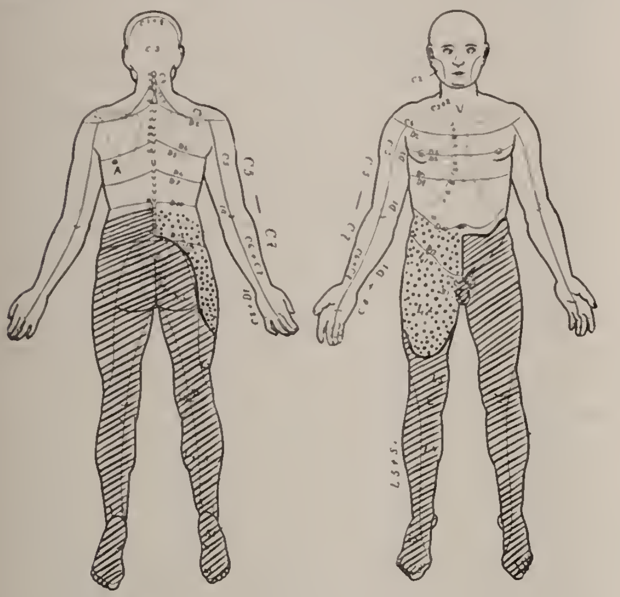

FIG. 7 (Case X).—Cord damaged at twelfth thoracic vertebra; dots show area of hyperesthesia, diagonal lines, anesthesia; A, point of entry.

CASE VI. Concussion and inflammation of the cauda equina; flaccid paraplegia; recovery in six months. A muscular man of thirty-eight years, wounded during a charge, December 21, 1914, by a bursting shell. The right humerus was broken, and a piece of shell, the size of one's hand, struck the middle of the sacrum, driving him forward two or three metres upon his face. The legs were completely paralyzed, so that he could not rise nor even turn upon his back. He was admitted to Doctor DuBouchet's service of the American ambulance, five days later. At the time of arrival both lower extremities showed a flaccid paralysis, with absent tendon jerks and no plantar reaction. Diagonally across the upper part of the sacrum was a deep wound about twelve cm. long and three wide, involving the bone and spinal canal. A copious discharge flowed from the wound. Slight disturbance of the vesical and rectal sphincters soon disappeared. Hypesthesia of both lower extremities and some postural disturbance in the toes was present. About the middle of January, 1915, he began to move his left ankle. Within a few days flexion and extension of the knee were possible. By February he could raise his left heel from the bed. During the next month motion gradually returned in the right lower extremity, so that he could feebly flex and extend the leg and ankle, and could raise the heel from the bed. The left ankle jerk had become active, although it remained absent on the right side. There was also at this time, flexor response to plantar irritation on the left side, but no response on the right. The wound continued to discharge, and gradually granulated to a small tract about two cm. in diameter. The escaping discharge was a mixture of pus from the wound and spinal fluid. The spinal canal in the sacrum had been penetrated, but no symptoms of general meningitis developed. On January 9th and on March 13th, small sequestra were removed from the sacrum. During the succeeding month, strength in both legs returned rapidly. By the middle of June, the wound had healed and the patient was walking unsupported and felt secure and strong upon his feet. The reflexes in the right lower extremity had not returned.

CASE VII. Concussion of half the cauda equina, and hemorrhage into it. Paralysis of one lower extremity; recovery in three weeks. Patient was a well developed boy of eighteen years, wounded March 25, 1915. He felt immediate severe pain in left hip and fell, and could not move his left lower extremity. He was admitted to the service of Doctor DuBouchet in the American ambulance, March 29, 1915. The wound of entry of a rifle ball was apparent, near the right posterior superior iliac spine, and the wound of exit was in the opposite iliac crest in the midaxillary line. The fifth lumbar vertebra and the interspace below it were very tender on pressure, as was an imaginary line connecting the two wounds. The left gluteal region was also slightly tender. There was anesthesia of the left buttock from the midsacrum to below the gluteal fold. The left thigh and leg showed diminished pain sensation throughout. The left side of the scrotum and penis, and an area to the left of the median line anteriorly, extending toward the umbilicus, showed a pronounced hypesthesia to pain and anesthesia to touch. The left lower extremity showed absence of motor power, while the right was unimpaired. The tendon reflexes were not abolished, and the left cremasteric was more active than the right. After five days, he began to move his left leg, and the areas of hypesthesia, though present, were less marked. The left gluteal contraction was extremely feeble, and absence of tactile sensation over the gluteal region continued. On April 5th, the sensory disturbance was slightly less marked. He could move the left lower extremity, but it felt heavy and numb and there was no plantar response. The motor power continued to improve at a more rapid rate than sensation, and at time of discharge, ten days later, he walked quite securely and without difficulty, but still had in a mild degree the hypesthesia first observed.

CASE VIII. Contusion of the spinal cord at the level of the first thoracic segment; motor and sensory paralysis below the arms; death eight months later. The patient was wounded October 31, 1914, falling from his bicycle, and was unable to move below the shoulders. He was admitted to Doctor Blake's service in the American ambulance, November 2, 1914. He was a muscular man of thirty years, with a bullet wound of entrance at the centre of the right scapula, and a wound of exit at the left side of the neck in the posterior triangle immediately behind the middle of the sternocleidomastoid. There was complete flaccid paralysis of both lower extremities and of the abdominal walls. The knee and ankle jerks and the epigastric, abdominal, and cremasteric reflexes were all absent. There was no plantar reflex. The reflexes in the

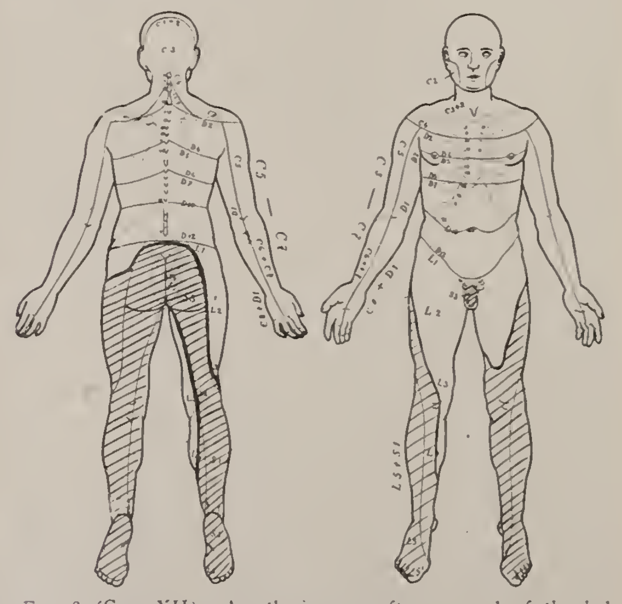

FIG. 8 (Case XII).—Anesthesia area after removal of the bullet; on admission the right lower extremity was anesthetic over same area as left; no further improvement.

arms, though diminished, were present. The bladder and rectum were paralyzed. The patient was completely anesthetic to touch up to the first intercostal space anteriorly. The line of anesthesia passed symmetrically from the sternum to the shoulders, included the axillæ and the mesial aspect of the arms to a point ten cm. above the internal condyles of the humerus. Posteriorly, anesthesia extended upward to the second dorsal spine across the back, to the shoulders, and down the arms almost to the elbows. Pain sensation was absent up to a line one cm. below the limit of touch perception. Temperature sense corresponded with pain sense. Sense of pressure was absent up to five cm. below the limit of touch. There was complete absence of sense of position in the lower extremities and in the lumbar spine. The fifth cervical spine was extremely tender to pressure, and the scalp was so hypersensitive that even slight touch of the hair caused pain. X ray examination showed a perforation in the lower half of the body of the first thoracic vertebra, but no foreign body. November 23d, the patient became excitable, restless, talkative, threw his arms about in an aimless manner, and later in the day suffered from illusions, hallucinations, became confused, and passed into violent delirium which lasted two days. The spinal fluid showed no increase in pressure, no cells, no globulin excess, and reduced Fehling's solution. November 28th, he became delirious again, complained of exceedingly severe pain traveling downward from Ludwig's angle to the epigastrium and shooting off to the right. Distention of the capsules of both knees developed; this was, of course, painless.

December 2d, a violent occipital headache, which never left him, developed. The edema of the knees continued, in fact, a general edema of both lower extremities developed. The hyperesthesia of the scalp persisted. The skin became dry and desquamated in plaques and numerous bed sores formed over the sacrum and hips. Repeated catheterizations were responsible for a chronic cystitis. Complete atony of the abdominal muscles permitted constant distension. Paralysis of the intestines was nearly complete. Respiration was feeble and entirely diaphragmatic. Attacks of vomiting and respiratory disturbance occurred. He became greatly emaciated, and the skin took on a greenish yellow hue. Pain in the right hypochondrium annoyed him. On striking the sole, there would result a drawing up of the knee and foot caused by a contraction of all the muscles of the thigh and iliofemoral group; the flexors being more vigorous, predominated, so that the knee would be raised about thirty cm. from the bed. There was no contraction in the leg. The same result could be obtained by compression of the sciatic nerve, or of the muscles of the thigh or calf. About six months after admission an extremely feeble quadriceps contraction could be obtained on striking the patellar tendon, but the ankle jerks and plantar response remained absent. Without further noteworthy change, the patient died eight months after receipt of his injury from general sepsis, absorption taking place from the pelves of the kidneys.

At autopsy, the dura was found adherent to the first and second thoracic segment of the spinal cord. When removed, the other membranes were indistinguishable. The vessels were dilated and the cord was of a dirty yellow color, but of normal contour. From the eighth cervical to the second dorsal segment it was cystic and fluctuating. A slight prick at this point permitted the escape of a homogeneous yellowish fluid of gelatinous consistence. The cord collapsed and consisted only of the thickened meninges which had preserved the contour of the cord. The nervous tissue had degenerated completely in this section. The cervical cord above this area was softened, and the pia injected. Cross section showed lack of definition of the gray and white matter. The first and second thoracic roots were adherent to the dura. Below this point the gross appearance of the cord was normal.

Case IX. Section of the spinal cord and spinal roots at the eleventh thoracic vertebra; paraplegia; survival of one year at least. The patient was wounded October 29, 1914, while digging a trench. He was in full uniform, with his bayonet hanging from his belt. Following the bursting of a shell close at hand, he felt as though a sudden heavy blow had been dealt him in the lower back. He lay as he had fallen, unable to move. He experienced no pain, but there was a dull, heavy sensation in his back. He was admitted to Doctor Miniot's service in the American ambulance, October 31, 1914. The patient was a well developed man of twenty-eight years. There was a small, irregular wound at the level of the tenth dorsal spinous process and five cm. to the left of it. He presented a complete flaccid motor paralysis of the lower extremities, with paralysis of the bladder and rectum. He was anesthetic to touch, pain, and temperature over the lower extremities and the trunk up to the level of the third lumbar spine posteriorly, and a line about ten cm. below the umbilicus anteriorly. Above this was a belt of hyperesthesia some three cm. wide. Sense of position was absent in the knees and ankles. The tendon reflexes in the knees and ankles were absent. There was slight dorsal extension of the great toes on stroking the soles, also a faint Oppenheim response.

An x ray examination showed a piece of metal two cm. long and about four mm. wide, penetrating the spinal canal at the level of the tenth intervertebral disc and the eleventh vertebra.

At operation, November 14, 1914, by Dr. Richard Derby, the left lamina of the eleventh thoracic vertebra was found to be shattered and the cord completely severed. Spicules of bone that were imbedded in the cord were removed. A few fibres of the left dorsolateral tracts alone remained intact, and the cord at the site of section had already degenerated into a thick, yellowish, oily fluid. The foreign body which had caused the damage proved to be a rivet from the handle of the man's bayonet, which had been driven in with sufficient force as to cause it to lodge firmly in the body of the eleventh thoracic vertebra. It protruded into the spinal canal and was extracted with considerable difficulty. The patient recovered from the operation without noteworthy event.

By December 1st, striking the patellar tendon elicited a faint contraction in the quadriceps, the right greater than the left, associated with pain in the lumbar region. The ankle jerks were still absent, and Babinski's sign was definite on both sides. By December 14th, the knee jerks had become hyperactive, although the ankle jerks remained absent. Spasmodic contractions in the thighs and legs developed. The contractions increased in frequency and strength for about one month and then began to diminish. The intervals between periods of contractions varied from a few hours to several months. The contractions were unattended by pain, but annoyed the patient by making it difficult to maintain a sitting position in bed. The lower extremities underwent atrophy, diminishing more in the quality and tone of the muscles than in bulk. Although the knee jerks were exaggerated and Babinski's sign was present, there was no clonus. Grasping the calf would cause a contraction of the hamstring muscles.

The continued urinary incontinence apparently prevented infection of the kidneys such as developed in patients who were constantly catheterized. At any rate, he continued in a fair state of health and was alive for at least one year after he received his injuries.

This was the only one of twelve patients in whom the cord presented a complete transverse lesion, who recovered his knee jerks and showed a Babinski sign. Compared with the other patients, he showed less trophic change and experienced no pain.

Case X. Laceration of the spinal cord and spinal roots at the twelfth thoracic vertebra. Complete paraplegia; survival of seven months. Patient was a muscular subject, thirty-one years old, wounded October 6, 1914, by a rifle ball. He was lying on the ground face downward, when he felt a sudden stinging sensation in his left shoulder and a cutting sensation across the waistline. There was an absence of sensation below the waist, which made him think that his legs had been carried away. Upon seeing his legs, he tried to move them, but found it impossible. October 16th, he was admitted to the American ambulance on Doctor Migniot's service. Examination revealed a bullet wound lateral to the left scapula near the posterior axillary line, marked edema, and some ecchymosis of the skin of the back. No tenderness nor deformity of the spine was discovered. He presented a complete motor and sensory paralysis below the waistline, except an area over the anterior and lateral aspect of the right thigh, which was hyperesthetic. There was urinary and fecal retention. The level of sensory disturbance girdled the trunk at the first lumbar intervertebral space posteriorly and at a point two cm. below the umbilicus anteriorly. All reflexes were absent in the lower extremities. There was no plantar response. Light tapping of the patellar tendons produced severe pain in the lumbar region.

He suffered attacks of severe lancinating pain, beginning in both knees and extending to the waist; these necessitated morphine. An x ray examination revealed a rifle ball lying one cm. to the right of the median line, between the first and second lumbar vertebræ.

Surgical intervention was advised, and on the following day, October 18th, a left hemilaminectomy was performed by Dr. Richard Derby. The transverse process of the twelfth dorsal vertebra was shattered, the body of the first lumbar badly damaged, the dura torn, and the cord had degenerated to the consistence of an oily yellowish fluid. As the bullet was not immediately in view, no attempt was made to remove it. The patient recovered from the operation without incident, although there was, of course, no alteration in his physical condition.

Multiple bed sores soon developed, also cystitis, causing an irregular septic temperature. He became jaundiced, greatly emaciated, and suffered with distention and pain in the abdomen. An extreme degree of atrophy of the lower extremities and buttocks developed. He continued in this deplorable state until death ensued, April 21, 1915.

At autopsy the spinal cord showed a dense scar matting roots, cords, and meninges into an indistinguishable mass at the level of the twelfth dorsal vertebra. Immediately above this, the cord expanded into a fluctuating bulbous cyst. The last distinguishable and uninvolved spinal root was the ninth dorsal. Below this the roots were matted into a mass of scar tissue. Across the posterior surface of the body of the twelfth dorsal vertebra was a necrotic blackened groove. The bullet was found to the right of the second lumbar vertebra. Abscesses in both kidneys, fatty degeneration of the liver, an atrophic state of the heart, and fibrinous deposits over the pleural surfaces were present.

Case XI. Laceration of the cord and spinal roots at the twelfth thoracic vertebra; paraplegia with sharp pains in the legs; operation, section of the cord; no relief. Survival of nine months. The patient was wounded, October 29, 1914. He felt as though he had been struck in the lower part of the back with a sledge hammer. His knees gave way and he fell backward. He experienced constant pain in his knees for twenty hours, after which he was not conscious of his lower extremities. He was carried off the field immediately and arrived at the American ambulance, October 31st, and was admitted to Doctor Du Buchet's service. The patient was twenty-six years old and in excellent physical condition. There was a perforating bullet wound in the tenth intercostal space in the left scapula line. The wound of exit was a little larger, about two cm. in diameter, and was situated in the median axillary line of the opposite side at the crest of the ilium. There was a complete flaccid motor paralysis in both lower extremities; absence of tendon reflexes, no plantar response, and no cremasteric reflexes; epigastric and abdominal reflexes were present. The lower extremities, the lower part of the abdomen and buttocks, up to the fourth lumbar interspinous space, were anesthetic. The patient preserved a sense of pressure upon the testes, and light tapping upon a testicle produced a very disagreeable sensation through the lower abdomen. A radiograph showed no fracture of the spine and no foreign body.

On November 16th, he suffered lancinating pains in both knees, which became periodical, increasingly severe, and relieved only by morphine. Bed sores appeared over the heels and sacrum. November 28th, he had above the area of anesthesia an exquisitely hypersensitive band. Even a slight movement of the sheet or the stroking of a wisp of cotton caused extreme pain. Up to December 17th, it was necessary to catheterize him; there was then incontinence. There developed about this time an enormous degree of edema of the lower extremities.

During January and February, the severity of the pains in the lower extremities diminished, but recurred with increasing severity during March and April. The area of anesthesia remained unchanged and there was no return of motor power. An attack of lymphangitis in the left lower extremity, extending upward from a bed sore on the heel, occurred during March. Incontinence continued and he experienced no sensation on the passage of urine or feces. The unmitigating character of the pains in his legs and the absence of any evidence of recovery led to the decision to cut the cord above the point where there was probably an accumulation of scar tissue.

Laminectomy was performed by Dr. Harvey Cushing, on April 27th. The tenth, eleventh, and twelfth thoracic and first lumbar laminæ were removed and the dura was thoroughly exposed. There was a small strip of intraspinous fatty tissue covering the dura. Opposite the twelfth thoracic vertebra the meninges appeared normal and bulging. Opposite the twelfth thoracic and the first lumbar vertebræ, the cord and all the lower nerve roots were adherent to the dura on both sides, in fact, all the tissues in this region were densely adherent. There was also on the left side at this point an old healed tear in the dura. The spinal cord and all the nerve roots in the canal were divided and pushed back, both above and below, so that a space of one cm. remained between the cut ends. The various tissues were then closed and the patient made an uneventful recovery. It was found that the level of anesthesia on the left side had ascended to midway between the umbilicus and the groin, showing that the cord had been severed in healthy tissue.

After the operation the patient still suffered pains in the legs, and during the succeeding month was free from them only at intervals, as before. The paroxysms, in fact, seemed more severe, but there was an increase in the interval between attacks. As a matter of fact, the therapeutic hopes of the operation were not fulfilled. The patient was transferred to the Salpétrière and was reported to have died three months later.

Case XII. Contusion of the spinal cord; lesion at the third lumbar segment; paraplegia; death in ten months. The patient was wounded December 21, 1914. He heard the whistle of an approaching shell, ducked his head, but remained standing. The shell exploded about ten metres behind him. He felt a sudden hot sensation in his back, as though an electric shock had passed down both legs, fell, and was unable to move his legs. He was admitted to Doctor Du Bouchet's service in the American ambulance, December 26th. Catheterization had been necessary since the receipt of the wound, and there was incontinence of feces. The patient was thirty-six years of age, and of excellent physique. There was complete loss of power in both lower extremities, the ankle and knee jerks were absent, and no plantar response was obtainable. The cremasteric reflexes were absent; the abdominal and epigastric reflexes were preserved. There was a small reddened bed sore area on the right hip and on both heels.

Complete anesthesia to touch, pain, and temperature existed over both legs to a point a little above the knees anteriorly; from this point the anesthesia passed outward toward the great trochanters, and inward along the adductors, leaving an eliptical area of preserved sensation on the anterior surface of both thighs. Posteriorly, the lower extremities were anesthetic from the top of the sacrum down. The penis and scrotum were anesthetic. There was a small wound of entry eight cm. to the left of the median posterior line, at the level of the twelfth thoracic spine. Upon pressure the eleventh spinous process was tender.

On December 27th, Doctor Drennen exposed the eleventh and twelfth dorsal and first lumbar spinous processes. The left lamina of the first lumbar vertebra was splintered and the fragments were removed, exposing a large spread out shrapnel ball lying in the left side of the canal upon the dura. The ball was easily removed. The dura was slit for one inch, exposing the cord, which was of normal appearance as to contour, size, and color. There was no hemorrhage, congestion, or edema. The patient recovered from the operation without serious reaction. By January 10th, he could contract the adductor muscles feebly. Five days later, he began to have involuntary spasms in the sartorius and adductor muscles of both sides. He became incontinent of urine on January 20th, having suffered from retention up to this time, and on January 31st, he began to have periodical lightning pains in both legs. Sense of motion in the right ankle and great toe returned, and an increased area of sensation upon the right side. The inner aspect of the right leg almost to the ankle recovered sensation. There was no other improvement, in fact, atrophy supervened in both legs and his tabeslike pains became increasingly severe. Lumbar puncture, performed on March 16th, did very little to relieve them; fluid showed no increased pressure, was of a clear yellow color, without cells, but contained marked globulin excess. The patient acquired cystitis and ultimately died after ten months from sepsis due to absorption from the pelves of the kidneys. During this period there was no increase in sensation, and the motor power in the lower extremities was limited to the pectineus, the iliopsoas group, and the adductors.

CONCLUSIONS.

From a study of the foregoing and similar cases of shell and bullet wounds of the spinal cord, the following conclusions may be drawn:

1. *Diagnosis.* The initial physical signs of contusion and concussion of the spinal cord may be identical, but an interval of twenty-four hours is usually sufficient to differentiate the conditions.

Concussion is usually characterized by more profound motor than sensory paralysis.

Contusion causes a parallel degree of sensory and motor paralysis.

Concussion is attended by numbness and tingling in the extremities affected.

Contusion of the caudal segments of spinal cord involving the cauda equina is associated with lancinating tabetic pains in the lower extremities.

A stereoscopic röntgenographic examination of the spine is valuable, almost essential.

When the lesion includes the cord and spinal roots, the symptoms are referable to the segment of the cord which give off the highest spinal root involved. The anatomical lesion is therefore several segments below the physiological.

When the cord only is involved, the anatomical and physiological lesions are identically situated.

2. *Prognosis.* Concussion with hematomyelia frequently results from the missile striking against the vertebra. Paralysis caused by this condition usually recovers rapidly and entirely.

Contusion or laceration of the spinal cord by actual contact with the missile, does not usually improve and is eventually fatal. Bedsores, cystitis, pyelonephritis, and sepsis is the usual course of the disease.

A patient with contusion of the cervical region of the spinal cord seldom survives long enough to reach the base hospital.

37 West Fifty-fourth Street.

THE TREATMENT OF INFANTILE PARALYSIS.*

Based on the Recent Epidemic.

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> "Infantile paralysis is an infectious and communicable disease, which is caused by the invasions of the central nervous organs, the spinal cord and brain, of a minute, filterable microorganism which has now been secured in artificial culture, and as such is distinctly visible under the higher powers of the microscope."

LOCATION OF THE MICROORGANISM OR VIRUS.

"The virus of infantile paralysis, as the microorganism causing it is termed, exists constantly in the central nervous organs and upon the mucous membrane of the nose and throat and intestines in persons suffering from the disease; it occurs less frequently in the other internal organs, and it has not been detected in the general circulating blood of patients." (Flexner.)

The purpose of this paper is to bring to attention what has been learned in the present epidemic of the treatment of infantile paralysis in the acute stage covering the first two weeks, and in the chronic stage covering a period of five to fifteen years from the beginning of treatment to such a time as operative procedures may be undertaken.

In a conversation with Dr. Haven Emerson at the Hospital for Deformities and Joint Diseases, on September 6, 1916, he informed me that in the various treatments carried on in the four city hospitals, consisting of internal administration of hexamethylenamine, intraspinal injections of adrenaline, as recommended by Dr. S. J. Meltzer, of the Rockefeller Institute, injection of immunizing serum from patients having had the disease, and injection of normal serum of healthy persons, there were numerically as many deaths, as many perfect recoveries, and as many cases of paralysis.

Hence, from the present methods of treatment in the acute stage, no apparent advantage exists from any line of treatment further than the fact that in cases where competent diagnosticians detect the disease in its incipiency, when paralysis threatens, and are able to recognize anterior poliomyelitis immediately, the disease has been checked and paralysis averted by the injection of immunizing serum obtained from persons who have already had the disease. Very successful, satisfactory results in this work have been reported by Dr. George Draper, of the Presbyterian Hospital, and by the observers in the health department.

The question as to when to begin the physical methods of treatment and protective methods to prevent contraction deformities, differs in the minds of most of the physicians at present engaged in this treatment. Some doctors apply braces and others apply plaster of Paris to prevent these contraction deformities. I wish to repeat here what I have said in previous publications of the irrational use of plaster for this purpose. A brace should be used which can be removed for the bath, light massage, etc. If a limb is confined in a solid plaster of Paris cast we add atrophy produced by the confinement (similar to the atrophy which occurs in a fractured extremity when encased in plaster), to the existing atrophy of the disease.

In addition to this, I have seen very bad sloughs produced in the application of plaster by incompetent assistants, owing to the imperfect way in which the plaster splint was applied. I wish most emphatically to state that plaster casts should never be used in infantile paralysis. Aluminum splints, which are inexpensive, are the most perfect type of protective splint and can be removed daily for such physical treatment as may be desired.

The time to begin treatment is in the second week. A good deal of pain that is due to the neuritis can be relieved by immersion in a warm bath. Much damage has been done to the nervous system and the health of children by administering morphine for these pains. I have seen in consultation several cases where this has been continued for a period of from three to five weeks, making the child a nervous wreck. A substitute for the bath in bed is an electric light bath, which acts as an analgesic in many types of toxic pains. This is done by exposing the extremities to white light, and then turning the child on the abdomen, producing hyperemia in the spine with the light. This hyperemia, which is followed by secondary anemia, relieves the congestion in the cord.

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*Read at the annual meeting of the American Electrotherapeutic Association, September 12, 13, 14, 1916.

Before continuing to describe the subacute condition, I wish to make an appeal for the investigation of high frequency currents, x ray, and radium for their powers in inhibiting bacterial growth and the destruction of the toxins in this disease. In my previous papers I have emphasized the value of the high frequency current, since which time several other authors have noted the efficiency of this current for the destruction of bacteria and their toxins. "The results of this series of experiments make it apparently certain that the reproductive power of bacteria can be destroyed by exposure to the ultraviolet rays" (1). M. Maurice Renaud (Académie de sciences, July 28, 1913) says that high frequency currents destroy bacteria and their toxins.

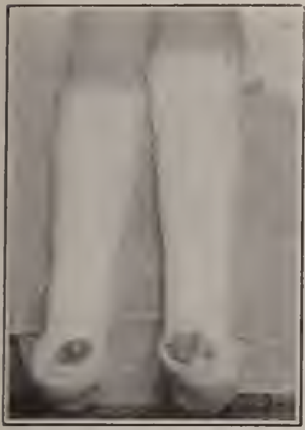
FIG. 1.—Showing cramping of toes and foot by plaster of Paris cast left on for eight weeks.

I have personally observed in cases taken from the home to the hospital and treated with high frequency currents for ten minutes along the spine, every three hours for three days, an arrest in the progress of the paralysis, and a decided recovery from the condition existing when the patient was first brought to the hospital. I regret exceedingly that no attempt has been made in the city hospitals to use any type of physical therapeutics such as high frequency currents, x ray, or radium as an inhibiting force to destroy the bacteria of infantile paralysis and their toxins in the acute stage of the disease, and it is certainly within their sphere to take advantage of any opportunity in acute infantile paralysis to test these physical agents. Light massage and baths should be continued while the patient is in quarantine.

At the Hospital for Deformities and Joint Diseases, the following plan of treatment is carried out and has been kept up for the past ten years:

Electric treatment. After an extended review of medical literature, I have failed to find any detailed descriptive method of the use of electricity and massage in infantile paralysis, so I shall describe what I consider the method yielding the best results. When should electric treatment begin, and what form of current should we use? Many writers advise waiting from four to eight weeks after the temperature becomes normal before doing anything in the way of treatment. According to the rules of the Department of Health of the City of New York, eight weeks' quarantine is required; in New Jersey, six weeks is required and in Pennsylvania, four weeks. I have found that we obtain the best results by beginning when paralysis appears and even before the temperature is normal.

I give to the muscles involved a sinusoidal current, alternating with a combined galvanic and faradic current that contracts seventy-two times to a minute, synchronous with the heart beat, and I regard this as an aid in the effect. It is known that contraction of the muscle can be obtained by the will; hence, this is a valuable means of retaining and developing the muscle fibre until it comes under the guidance of the mind.

Although many differences of opinion prevail as to the application of the sponge electrodes, I am in the habit of applying them at the origin and insertion of the muscle or muscle groups involved, always laying stress on the importance of approximating the origin and insertion of the muscle as nearly as possible. For instance, in treating the peroneal group, these muscles being most frequently involved, one sponge is placed over the middle third of the outer side of the fibula, the foot flexed as much above a right angle as possible and the other sponge applied over the insertion of these muscles on the outer side of the foot. In this way, the bellies of the muscles are relaxed and a contraction is made more easy.

I believe that much unnecessary stress has been laid on the reaction of degeneration, and I wish to prove, from a large practical experience, how deceptive it may be. It is said that a failure to obtain a muscle contraction by a galvanic or faradic current is an evidence of degeneration of the muscle fibre, and that no improvement can be looked for in this paralyzed condition in the future. Do we fail to obtain a contraction in most cases? No. We find that the cutaneous surface will not tolerate the pain of the current, and we must desist before contraction takes place, for most of the cases occur in children under five years of age who see no reason for enduring pain. This is even true in other cases when the age of the patient and his cutaneous toleration are greater; the strong current may give no reaction and still reappearance of function may occur. Hoffa said that the only way to determine the character of the muscle was to operate and cut down on the muscle, examining the nature of the muscle fibre to determine its condition.

The strength of the currents should be the weakest that will produce a contraction, and it is never to be used after contraction of the muscle ceases, nor longer than from two to three minutes on any particular muscle group, or from six to twelve minutes on the body at one séance. If this method is followed, the child will not cry from pain, or have its nervous sys-

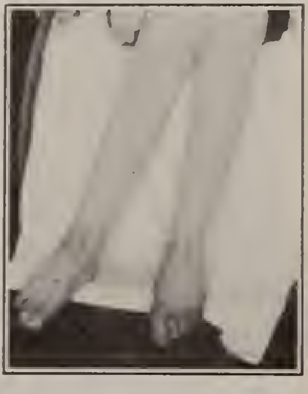
FIG. 2.—Showing pressure sores produced by plaster of Paris cast on anterior surface of ankle.

tem upset by too long continued electric treatment. I regret to state that the worst results seen by me have been in children of physicians who have had an excess of treatment; that is, electricity given from half an hour to an hour daily has inhibited the recovery and eaten up, as it were, all nature's element of repair.

Massage. Dr. Benjamin Lee says: "In the essential paralysis of infancy, truly wonderful results are obtained by massage." Massage treatment should be begun the moment the acute inflammatory symptoms have disappeared and be continued daily in the face of seemingly absolute ineffectiveness, for weeks and even months. Cases in which no improvement can be detected for long periods, often suddenly begin to improve and progress with great rapidity.

The effect of massage may be classified as 1, mechanical; 2, reflex; 3, thermal, and 4, electrical.

1. The mechanical effects are by far the most important, but the others should not be overlooked or forgotten. They consist of the interchanging of cell contents under the influence of alternate pressure and relaxation; a quickened movement of the blood in the capillaries, especially in the muscular tissues; increased activity in the movement of the areolar fluid; acceleration of the currents of both blood and lymph in the respective channels.

2. The reflex, or purely nervous effects of massage are obtained by light stroking and percussion. The former produces results which can be explained only on the supposition that it acts as a stimulant to the reflex system of nerves, the force used not being sufficient to account for any change on the mechanical theory.

3. The thermal effects of massage and movements are almost too apparent to need scientific demonstration; everyone is familiar with the fact that both muscular contraction in the form of ordinary exercise and simple friction develop bodily heat to a striking degree. Dr. Weir Mitchell, in his essay on *Fat, Blood, and How to Obtain Them.* notes (what has been observed by many others) that he had frequently seen the strangely cold limbs of children suffering with infantile paralysis gain from 6° to 10° F., during massage.

4. The remarkable effect of massage results partly from the development of surface heat, partly from the surface friction, partly from the attrition of the muscular fibres and cells, and partly from the nerve stimulation and chemical action. Graham observes that muscles give a much more ready, vigorous, and agreeable response to the will and to the faradic current after massage than they did before.

A child suffering from infantile paralysis was introduced, the affected limb having a surface temperature of 70° F. The poles of a battery were applied, and eleven milliampères were required to produce muscular contraction. The limb was then massaged and the temperature was found to have risen to 95° F. The poles being applied at the same points, contractions followed the employment of only five milliampères. It is evident, therefore, that massage diminishes the resistance of the tissues to the electrical current and increases the electrical contractibility of the muscles.

As some men prominent in orthopedics and neurology have condemned the use of electricity and massage, I have taken one of the most recent articles illustrative of this side of the subject, by Dr. Henry Ling Taylor: "The conventional treatment by electricity and massage is completely ineffectual." Further to support this position, he continues: "This was publicly acknowledged by Dr. B. Sachs, of New York, a distinguished neurologist, and chairman of the Collective Investigation Committee of the New York epidemic of 1907, at the Congress of American Physicians and Surgeons, at Washington, May 10, 1910. He spoke of electricity and massage in these words: 'I consider that the time given to electricity and massage, in these cases, is wasted. I cannot see that these methods do any definite good.' "

It is true that Doctor Sachs made the preceding statement in May, 1910, as I was present at the time. But five months later, on October 24, 1910, at the New York Academy of Medicine, Doctor Sachs, in discussing this subject, spoke of electricity and massage in the highest terms, thus showing that a man of high standing, from a later and more comprehensive knowledge of the subject, completely changed his views of the value of electricity—a striking illustration of the old adage, "Wise men change their minds."

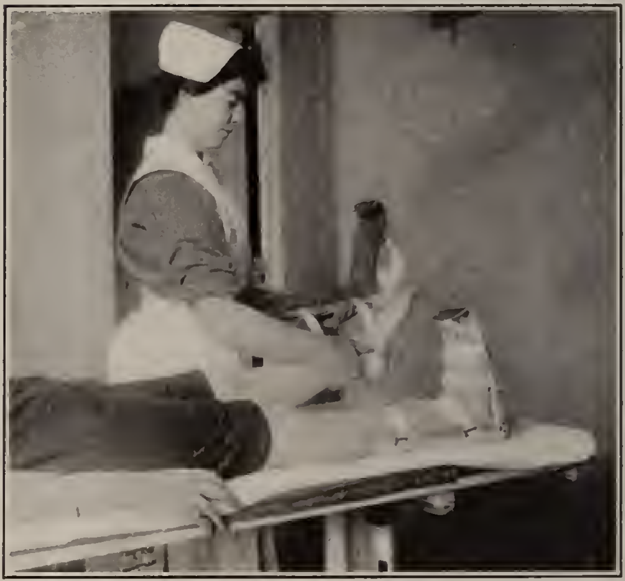

Fig. 3.—The aluminum removable foot splint to prevent foot drop; light and clean.

Doctor Taylor's unconscious accord with this view is shown on the next page of his own article where he speaks in the highest terms of vibration which the overtreatment hampered the progress of recovery. Fifteen to twenty minutes daily is sufficiently long to administer treatment.

The abuse of treatment is found in prolonged massage. Children who receive an hour or more of treatment daily cannot improve in the face of such a physical tax. I have seen many cases in which the overtreatment hampered the progress of recovery. Fifteen to twenty minutes daily is sufficiently long to administer treatment.

Hydrotherapeutics. The use of the bath, whereby we may float the limbs and aid motion, is a valuable adjunct to treatment. I wish to draw attention to the value of immersion of the affected limb in warm water from 95° to 102° F., for twenty minutes each night, when we find that the sixty-two and a half pounds of pressure of the water, when removed to the atmospheric pressure of fifteen pounds to the square inch, results in a dilatation which, together with the heat absorbed, produces an effect on the trophic centres and improves the temperature and growth of the limb. The paralyzed limb retains this heat for hours.

Muscle education. Finally, I wish to call attention to a class of active and passive exercises done before a mirror, having the patient concentrate his mind on the affected muscles. When the origin and insertion cannot be approximated by an effort of the will, the attendant aids in the effort.

After a time, however, it is found that the motion may be brought under control of the will. It is known that when motion is guided by mental concentration, the sulci in the gray convolutions in the brain, presiding over this motor area, are increased as well as the calibre of the nerve going from the cortex to the periphery. It has been demonstrated by Anderson, of Yale, and others that when a person is securely placed on a body balance and concentrates his mind on an extremity, the hyperemia thus produced tips the body balance in the direction of the limb.

A moment's thought makes clear the fact that the nerve efficiency or nerve control, as displayed by the gyrations of the Nautch dancer, can be developed by any person in any set of muscles if a proper effort is made. The stimulus transmitted from the brain to the periphery depends on the calibre of the conducting nerves, as the diameter of copper wire regulates the volume of electric current capable of transmission. We must realize that the concentration of the mind on the muscular effort not only initiates the movements, but also sends blood to the controlling nerve centres, producing growth and development in the conducting filaments.

In this treatment of infantile paralysis, in addition to the application of massage and treatment by galvanic, faradic, sinusoidal, and high frequency current, in children over three years of age a course of muscle education before a mirror is added, which I regard as one of the most important, because recovery is best brought about by the action of the will, influencing action after massage and electricity have brought the muscle under the control of the mind.

The muscles most frequently involved in infantile paralysis are the peroneal group, and the plan of exercising one set of muscles can be utilized in another set of muscles involved. Placing the child in a chair before the mirror in a comfortable position, I first approximate the origin and insertion of this muscle group by bringing the foot up to a right angle with the leg, and then urge the child to aid in bringing up the little toe side of the foot through an arc of about 30°. If the muscle contraction is such that the child cannot do this alone, the instructor places one hand on the knee to keep the leg in position, and places the other hand under the foot, which greatly aids the efforts of the child to produce the required contraction. This should be repeated several times, but not to the point of overtiring the weakened muscles. Each set of muscles should be contracted in a similar manner. If the motion cannot be brought about, the mental effort should still be made for the attainment of this action.

To emphasize how efficient this method is, I wish to state that through this, combined with other treatment, I have been able to show at medical meetings, practically cured, some forty-three patients who were unable to walk for periods extending from nine months to four years, although they had received some form of treatment during that time by other physicians and had been referred to the Hospital for Deformities and Joint Diseases by such able observers as Kerley, Koplik, Mandl, and many others.

It has been learned from necropsy that when areas in the brain have been destroyed by tumor or cysts, the function for this area has continued, and by the decussation of the nerves other areas in the brain have taken up the function. I am of the opinion that in cases in which recovery has taken place in paralysis, after a few years, the motor conduction from the brain to the periphery has been carried on through other motor tracts in a new circuit, passing around the damaged area in the cord.

REFERENCE.

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160 West Fifty-ninth Street.

THE TREATMENT OF INFANTILE PARALYSIS.*

By Frank E. Peckham, M. D.,
Providence, R. I.

Infantile paralysis has made serious inroads in this country and much study has been given to it. Clinically, it is usually easy of recognition, but in the early stages it may be difficult, and indeed diagnosis may be impossible until paralysis is actually in evidence. It should be unnecessary at this time to go over the clinical picture of an acute infantile paralysis as so much has recently been written and, as far as this paper is concerned, the diagnosis will be considered as having been made.

Thus far, the treatment leaves much to be desired, and any method which offers positive assistance should be thoroughly known and used. For any logical treatment to be instituted there must be a definite idea as to the pathology, and also as to general physiological principles. According to all investigators, including Flexner, there is present in the early stages a hyperemia of the cord and meninges, the vessels are all congested, and the cerebrospinal axis is edematous. "Any inflammatory focus is surrounded at the periphery by zones of hyperemia, exudation, and edema." (Meltzer.) "In an inflammation we have to distinguish between the centre which represents the main inflammatory focus, and the surrounding area, consisting of zones of cellular infiltration, active hyperemia, and edema. In the centre the original tissue may be destroyed and when a healing process takes place it is accomplished by filling up the gap with connective tissue." (Meltzer.) In the earliest stages there is little increase of cerebrospinal fluid; later, however, there is an increase in the amount. The infection of the disease exists in this fluid which infiltrates the tissues and fills the spinal canal. In this hyperemic condition of the cord, the cellular exudate forms a sheath around the vessels and nerves at their exits, and this nerve pressure is what produces the pain along the nerve trunks in the limbs. (Neustadter.) The pressure of the zones of hyperemia, cellular infiltration, and edema may produce mechanically the symptoms in an acute poliomyelitis. In extremely severe cases, where profound paralysis of the whole body musculature seems to make death inevitable, it is not uncommon to see such a case terminate in almost, if not quite complete recovery, without special treatment. It is evident that such paralysis cannot be due to actual death of central nerve cells or recovery could not take place. What more logical than to consider it due to mechanical pressure as above described, and that with the subsidence of the hyperemia and infiltration and the consequent pressure, the symptoms should disappear? This is also demonstrated in cases of lumbar puncture when the sudden withdrawal of the fluid, thus removing the pressure, results in immediate alleviation of symptoms. The early refilling, however, causes their prompt return. This process which causes infiltration, exudation, and edema, is a reversible one, according to Meltzer, who has used adrenaline with repeated injections to relieve the pressure and thinks favorably of it. It may be possible to accomplish this in a more physiological way, and, if more physiological, it must of necessity be more permanent.

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*Read at the annual meeting of the American Electrotherapeutic Association, New York, September 12, 13, 14, 1916.

An increasing number of men are becoming familiar with the use of the static wave current to dissipate the infiltrations and edema in various parts of the body. I think we are indebted to Doctor Snow for first using it in the infantile paralysis cases. The first report with which I am familiar was in the *Journal of Advanced Therapeutics* for October, 1912. It is in accordance with this method that I had an opportunity of treating three cases a few months ago which I wish to report.

CASE I. Girl, five years of age, had a sudden attack in the afternoon of September 25, 1915. There were nausea and vomiting, loss of appetite, and some fever. Four days later, she complained of pain in the left leg, severe enough to keep her awake at night. On October 2nd, the seventh day, the child was brought to my office for treatment. At this time, there was still some fever, and the pain in the leg was keeping her awake at night. Walking was possible, but with the left leg hyperextended. There was a half inch atrophy of the left calf, and both patella reflexes were absent. Treatment consisted of the static wave current applied over the lumbar region of the spine for twenty minutes. The 500 c. p. lamp with the blue screen was used over the leg muscles and over the lumbar region of the spine. Following this treatment, there was entire absence of pain and tenderness in the muscles, consequently vibration was applied and this was followed by gymnastic movements. The child was regularly brought three times weekly for treatment. There was immediate relief of symptoms, and on October 11th, after four treatments, the pain had disappeared completely. On November 8th, walking was possible without hyperextension of the knee, both patella reflexes were normal, and the muscular atrophy had completely disappeared. Treatment was continued for a while longer to be on the safe side.

CASE II. A boy, aged five years. The acute attack occurred about two weeks before he was brought to my office. The boy had been in bed with fever, and when he got up the legs gave way under him. In this case the patellar reflexes were very much exaggerated. The first treatment was given November 2, 1915, and consisted, as before, of the wave current applied to the lumbar region of the spine. The 500 c. p. lamp over the muscles of the legs, as well as the lumbar region of the spine, was followed by vibration of the muscles and then gymnastic movements. After two treatments the knee jerks were less exaggerated and appetite and sleep were improved. Sixteen days later, the boy was running about as before.

CASE III. A boy, two and a quarter years of age. The onset, with an acute attack of fever and pain in the legs, occurred about three weeks before he was brought to my office. About six days before, the right leg had given way. Examination showed that the tibialis anticus and extensor group of muscles were completely powerless, and both patella reflexes were absent. The first treatment, on November 5, 1915, was exactly the same as in the other cases. After two treatments, the pain was gone and there was no more crying. On December 13th, the baby began to move the toes. On December 27th, he could extend all the toes, and both patella reflexes were present. The father ceased attendance in January; the result was not quite perfect, but the parents thought the baby was all right.

Although only three cases are reported, I feel that the treatment is logical and physiological and should be given in the earliest stages; if the infiltration and edema can be dissipated at that time, much damage may be avoided.

In patients acutely sick great care must be taken to prevent overstretching of the affected muscles. Personally, I feel that this should be done by braces to be removed for treatment, which it is possible now to begin much earlier than formerly when the patients are so situated that light and vibration may be applied as already described. The splinting keeps the strong muscles stretched out and contractures are prevented. When the muscles have been exposed to the light and thus freed from all pain, manipulation may well be employed. If a limb is held by the removable splints in a position in which the muscles are evenly balanced, the strong muscle will contract just as far as the splint will permit. This means that its elasticity beyond that point is lost. Later, when the splint is removed, this muscle will prevent passive motion beyond that fixed point. If ~~by~~ exposure to light, manipulations have been rendered possible, and the strong muscles not only prevented from contracting, but their elasticity also preserved, when the apparently paralyzed muscles begin to regain power it will be seen at once what a tremendous advantage these methods of treatment possess. Even if a proper serum becomes an established fact, the treatment still will be to care for the muscles so that deformity may be prevented, thus reducing surgical operations such as tenotomies, etc., for the correction of deformities, to a minimum.

In the ordinary cases it is not difficult to ascertain very early what muscle or group of muscles are to be affected. As soon as it is time (which by the methods of treatment described is now much earlier than formerly) work may be instituted upon these muscles. The method which I have used for many years is, first, to expose the weakened or paralyzed muscles to the 500 c. p. lamp for twenty minutes (the light being screened with blue glass). The light thoroughly applied heats and stimulates the tissues, and fresh red blood is thus brought to the exposed area. The blue light is an anesthetic, which causes the pain to disappear. Immediately following the exposure to light, vibration may be applied, thus increasing the flow of this flesh influx of blood and also stimulating the nerve supply. The conditions are now ideal for active muscular efforts which, everyone agrees, are of the greatest value.

It is my belief that these methods give as good results as are possible to obtain in a given case. In the neglected cases, especially in those where the weakened muscles have been pulled around by the strong ones it has frequently been found, after tenotomy has been done and deformity corrected, that the stretched out and supposedly paralyzed muscles respond very promptly to the above outlined treatment. This restoration may be obtained even years after the acute attack.

It will be observed that I have not made use of electricity in restoring muscular power, but have confined myself to the 500 c. p. lamp, vibration, and active gymnastic work. In common with most orthopedic men, I had considered that the electrical stimulation of the muscles had very little, if any value. Last winter, however, in Doctor Snow's office, I saw a girl about sixteen years of age who in earlier life had an attack of poliomyelitis resulting in paralysis of the trunk muscles and a consequent scoliosis. When I saw her, the muscles had begun to respond to the sinusoidal current, thus convincing me that results may be obtained in more than one way. Whatever physical, mechanical, or electrical methods may be used, I feel and feel strongly that gymnastic exercises, with and without resistance, are of the very greatest importance and should never be neglected.

If these methods of treatment were made use of from the very beginning, I believe there would be more perfect recoveries and, in consequence, fewer cases requiring braces and operative procedures. With braces and operations I shall deal only in a general way.

As the cases now present themselves, after the epidemic in New York and elsewhere, treatment has been nil. Many parents have been told that "nothing can be done," and I presume that the practitioner meant that as yet there was no specific serum. Let us consider for a moment what would happen if we really had a serum. In the first place, it would have to be used within the first eighteen or twenty hours of the infection. In only a few cases would the diagnosis be certain so early, which means that most of the cases would be about where they are now as far as treatment is concerned. When these patients are ready to walk, braces may be necessary to support the limbs until usage makes the weak muscles strong. Gradually, then, the amount of bracing may be reduced. If the methods of treatment above advocated are persistently used, great improvement may be expected.

The operative treatment comes last of all and includes such procedures as arthrodesis, silk ligaments, astragalectomy, and tendon work, either the fixation or transference or both. The great trouble with all of these operations is that too much has been expected and consequently there has been some disappointment. They all have a value, however, but should only be done by men who are familiar with such work and by those especially who appreciate the functional value of muscles when placed in new positions. This paper was written to place emphasis upon the physiotherapeutic modalities, especially when used in the acute stage.

266 Benefit Street.

THE SPEEDY CURE OF TUBERCULOSIS.

Presidential Address Delivered Before the American Electrotherapeutic Association, New York, September 12, 1916.

By J. D. Gibson, M. D.,
Denver.

Several years ago, in passing along the *Graben*, a street in old Vienna, my attention was attracted to a queer, yet beautiful monument. On inquiry I learned that this beautiful monument was dedicated as a thanks offering to Almighty God, for the disappearance or cessation of the black plague, some three or four hundred years ago. Later, I never passed this structure without feeling thankful that I lived in a better day, and, as I mused, Why is it a better day?—my mind turned to Jenner, with his vaccination, like a great light illuminating the ages, also to Virchow and his illustrious pupils and contemporaries, Koch, Klebs, Creduly, von Ruch, Pasteur, Metchnikoff, Welch, von Behring, and a vast army of investigators who have intensified and increased this light, until the whole world has been illuminated and benefited, until we can scarcely realize that such a thing as the black plague ever existed.

In our own land many of you will remember the old time scourges of our southern borders with yellow fever, when Federal and State shotgun quarantines were of common occurrence. By this means our old friends, Cochrane and Sanders, with other State health officers of the Gulf States, usually managed to stamp out and control the epidemics until Jack Frost came to their relief.

But now of late years, since Finlay and General Gorgas have cleaned up Havana and Cuba, and Gorgas has succeeded in making Panama almost as safe from yellow fever and malaria as New York city, we hear less of the shotgun quarantine, and trust it has passed away forever.

Before the discovery of vaccination by Jenner, not only were there thousands of deaths every year from variola, but it is stated that eight out of every ten persons met on the streets of London had their faces pitted from smallpox. Today, owing to vaccination and government control, there are scarcely any deaths from smallpox, and there is not one person in a thousand that we meet upon our streets whose face is pitted by smallpox.

Variola is not the only disease brought and kept under control by our health boards. Scarlet fever and diphtheria, both old time terrors to doting parents, have been largely put in the background and are no longer dreaded scourges of humanity, thanks to the great researches of modern medical men.

The great predominating fact that stands out before us in controlling these plagues of contagious and infectious disease, is the support that all enlightened and civilized governments have given the medical world. They have developed step by step, the knowledge of the natural history and cause of disease, and aided in developing the great fields of preventive medicine. Without government aid Finlay never could have cleaned up Cuba and freed Havana from yellow fever, although he sacrificed his own life in doing so. Gorgas could not have cleaned up Panama so thoroughly that he has received the thanks of the civilized world for his effective work, if the United States Government had not been his staunch supporter throughout the ordeal. So it is with measles, varicella, and many other diseases; they are kept under control simply by continued and untiring vigilance of the health departments. Federal, State, county, and municipal, all having their special functions to perform. We know they are doing it well when we compare the results of today with those of only ten or fifteen years ago.

These health boards have accomplished so much already, it is my desire to thrust a little more work upon them, and see if I cannot point out a way in which a little more light can be thrown upon the only great plague left for us at the present time, the Great White Plague.

The question is frequently asked, "Why does not the government, both Federal and State, try to do more for the control and stamping out of tuberculosis in man?" We hear the government frequently criticised for spending much money on the examination and care given to domestic animals, especially dairy herds and beef cattle, to keep them clear of tuberculosis, and yet doing little for suffering humanity. Many people fail to stop, think, and realize that every cow and hog that is segregated and killed, is killed that it may not become a carrier or a source of infection of tuberculosis to human beings; in other words, every dollar spent in caring for cattle is spent in an effort to benefit humanity.

The government, you must remember, has never had any more specific and certain method of cure of tuberculosis than any of the regular physicians; therefore, it has never had any agent or method that was certain and definite enough to justify it to go to extremes and great expense for its promulgation. When the National, State, and city governments find a remedy or agent that will control, cure, or aid in stamping out tuberculosis of all kinds and stages, I predict it will aid and develop this work just as quickly and effectively as it has done in vaccination for variola, and antitoxin for diphtheria.

Tuberculosis in all its combined forms is the great plague of the age. In our own land there is a continual wending of 200,000 funeral corteges from homes to cemeteries every year. Think of the misery, suffering, and heart aches in those 200,000 funeral processions; the widows, widowers, parents rendered childless in their old age, and orphans! Think of the changes wrought in the destiny of a family by the empty chair and vacant fireside, as pale death continues to invade equally the palace of the rich and the cottage of the poor. Think of the economic loss to the State and relatives as this vast army of youth, young manhood and womanhood, is hurried on to an untimely end. This 200,000 dead are those whom all "chasing" and treatments have failed to save, no account being taken of the hundreds of thousands who fight the great fight and win every year. Shall this cortege of 200,000, with its ocean of tears and woe, go on forever? I say No!

Two years ago at Battle Creek, I read a paper before this association, in which I made the assertion that with the present light before us, it would be possible to banish tuberculosis as an important factor in vital statistics in ten years' time. Two of those ten years have passed, and I want to say that by plans I bring you today, the death rate from tuberculosis can be made probably less in the remaining eight years in the United States than it is from variola; or the 200,000 funerals can be cut to less than 20,000 yearly. Is not the saving of 180,000 lives of our neighbors, relatives, and friends yearly, enough to stir the red blood in the veins of any living man? This then, is my excuse for this discourse, and I come before you as one with authority, the authority of the treatment of nearly 1,000 cases, and of many years of experience, with the vast majority of patients treated now living, who can testify to the results.

I am not satisfied with making practical cures of more than ninety per cent. of all cases, all stages, and complications of pulmonary tuberculosis as I am making at the present time, which ratio in itself would save 180,000 of the 200,000 funerals, but we can, and must, surpass this record. I think in eight years more we can create conditions that will make death from pulmonary tuberculosis a great rarity.

The National Association for the Study and Prevention of Tuberculosis has accomplished a great work. It has taught the masses of common people the manner and cause of contagion in tuberculosis, and has taught them to fumigate rooms and dispose of the sputum in a sanitary manner. They have insisted upon outdoor life until it has become popular throughout the entire land, have established tuberculosis camps and hospitals all over the country, and have thereby actually caused a decrease in the death rate from tuberculosis in the last ten or fifteen years. But my plan is to get nearer the root of the condition than tuberculosis camps and hospitals and fresh air, and see if we cannot, in a few years, make the camps and hospitals for tuberculosis useless institutions.

MY PLAN.

1. Make use of the health boards of every city and county.

2. Every child in the public or other school should be examined for tuberculosis and treated, if needed, under the direction of a board of health.

3. The health board, or commissioners, should set aside and maintain a department for this special school work, known as the tuberculosis department, and the chief or manager of this department, with all assistants needed, should devote his entire time to the care, examination, and treatment of the school children. The exact records of each year's examination of every child, sick or well, should be kept and recorded properly. Every child that is tuberculous, or shows a reaction or sign of tuberculosis, should be treated by my method of treatment, and cured while it is attending school. Segregation will be unnecessary.

I say my method, because by this method, namely, "the adding of x ray for its direct and specific effect on the bacilli and the lung tissues or cells of the lungs; static electricity for its direct effect upon the heart, nervous condition, and general metabolism; and inhalations of an ozonized oil nebula for its effect on the cough, added to the ordinary dietetic, hygienic, climatic, rest, and medicinal care, as generally used in the treatment of pulmonary and other forms of tuberculosis," I have, in this present year, been able to save from death over ninety-two per cent. of all applicants, in all stages and with all complications of pulmonary and other forms of tuberculosis.

This is the method, therefore, which will, and does make this further step in the control of this great plague feasible. I believe the method which I am bringing before you this evening, and for years have been calling to your attention, is absolutely the most definite and positive remedial agent ever brought before the profession in the treatment of pulmonary tuberculosis. I maintain that by this method it is possible to eradicate and cure every case of tuberculosis in adults and children when detected in the early or prebacillary stage, and raise such an immunity in the victims, that it will be almost impossible or be exceedingly rare, at least, for them ever to manifest tuberculosis.

Now, if this is possible, do you grasp the significance? If every child can be rendered immune to tuberculosis for the remainder of its life, in a few years where can tuberculosis material be found upon which this great plague can continue to feed and flourish? Consequently, the third stage and desperate cases will soon have dropped from the earth, and death from tuberculosis will be a thing of the past.

Another point I want to touch on is this: The treatment will make ill developed and poorly nourished children grow and develop rapidly. I have seen many poorly nourished children, of tuberculous parents and families, grow and develop splendidly after this treatment, improving not only physically, but mentally as well. I predict that the ill nourished and physically weak children, when treated by this method, in a few years will rank alongside or above the untreated normal children.

4. Why should the school be supervised and managed in this manner by the health board? In the first place, the board of health could have unquestioned authority behind it. It can enforce its mandates and secure the treatment for tuberculous children just as it does vaccination, and matters of quarantine. All children can be cured, and will be, if it is made compulsory. Another reason is that few physicians will be willing to make the outlay of money needed to prepare them for this work, and spend their time to learn the method for the few local cases they are likely to treat. Nor would every doctor likely get patients enough to enable him to become proficient in the work. Nor could all the parents of these tuberculous children afford the expense of the treatment at private hands, as this treatment is expensive, and necessarily spreads over quite a length of time. Therefore, the physician in chief appointed by and under the direction of the board of health, should have sufficient room set aside in the school buildings, so that the examination of children can be made easily and conveniently. These examinations and tests should be made thoroughly, with all the approved methods of physical diagnosis. Physical examinations should be thorough and charted, and supplemented by sputum examinations when sputum can be obtained. Röntgenographs of the lungs and joints should always be made, and prints filed with other examination records. If doubt still exists, tuberculin tests should be used, and reactions carefully noted. In other words, if there is tuberculosis in the body of a child, find it. Find it if it is latent or active, and if you find it, treat it and cure it whether it is latent or active.

X ray machines of the best patterns will be needed for this work, both for diagnostic use and for giving the necessary x ray treatments. Ozone machines of approved patterns and efficiency should also be installed for the inhalations, thus procuring its tonic and cleansing effect on the bronchial tubes. Static machines will be required for the metabolic effect of these currents. These machines and apparatus should be installed by the city in sufficient numbers for the treatment of all children requiring it, and the expense of the work should be borne by the city.

Every case of tuberculosis in a child of this day and time can be detected. It is possible in every case for the doctor to be able to say with certainty and assurance, "yes" or "no" in the case of every patient, long before the bacilli can be demonstrated in the sputum. These are the cases we wish to find, pick out, and cure before the lungs proper become infected.

It is my experience, and I believe literature bears me out, that the tuberculosis of young children is usually glandular, and that most latent or incipient tuberculosis in children is in the bronchial, mediastinal, cervical, abdominal, or inguinal glands. In other words, it usually is first a glandular tuberculosis. Now this is when we wish to, and must detect the disease and treat it, because there is not a physician before me in this audience but knows that Röntgen rays will cure a tuberculous gland. That being the case, and it cannot be contradicted, in Heaven's name, why not cure it when to cure is easiest and surest, and save the child in the future for itself, its family, and the State, and also know that he will not be a carrier of tuberculosis, infecting all about him for the rest of his life?

We know that it is held by some authorities that all tuberculosis is contracted before the host is five years old, and in the majority of cases lies latent until later in life, when something happens to cause it to develop, and once more endanger life. If this theory has any truth in it, it only makes my suggestions more imperative.

The chief reason for forcing this idea for the control and cure of tuberculous children while they are in school or at the school age is, first, children respond promptly to the treatment, and almost every case can be diagnosed and located while it is in a curable stage or condition. Nearly all of these cases in children, when it is latent or active, can be detected and located while it is still glandular. Not only can the child be cured, but the general physical condition of the child can be so greatly improved in every way, that the expense will be a splendid investment for the county and State, to say nothing of the home and relatives Secondly, the economic side of the case is of great importance. If the tuberculous conditions are neglected in the child, they are not likely to develop until about puberty and afterward, when the children become wage earners and begin to assume some of the responsibilities of life. At this period, there is entailed not only the expense of treatment, loss of time, and increased danger, but loss of salaries as well. In other words, at this time it is a double edged sword, and cuts two ways, loss of salaries and much expense. While if the case is cured in childhood, all of this can be avoided; and when the child is ready for business and the active duties of life, it is equipped with health and strength, and will meet all its obligations with fearlessness and certainty. Therefore, it would prove great economy both to State and family, that these children should have been treated, and all taint of tuberculosis removed in their early life, and also that they had been taught to care for their health while in the public schools. They can receive treatment, ten to fifteen minutes every day, just as they take their mathematics and other lessons.

This work will have to be studied by the different staffs in charge, and much will be learned by their experience in the work, but I predict that in a short time the rivalry in the ratio of statistics between different cities will be so great, that excellent work will be accomplished. The specific details of this method of treatment will be given you in another paper to be read at this meeting, entitled, One Year's Work in Pulmonary Tuberculosis, so I will not tax your patience now with their rehearsal.

Thirdly, the tuberculosis staffs of these schools will become so proficient that they can be used as centres to which all the old tuberculosis cases in the surrounding communities can come and be cured, without having to travel many miles to different cities and climates, hunting up various specialists for this purpose.

I predict that in a few years this work will be done so efficiently by the staffs of these different schools, that my old claim, that it is possible to eradicate tuberculosis as a factor in the death rate in ten years, will be realized.

HEALTH INSURANCE FROM THE VIEWPOINT OF THE PHYSICIAN.*

By Ira S. Wile, M. D.,
New York.

The unnecessarily high morbidity and mortality rates existing among industrial workers suffice as a reason for the establishment of some type of insurance which will distribute the economic cost of such disabilities in a more just manner. With a general average of wages for the majority of the population below an amount sufficient to provide for an adequate standard of living, it is financially impossible for the conservation of health to be an active motive in family life. Nor is it possible for those with annual incomes under $1,200 a year to receive the most effective and satisfactory medical attention for the palliation or cure of their illnesses, without the sacrifice of self respect or independence.

In an attempt to secure a measure of relief during such disadvantageous times, many thousands of workers have united to establish voluntary forms of health insurance. By fraternal orders and by unions they have sought to secure group medical attention on a capitation basis which is insufficient to secure adequate relief. With doctors receiving one dollar a year from each member of such organizations and with fifty cents or one dollar a year added if the family is to be included, a high quality of medical service is difficult to obtain. The financial benefits which such organizations give are too frequently restricted according to the number of visits required, and to the character of service needed. The lodge doctor or the contract practitioner cannot provide the special types of service most essential for his patients. The treatments are not begun sufficiently early nor is the medical care prolonged to the time actually necessary to establish the return to health. What is of greater importance, however, is the fact that most types of voluntary insurance are prohibitive to workers most needing it, namely, the lowest paid in the industrial group and the least thrifty.

It has been estimated that in the United States for the 34,000,000 men and women in industrial life there are 13,400,000 days of illness or an average of eight and one half or nine days for each person. The Federal Commission on Industrial Relations has called attention to the fact that accidents cause practically only one seventh of the amount of destitution that results from illness.

It is almost axiomatic that disease entails poverty and poverty entails disease. Health insurance is a measure which properly developed would decrease poverty and disease, and generally raise the standard of health and living to a more civilized basis.

As far as the general proposition of health insurance is concerned it may be admitted that physicians in general are in favor of it. The medical profession recognizes that social legislation is inevitable. The experiences of foreign nations with accident insurance, health insurance, maternity insurance, old age insurance, and unemployment insurance represent distinct social advances in that the State, as a whole, thus manifests interest in the physical, mental, and moral welfare of its citizens.

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*Read before North Atlantic Tuberculosis Conference, Newark, N. J., October 20, 1916.

Thirty-five States and Territories of this Union have enacted workmen's compensation acts which seek to make adequate provision for the victims of industrial accidents. A few States have developed insurance laws for the relief of occupational diseases. It is of the utmost importance that health insurance should be wide in its scope, reach the largest percentage of the workers, and take cognizance of the interests of the various parties concerned. This involves the recognition of the part to be played by the employee, the employer, the State and, by no means the least in importance, the medical profession through which the provisions of enactments are to be carried out.

I believe that the medical profession recognizes that the advantages of health insurance far outweigh any particular class disadvantages which, to be sure, merit its consideration. A large proportion of the population is constantly ill and for financial reasons deny themselves or are denied prompt and proper medical attention. The possibilities of more complete treatment leading to restoration of health naturally appeals to those interested in rehabilitating the physically handicapped. Under insurance provision more adequate facilities are provided for insured patients, not merely in hospitals and dispensaries and diagnostic laboratories, but in the important phases of medical and social service indicated in nursing care, the supplying of necessary appliances, convalescent care, and continued medical oversight.

My personal interest in health insurance is due to my conception of it as a recognition that health constitutes an asset of the State. The mere cure of individuals is of secondary importance to the principle that the general raising of the standards of health of a community is essential to the development of the best type of citizenship. Any system of health insurance which is regarded as merely a relief system fails to recognize its most vital function. Health assumes a financial value when the lack of it is penalized by financial payment. The greatest results from health insurance are to be achieved in the direct and indirect educational work aiming to establish conditions which permit continued healthful living, or at least remove environmental obstacles tending to wreck or undermine human existence.

Personally, I believe that the establishment of health insurance means an increased practice for the average physician. The possibilities of this have been demonstrated in the action of the English Insurance Bill, to which the profession was originally opposed, but which today has financially established itself as a measure beneficial to the entire profession.

A system of health insurance wherein the funds are to be provided by employees, employers, and State appropriations, appears to be sound, provided that adjustments are made for a decrease in the amount to be paid by employees in the lower wage scales. The economic loss to the nation, incidental to the illness of wage earners, approximates $750,000,000. This in itself is a sufficiently large sum to suggest the importance of distributing the loss in such a way that it does not fall upon those least able to bear it. Most of the illnesses of society are not due to the shortcomings and indiscretions of individuals, but are part of the responsibilities of society as a whole, and therefore society as a whole should pay its share of the economic loss. The statement of financial loss, however, fails to take cognizance of the loss of family life, the amount of anxiety, terror, poverty, continued invalidism, vagrancy, and criminal acts, which are bound up in the loss of health, enthusiasm, ambition, and potential working power incident to disease. The occupational hazards, the enforced unemployment, the unhealthful industrial environment, the economic disability due to low wages, represent factors which cannot be interpreted merely in terms of economic loss due to illness.

As a relief problem, the mere establishment of weekly benefits for illness would be a failure. The responsibility for health should be the motive force underlying rational health insurance acts. Health is to be sought, encouraged, and education to this end is to be developed in order to lessen the drain upon the financial resources of employees, employers, and the State as pooled in an insurance fund.

The Conference of State and Territorial Health Authorities with the United States Public Health Service advocated that the administration of the medical benefits be directly under governmental agents, who are to be responsible for the certification of all patients to whom cash benefits are to be paid. If this plan were adopted, it would be necessary to select such officers on some civil service basis in order that political questions might not arise to impair the efficiency of the system through the appointment of political favorites rather than capable administrators and examiners. Such officials should be upon full time service and would indeed serve as a check upon physicians seeking to increase their charges through prolonged treatment, and would relieve them of any of the embarrassments occasioned by questions of certification. It would be possible through them to seek out the incapable practitioners, those negligent, indifferent, or dishonest, with a view to removing them from whatever panel might be established.

As a general proposition, I believe that the patient should have free choice of physicians, conditioned, obviously, upon the acceptance of the patient by the physician, regardless of whether the payments are to be made upon a capitation, visitation, or salary basis. This in itself would be a distinct advantage to the community in that it would provide a stimulating reason for physicians to raise the standard of health of their patients and give the most efficient service, in order to retain their popularity among the workers served.

The hospital question is of exceedingly great importance. The establishment of health insurance would necessarily alter the type of dispensary practice, as at present organized, and would in time cause the abolishment of the free dispensary for those coming within the purview of the insurance law. Service by physicians in dispensaries would be paid for; hospitals themselves would be better controlled and organized so as to provide the most modern equipment and diagnostic facilities for the use of physicians in the interests of the patients. Hospital units would necessarily be developed in accordance with the particular needs of communities, not with a view to providing philanthropic agencies, but for the purpose of supplying scientifically managed institutions for the reestablishment of the health of those making use of them. There would no longer be a going forth from hospitals of patients not fully recovered, but there would be opportunities afforded for convalescent care. The time spent in the hospital would be merely that necessary for restoration to sufficient health to permit of transportation to special institutions essential for the complete development of the potential power of the patient. Convalescent homes, educational homes, and special institutions would be created to return workers to industrial life capable of being economically independent, so far as their actual physical handicaps and disabilities would permit. With such a system of restoring facilities, the social health of the injured would be paramount, and ability to function normally would be regarded as an integral part of the conception of health.

In a general way, physicians would have larger practices, their fees, large or small, would be assured by virtue of the insurance fund. Their point of view would be changed from the pathological, which places a premium for them upon disease, to the more normal and rational view of payment received for the maintenance of health. The family of the injured, no longer suffering from a total wage loss incident to illness, would be able to maintain reasonable standards of living, suffer less distress from impoverished nutrition and anxiety, and would be less susceptible to tuberculosis and other communicable diseases. They would gain in confidence and moral force with the knowledge that disease itself penalized only the victim and not the whole family. This in itself would increase the standard of health in the community and decrease the amount of illness requiring attention by physicians during the period of greatest industrial activity.

In the working out of the details of a health insurance act, it is essential to secure the cooperation of the medical profession. The unpleasantness and hostile experiences in Great Britain must not be permitted to arise in this country. The most conservative physicians only ask that the medical profession have proper and adequate representation on the various committees or the boards responsible for making decisions in medical matters which may arise in connection with health insurance. They ask that on the panels of physicians every legally qualified practitioner of medicine should have the right to have his name recorded. They ask that the injured person shall have the free choice of any physician on the list or panel, subject only to the acceptance of the patient by the physician. They desire that all contracts for medical attendance and terms shall be made with associations of physicians composed of one or of several panels, to which associations all panelled physicians in those districts must belong.

Some interesting problems will arise under a compulsory insurance act providing for the free choice of an attendant, particularly when the State law permits treatment by chiropractics, various irregulars, and Christian scientists. The insurance act, however, can take cognizance only of the State laws establishing the qualifications for the practice of medicine. Inasmuch as efficient service is impliedly an aim of a law of this character, the question arises how it may be possible to obtain a specially qualified man. Under a free choice law with an open panel, it would be impossible to offer any guarantee as to the character of service to be given by the physician. The checking by salaried State medical officers might possibly suffice to decrease the panel list after a sufficient period of experience, but it is doubtful whether this would prove particularly satisfactory. Conditional examinations for the determination of panel physicians would meet with rigid opposition. For these reasons it is probable that State insurance acts would have to accept present standards of medical licensure as the only conditions for placing a doctor among the available insurance physicians.

The free choice of physician by the patient carries with it a hazard in that physicians would accept a larger number of patients than they could adequately and efficiently treat. Experience will in time determine the maximum number of patients which one physician can properly attend, but this cannot be defined until regulations have been established, making clear the character and effectiveness of the medical service which is to serve as the standard. For the successful and practical working out of an insurance act, these two facts must be established, though probably this is a matter of administrative detail which can be worked out only after the passage of a health insurance law.

If contractual relations are to be determined by local groups of physicians, it will probably be advisable in some places, industrial centres, for example, to employ salaried physicians to care for the insurance work in specific large industries. From the standpoint of a knowledge of occupational diseases, this would inure to the advantage of the insured and would not work a hardship to the physicians any more than is true at present where such practice obtains. In rural communities, it is possible that salaried medical officers might be employed to treat the insured, but this would arise only as a result of the action of the physicians themselves viewing the actual needs of the situation.

The provision for treatment by specialists, or the securing of consultation advice may demand the retention on salary of certain members of the profession; or possibly they should be paid on a limited visitation basis, in order to secure the best medical results. In the present complexity of medical sciences, it is impossible to expect from the general practitioner equal ability in various lines of medical service. The possibility of securing special attention should be made simple, in order that the physician himself may have every reason and opportunity for taking free advantage of such consultants in the interests of the patient.

Hospital arrangements will naturally vary in different sections of the community, but one provision in administration seems imperative, namely, that when hospital care is essential for the recovery of a patient, failure to take advantage of it should be penalized by the withdrawal of cash benefits. Any hospital should be properly recompensed, whether the institution is organized by an insurance commission, local association, as a city institution, or is conducted under private auspices. The terms of such compensation will necessarily vary in different sections of the country.

From the standpoint of medical economics, as ordinarily understood, the most vital part of a health insurance act involves the discussion of the remuneration of the physician. Regardless of the fact that collections are assured and that there will be no loss for services given, the importance of the method of remuneration must not be underestimated. A capitation payment under an insurance act will still have many of the defects inherent in such methods of payment, as at present practised by lodges or fraternal orders. Visitation fees give remuneration in proportion to the actual service extended to the injured and are likely to conduce to the more careful consideration of the medical needs of the patient, but on any existent scale of fees are practically too costly for an insurance fund. If it were possible to devise a system where a capitation fund is set aside to be divided among physicians in proportion to their actual service, computed on visits made, it might be possible to secure a more equitable distribution of the fund, but this would require considerable checking in order to discover physicians seeking to increase their pro rata through needless visits. An indirect beneficial effect would result with busy physicians aiming to decrease the number of necessary visits through educating their insurance clientele in methods of hygienic living.

While it has been suggested that the occurrence of epidemics would throw an extra burden of work and cost upon physicians, it is probable that in general this would be offset by the diminished amount of work with relatively higher fees during periods when epidemics did not exist.

From the standpoint of physicians, there are obvious benefits in the increased opportunities for nursing service, maternity benefits, hospital treatment, and the furnishing of medical and surgical supplies. I believe strongly that health insurance represents a practical, just, and responsible method of distributing the economic losses incident to disease, that it gives a financial incentive for the development of higher standards of health and social welfare, and that it is a public health measure of unusual importance. I believe it to be desirable from the standpoint of the medical profession which is vitally interested in promoting the health and welfare of the industrial workers of this country. In this view, I believe, we may count upon the support of the enlightened profession, which is willing to acknowledge its responsibilities to the community and to cooperate in bringing about the social advances which are possible only through higher health standards.

230 West Ninety-seventh Street.

Treatment of Chorea Based on Etiology.—W. C. K. Berlin (*Western Medical Times*, November, 1916) is inclined to believe chorea to be an infectious disease, and says he has obtained excellent results from a streptococcus vaccine.

THE LATE DR. HENRY L. ELSNER,*

By Charles G. Stockton, M. D.,

Buffalo.

To inherit goodness, intelligence, and the love of knowledge, to have the opportunity for self development and the diligence to acquire skill, to be endowed with personal traits that win confidence, to have accomplishments that secure the approbation of fellow workers—all these combine to make an enviable character of which would be predicted a successful career. This array of qualifications was that of Dr. Henry L. Elsner, an honored member of this association, who died on February 17, 1916, deeply regretted by the medical profession and by a host of devoted friends, pupils, and patients.

Doctor Elsner was born in Syracuse, N. Y., and at his death held the chair of medicine in Syracuse University. Although only fifty-eight years of age, he was old in practice, having graduated from the College of Physicians and Surgeons at New York, in 1877. Soon after this date he became a student at Vienna and returned to his native city well qualified to begin a professional life, which was notable for its high ideals, its scholarly methods, and its adherence to the best traditions. It was only natural that Doctor Elsner should become eminent, that he should become the leader in northern New York as teacher, consultant, and practitioner; he had been president of the Medical Society of the State of New York, of his county and his city medical societies, and was an active member of many other learned societies, including the American Therapeutic Association.

He had contributed largely to literature and had but just completed his *magnum opus,* a large book on prognosis, which is likely to secure for his name enduring commendation.

Doubtless the intense application which the creation of this book required, sapped his vitality. He sought rest at Washington, but passed away unexpectedly just when he was believed to be mending.

His death was a shock to every one who knew him, especially to his colleagues in New York State.

It is a pathetic fact that his wife survived him only a single month.

436 Franklin Street.

Septic Teeth.—John S. Marshall (*California State Journal of Medicine*, November, 1916) urges that nearly all teeth with abscesses at their roots should be extracted. The dentist frequently treats these cases with the hope of curing them, that a crown or bridge may be inserted, but in most cases these diseased, septic, abscessed teeth are not amenable to treatment and would be better out of the mouth. The difficulties which surround the proper treatment and filling of the root canal of pulpless teeth are very considerable. The operation requires a great degree of technical skill and unlimited patience, so the dentist of average ability rarely succeeds in making a perfect operation of this class, a statement that has been proved by many x ray pictures.

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*Read at the annual meeting of the American Therapeutic Society, Detroit, June 9, 1916.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD AND EFFICIENCY.

By Martha Tracy, M. D.,
Philadelphia,
Professor of Physiological Chemistry, Woman's Medical College, Pennsylvania.

(*Continued from page 954.*)

IV.

DAILY REQUIREMENTS OF THE HUMAN BODY.

We have now reviewed briefly the purposes of food in the animal body and have shown that normal nutrition involves an adequate supply of tissue building foods: proteins, a little carbohydrate and fat, inorganic salts, water, and minute quantities of vitamines; and of fuel foods, chiefly fats and carbohydrates, to yield the energy necessary to keep the machinery in motion.

We are prepared now to approach the obvious practical problem of what constitutes this adequate supply of food; how much tissue building material do we need each day to keep the body engine in repair, and in youth to provide for growth; and how much fuel is necessary under the varying conditions of life to keep the engine running smoothly and capable of carrying on productive work with the highest degree of efficiency?

Lavoisier once attacked this problem, and having demonstrated, in 1870, that "animals which respire are truly combustible bodies which burn and consume themselves," he put together the first primitive contrivance for measuring the oxygen consumption of a living animal.

Eighty years passed before Pettenkofer and Voit, in 1862, constructed their classical respiration calorimeter, and Voit, in 1866, began the computation of the amounts of food substances theoretically oxidized in the body, as measured by volumes of oxygen consumed, and volumes of carbon dioxide expired.

In 1885, Rubner, in Voit's laboratory, made the first accurate determinations of the heat producing value of urea and other nitrogenous substances, and established the now accepted biological figures for the heat producing or caloric value to the body of the three great classes of organic food stuffs, fats, carbohydrates, and proteins. Rubner, in 1894, constructed the first really successful calorimeter for studying the energy exchange in dogs, and Atwater, studying in Voit's laboratory at this time, returned to America with the inspiration and experience that enabled him to take up the work in this country.

In the laboratory of Wesleyan University at Middletown, Conn., in 1903-1904, was built the Atwater-Rosa-Benedict respiration calorimeter for man, in which the first experiments in human calorimetry were carried on. By means of this remarkable apparatus, a full description of which would be out of place here,[1] it was for the first time possible to measure with accuracy the amount of oxygen consumed, the amount of carbon dioxide discharged, and the amount of heat liberated by a human being during a period of several hours or even days, and under varying conditions of rest and of work. During the past twelve years more has been learned of the energy transformations, the energy metabolism, of man than during the entire period of 125 years that followed Lavoisier's discovery.

Preceding and accompanying these epoch making experiments of Atwater and Benedict, however, much valuable information was gathered from many sources, by observers who studied the problem of the food intake, and food or fuel requirement of man by methods which, though less elaborate and precise, have yielded remarkably confirmatory results.

We are now able to examine and answer this question of food requirement through the following methods:

1. We may weigh accurately the food actually eaten by a man or woman, multiply the total weight of fat, carbohydrate, and protein by the factors which represent the fuel values of these food stuffs (1 gram of protein=4 calories, 1 gram of fat=9 calories, 1 gram of carbohydrate=4 calories) and thus determine the total caloric value of the food ingested, which represents the energy, expressed as heat, which is available to that person for the period given.

2. We may from weight of protein food ingested, and weight of nitrogenous material excreted in the urine and feces, calculate the amount of nitrogenous material retained in the body to serve tissue building purposes.

3. We may determine the energy generated in the subject's body by "indirect calorimetry"; that is, we may measure, by now simplified instruments, the oxygen actually consumed and the carbon dioxide actually expired during a given period, and compute from the figures so obtained the number of calories of heat which must have been produced by the combustions which have given rise to our oxygen and carbon dioxide figures. Thus again we have estimated the number of calories, the amount of energy, available to that person during the period given.

4. We may place the subject in the now perfected respiration calorimeter and actually measure the heat given off by that body during the period of observation.

Thus we gain data in regard to both phases of our problem of food requirement. By the first and second methods we note the amount of nitrogenous or tissue building food used daily in maintaining the body in an "equilibrium of substance," and we note by methods one, three, and four, the total amount of fuel consumed, of heat generated, of energy released during the daily activity of the body machinery. We shall discuss this total daily energy requirement first.

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[1] See *Publication No. 42*, Carnegie Institute of Washington, and the publications of Atwater and Benedict in *Bulletins of the Office of Experiment Stations*, U. S. Department of Agriculture.

Before the perfection of the accurate instruments for direct and indirect calorimetry, the statistical or dietary studies furnished the chief sources of information as to the caloric value of the food available or actually used, and therefore presumed to be required by men and women under varying circumstances. Thus Neumann made careful observations of his own total daily food consumption during ten months, while pursuing his usual professional duties in the Hygienic Institute at Kiel. The energy value of his daily food, which was sufficient to maintain health and weight, was 2,242 calories.

Langworthy, from collected statistical data, has compiled the following table:

RESULTS OF DIETARY STUDIES.

Occupation.	Food for one man each day. Protein grams.	Food for one man each day. Fuel Value calories.
United States:		
Man at very hard work (average 19 studies)	177	6000
Farmers, mechanics, etc. (average 162 studies)	100	3425
Business men, students, etc. (average 51 studies)	106	3285
Inmates of institutions, little or no muscular work (average 49 studies)	86	2600
Very poor people, usually out of work (average 15 studies)	69	2100
Canada: Factory hands (average 13 studies)	108	3480
England: Workingmen	89	2685
Scotland: Workingmen	108	3228
Ireland: Workingmen	98	3107
Germany: Workingmen	134	3061
Professional men	111	2511
France: Men at light work	110	2750
Japan: Laborers	118	4415
Professional and business men	87	2190
China: Laborers	91	3400
Egypt: Native laborers	112	2825
Congo: Native laborers	108	2812

From study of such data as these, estimates have been made of the amount of daily food that might be assumed to be most advantageous under different conditions of activity, and we are familiar with the dietary standards suggested by the following physiologists:

	Total calories in 24 hours.
Voit: Man at moderate work	3000
Rubner: Man at sedentary occupations	2445
Atwater: Man at hard muscular work	4150
Man at moderately active muscular work	3400
Man at sedentary or woman at moderately active work	2700
Man at no muscular exercise or woman at light work	2450
Chittenden: Business men	2800

That computation of the total calories from food consumed during a given period constitutes a reliable practical method for determining the daily available energy in any individual case is shown by the comparison of results in this method with the observations of direct calorimetry. For example, Doctor DuBois and Doctor Coleman, at the Russell Sage Institute of Pathology, at Bellevue Hospital, have shown that a patient in the respiration calorimeter by actual measurement generated 419.78 calories of heat during five hours. Calculations made from the value of the food ingested during the same period yielded 422.5 calories. This is a very striking agreement between theoretical and actual results.

The results of indirect calorimetry also have been shown to be strikingly in accord with those of direct calorimetry. In experiments on men resting or moving quietly within the calorimeter the following figures were obtained by Benedict, in 1889:

	I	II	III	IV
Estimated heat of combustion a day by measurements of oxygen consumed and carbon dioxide expired. Indirect calorimetry	2265	2272	2436	2356
Heat actually measured per diem in the calorimeter. Direct calorimetry	2283	2309	2394	2286

These observers have as a result of their experiments made the following estimates of energy expenditure by normal young men under various conditions of activity:

Man sleeping	65 calories an hour
Man sitting at rest	100 calories an hour
Man at light muscular exercise	170 calories an hour
Man at active muscular exercise	290 calories an hour
Man at severe muscular exercise	450 calories an hour
Man at very severe muscular exercise	600 calories an hour

An average day of sleep, rest, and active work is shown, therefore, to require fuel consumption about as follows:

8 hours sleep at 65 calories = 520 calories
2 hours light exercise at 170 calories = 340 calories
8 hours active exercise at 290 calories = 2320 calories
6 hours sitting at rest at 100 calories = 600 calories

Total food requirement for the day = 3780 calories

This is in substantial agreement with results of dietary studies of farmers, men who spend a large part of a long working day at severe muscular work:

	Calories in 24 hours.
Farmers in Connecticut	3410
Farmers in Vermont	3635
Farmers in New York	3785
Farmers in Mexico	3435
Farmers in Italy	3565
Farmers in Finland	3474
Average	3551

The most interesting of the recent experimental results published by Benedict and his associates (*Journal of Biological Chemistry*, March, 1915) are observations upon the "basal metabolism" of men and women. By "basal metabolism" is meant "the minimum heat production that is consistent with normal cell life in an individual at complete muscular rest, without food, and surrounded by a temperature of 30° C. or more."

In order to determine as closely as possible this basal metabolism, observations were made upon eighty-nine normal men and sixty-eight normal women, lying at absolute muscular rest in bed, and in the "postabsorptive" period, i. e., twelve hours after the last meal. Thus were eliminated all energy expenditures due to the ingestion of food, to muscular efforts, and to changes in external temperature, as the temperature of the chamber was kept constant. The conditions of these experiments were such as to give a more complete and accurate picture of the basal metabolism than any heretofore published.

AVERAGE VALUES FOR BASAL METABOLISM OF NORMAL MEN AND WOMEN.

	Age.	Weight kg.	Total Calories in 24 hours.	Calories to kg.	Calories to sq. meter body surface.
89 men	26	64.3	1638	25.5	832
68 women	27	54.5	1355	24.9	772

The basal metabolism is here shown to be very close to one calorie to the kgm. of body weight in one hour.

These results confirm the earlier figures of Magnus-Levy calculated by indirect calorimetry, which showed the "minimum metabolism of a man of average size, kept absolutely motionless and fasting" to be 1,625 calories a day.

It is perfectly clear, then, that the average adult human being requires for maintenance of body weight only, that is, for the performance of the vital internal work, maintenance of normal body temperature, and repair of the working cells, a minimum fuel supply of approximately 1,650 calories each day.

It has been shown, further, that if food is taken, the heat production will increase about ten per cent. over the basal metabolism. If the subject sits up in a chair, another increase of eight per cent. above the basal metabolism occurs; and if movements about the room are made, a twenty-nine per cent. increase follows. Thus a basal metabolism of 1,680 calories will be raised, as indicated above, to 2,168 calories. If a walk of two hours occurs during the day, the energy expended rises to 2,488 calories, a figure close to the statistical standards given earlier.

Scientific experiments have thus shown that about 2,500 calories a day represent the amount of fuel necessary and desirable for normal moderate activity. With every increase in the work done, more fuel is burned, more energy is discharged, more heat produced, more carbon dioxide and other waste products are excreted, and a corresponding amount of food is needed to supply the demands of this activity. Paul reminded the Thessalonians that "if any would not work neither should he eat." He might well have gone further, completing the circle of cause and effect, and added—if any will not eat neither shall he be able to work. Work means consumption of fuel, and efficient work means adequate fuel, a number of calories in the food equivalent to the energy expended in the work which must be done.

The idea at once suggests itself, however, that men and women of different size and weight must differ from one another in food requirement. The greater or less extent of body service in proportion to the weight is also of significance, as from the proportionately larger surface of the smaller mass there will be a proportionately greater radiation of heat, which must be made good by the burning of extra fuel. It is frequently useful, therefore, to consider the food or fuel requirement in terms of calories per kgm. of body weight, or calories to the square meter of body surface, and these data are noted in Benedict's figures given above.

Van Noorden suggests as the requirement for normal young adults:

At complete rest	30·35 calories per kgm. each day
With light exercise	35·40 calories per kgm. each day
With moderate exercise	40·45 calories per kgm. each day
With hard muscular work	45·60 calories per kgm. each day

Thus for the average individual of forty years of age, and of seventy kgm. weight (154 pounds), with moderate exercise, at thirty-six calories per kgm. each day, the requirement would be 2,520 calories, the amount which we have previously noted as desirable for these conditions.

Benedict's studies have shown, however, that with average adults no direct and simple relation can be traced between the rate of metabolism and the weight, height, and extent of body surface of the subject of experimentation. With differences in the taking of food, amount of muscular exercise, temperature of surrounding air, and age, eliminated, he believes that the basal energy exchange is proportional to the "mass of protoplasmic tissue" in the body, and to differences in "stimulus to cellular activity"—two factors difficult or impossible of measurement. Heredity, with its undoubted relation to the adequacy of the internal secretions and the "stimulus to cellular activity," must play some significant part in influencing the normal oxidative processes. But unless the subject differs very widely in height, weight, and extent of body surface, from the average figures for persons of his or her age, we are justified, for practical dietetic purposes, in assuming an average energy requirement proportionate to the activity.

Age, however, does play a significant part in determining the food needs. In the young, growing child there is need, first of all, for an abundance of tissue building foods, as cell construction is especially active; and there is need for a proportionately more abundant fuel supply than in the adult to support the more rapid rate of metabolism, to keep pace with the almost unceasing muscular activity, and to make good the greater radiation of heat from the proportionately larger body surface. The following table is useful (Sherman: *Chemistry of Food and Nutrition*, p. 172):

REQUIREMENT OF CHILDREN OF NORMAL SIZE, DEVELOPMENT, AND ACTIVITY.

	Total Calories.	Calories to kgm. of body weight.
Children under 1 year		100
Children of 1-2 years	900-1200	100-90
Children of 2-5 years	1200-1500	90-80
Children of 6-9 years	1400-2000	80-70
Children of 10-13 years	1800-2200	70-60
Girls of 14-17 years	2200-2600	60-45
Boys of 14-17 years	2500·3000	60-45

In aged persons, on the other hand, there is a much less active metabolism, very little cell construction, and less active muscular work. It is suggested that the caloric requirement of children may be considered to be one third greater than that of young adults, while that of elderly persons is one quarter less.

(*To be continued.*)

Treatment of Obesity by a Rational Diet.—Edward E. Cornwall (*Boston Medical and Surgical Journal*, October 26) gives practical suggestions for regulating the diet in obesity. Regulation of the diet should be qualitative as well as quantitative. Insist on scales and measures being used to secure accuracy in carrying out dietetic prescriptions. Do not rely for protein chiefly on animal tissues and eggs, but secure it from milk and its products. If no other morbid condition is present a small amount of animal tissue and eggs may be included in the diet, but this should be excluded when there is obvious insufficiency of nitrogenous metabolism, or there is disease of the alimentary canal. Include plenty of fresh fruits and vegetables, but select carefully so as to include only those which are comparatively free from objectionable qualities, such as indigestibility, possession of purin or oxalic acid content, and offensiveness to the patient's idiosyncrasies. Allow water in ordinary quantities. Begin the treatment by restricting the fuel ration so as to supply about 1,000 calories less than the minimum health ration for the particular patient. Do not reduce the quantity of protein much below the minimum health ration; let the loss fall chiefly on the fat and carbohydrate. Do not, as a rule, try to reduce the weight by more than two pounds a week; such a moderate reduction is not often attended by unpleasant consequences. Bear in mind the exceptions which exist in regard to reducing weight; be cautious in reducing the weight of those afflicted with serious disease; relax the rigidity of the diet, or discontinue all attempts at reduction, if in the course of treatment symptoms of distress or weakness appear; do not, as a rule, attempt to reduce the weight of those entering on old age who have been obese for a considerable time. In most cases allow occasional periods of rest from the rigid diet, and, while giving the minimum health rations, take note if the weight increases in consequence.

Medical Treatment of Gastric and Duodenal Ulcers.—Seale Harris (*Southern Medical Journal*, November, 1916) simplifies and modifies the Lenhartz diet so that it can be carried out with greater accuracy by the average nurse or attendant than the one originally devised. The Lenhartz diet consists principally of eggs, milk, cane sugar, scraped beef, raw ham, rice, and zwieback, which are prepared separately and given in definite quantities, expressed in grams, every hour from 7 a. m. till 9 p. m. for ten days. Harris has the nurse prepare enough of a mixture in the proportion of one egg and one and a half ounce of cream to four ounces of milk, and gives it every hour from 7 a. m. to 7 p. m., in gradually increasing quantities, beginning with half an ounce the first day and increasing half an ounce each day. In six days the quantity at each feeding is three ounces, and this quantity is maintained for four days. From the seventh to the tenth day a soft cooked egg and two tablespoonfuls of strained oatmeal may be given with the feeding at 7 a. m. and 7 p. m., and at 1 p. m. two tablespoonfuls of scraped beef lightly broiled and two tablespoonfuls of thoroughly cooked rice with butter. After ten days until the fifteenth day, three ounces of the egg, milk, and cream mixture are given at 9 and 11 a. m., and 3 and 5 p. m.; two ounces of strained oatmeal with cream and sugar, and one or two thin slices of dry toast and two soft eggs for breakfast at 7 a. m. and supper at 7. p. m.; and chopped or minced chicken or scraped beef, dry toast, rice, and ice cream or gelatin at 1 p. m. Butter is allowed after ten days. Beginning with the fifteenth day, for two months the patient is to have small meals, three times a day, with an egg and a goblet of milk between meals and at bedtime. The egg, milk and cream mixture should be kept in a covered dish with ice packed around it. The amount for each feeding should be given slowly and with a spoon, with the same exactness and regularity as if it were medicine. The scraped beef should be made into a patty and lightly broiled with a little butter and salt. The rice and oatmeal should be cooked for several hours. The dry toast should be in slices about four by four and a half inches in size. The crust should be removed and the patient instructed to chew it until it becomes liquid.

He says that it is surprising how the pain and discomfort is relieved by giving half an ounce of the egg, cream, and milk mixture every hour. The patients gain in weight, the anemia subsides, and the strength of the patient is built up rapidly on the diet prescribed, which may be begun within forty-eight hours of a hemorrhage, and in three or four rays after a gastroenterostomy. In a few instances the mixture has disagreed, and then the quantity of food is reduced for a few days. Approximately the total number of calories are for the first day 300, for the second 600, for the third 900, for the fourth 1,200, for the fifth 1,500, for the sixth 1,800, for the seventh to the tenth 2,100, for the eleventh to the fourteenth 2,800, from the fifteenth to the twenty-first 3,000, and from the third to the sixth week 3,500. For a year after that the diet should be such as is indicated in hyperchlorhydria. It should be highly nutritious, from 3,000 to 3,500 calories, because the building up process in ulcer is as important as in tuberculosis. Highly seasoned foods, pepper, spices, condiments, and pickles should be avoided, as should also hot bread and fried foods. most sweets, tough meats, corn, and fruits and vegetables that contain hard seed or have tough skins. Coffee, tea, and all other caffeine beverages, wine, beer, and other alcoholic drinks as well as tobacco, should be tabooed.

Malt Soup Extract in Infant Feeding.—B. Raymond Hoobler (*Journal A. M. A.*, Nov. 11, 1916) likes Liebing's original plan, which is to employ malt soup for the nutrition of normal infants, especially those which are stationary in weight and in which there is a tendency to constipation. This seems to Hoobler to be the great field for the use of this food, but for this purpose the formula of Keller—now generally employed—requires modification. This is true, first, because boiled milk should not be given for a long time to infants with constipation; second, because raw or inadequately cooked starch should not be given to infants; third, because the proportions are not correct for all cases; and, fourth, because the amounts specified are too arbitrary. Hoobler, therefore, modifies the preparation of malt soup as follows: Using the desired quantity of the particular cereal indicated, one quart of cereal water is to be made by cooking for not less than one hour in a double boiler. When cooked and still hot, add two level tablespoonfuls of malt soup extract, stir until dissolved, and strain. Then measure out the amount and kind of milk desired, add enough of the mixture of cereal and malt to complete the formula, then add the requisite sugar. Using this plan a formula is to be tried for two or three days, and is then continued, increasing the proportion of malt soup and cereal mixture if there is no change in the stools or the weight. If the formula is near the point of carbohydrate tolerance, each increase in malt soup extract should be met by a reduction in the added sugar. The choice of the cereal should depend upon the effect desired—thus oatmeal is laxative, while wheat flour is only mildly so, and barley and rye are intermediate. The response of the infant, however, will vary in great measure with the particular intestinal flora, and the choice of the cereal must be largely experimental in each case.

Editorial Notes and Comments

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THE GENERAL PRACTITIONER'S DUTY TO HIS COUNTRY.

Although the subject has been argued at great length in the lay press, and has given birth to political planks and moving picture shows, so far it has seemed to touch the medical profession remotely, if at all. Some of us believe that back of the agitation are the munition makers; many of us think that, prepared or unprepared, Uncle Sam could whip all the nations in the world, separately or together, but we all know that, should the time come for action, we would do our part. The chief disagreement concerns the time when we should begin to prepare; when we have time to think, it is to rest comfortably in the assurance that the routine of our daily work is sufficient preparation.

Any physician is invited to have this optimistic view quickly dispelled by an interview with a military surgeon. Only army surgeons realize how greatly military medicine differs from civil practice, and what an enormous amount of experience is required before the family physician can be transformed into the military surgeon. In the army efficiency is based on discipline; the civil practitioner, accustomed as he is to a position of importance in his community, is slow to recognize this. It galls his pride to find that he is a mere unit in a vast machine; it is irksome for a college professor to be subordinate to his former pupils, and to adapt himself gracefully to changed conditions such as these, requires practice.

The whole matter of preparedness for the civilian physician is discussed by Colonel La Garde in the *Military Surgeon* for September. He calls attention to the numerous accounts in military history of expeditionary forces coming to grief through disease rather than a hostile force, and contrasts these accounts with the good health record of American troops in the tropics in recent years. This is entirely due, he says, to the highly specialized efforts of the medical corps.

La Garde estimated the problem we should have to face in the event of war somewhat as follows: The first call would probably be for a million men; for these would be required about 10,000 medical officers. The regular army could offer 443 surgeons, which would mean that approximately 9,500 must come from the civilian population; of this number 3,000 would be required to take care of the sick and wounded, i. e., perform duties very similar to their daily routine in civil life. The remaining 6,500 would be needed to look after sanitation, hygiene, and administrative matters.

Is the average civil practitioner qualified, even in an elementary way, for such duties? It would seem not. For the army in selecting its medical officers raises its requirements very high; it takes only graduates of first class schools who have had at least one year's hospital experience, and who must still pass a rigid mental and physical examination. It gives them nine months' intensive training in the Army Medical School, the curriculum including military surgery, medical department administration, ophthalmology, tropical medicine, military hygiene, sanitary chemistry, bacteriology, pathology, laboratory diagnosis, sanitary tactics, operative surgery, röntgenology, and psychiatry. Even then they are required to spend a year in the field before they are considered fully fledged. The average practitioner cannot find time for such a course as this, but La Garde suggests three ways in which he can obtain preparation: The National Guard and the Medical Reserve Corps for the younger men, and the Red Cross for the older men.

Camps of instruction for the former two have been ordered at Tobyhanna, Pa., Anniston, Ala., Sparta, Wis., Fort Riley, Kans., and Monterey, Cal. Here courses will be given in physical exercise, sabre, litter, and tent drill, administration of regimental hospital, field hospital and ambulance company, stable management, recruiting, camp sanitation, public health matters, transportation of the sick and wounded, hygiene of troops, and many other matters pertinent to military medicine, not to mention the intangible but indispensable something which we call, for want of an equivalent, *esprit de corps;* moreover, there is acquired a respect for discipline, together with assurance and self confidence.

In the Spanish-American war there were six civilian surgeons to every military one, while in the Civil War the ratio was sixty-six to one. Should war come now, the ratio, at first, would probably be about twenty to one. La Garde urges all young medical men to enter the Medical Reserve Corps, and the older ones to join the Red Cross, so that the twenty may be valuable aids to the one. When our profession realizes that it can aid much in mitigating the horrors of war as well as perform a patriotic service it will not be slow to do its part.

THE ENDEMIC INDEX IN MALARIA.

The prevalence of malaria in the southern States is, together with hookworm infection, the greatest factor in delaying the progress of a great mass of people. The amount of actual illness and disability is likewise large. While present in the northern States, the disease does not constitute the problem that it does in the south; yet an intensive examination of northern communities, on somewhat the scale carried on in the south would undoubtedly show a greater prevalence than is now realized. A great many of the vague conditions now remaining undiagnosed could be brought within the fold of this disease. Wherever there are breeding places for anopheles, whether in the north or in the south, there will malaria flourish. Because of the greater area for the presence of stagnant water, the country is the place of selection for malaria. Clearing out brush and ditches eradicated the infection by depriving anopheles of breeding places. In the cities the same conditions can be simulated by street pools, defective house drains, uncovered water tanks, and the like. In the eradication of yellow fever from urban communities, these were the very conditions which furnished breeding places for stegomyia, and demanded attention.

In some of the southern States as many as seventy-five per cent. of a working community would often be incapacitated, although the absolute average of malarial attack did not perhaps exceed five per cent. each year. Because of the early seasonal increase of malaria, the carrier population must be very large. As in other conditions in which the carrier is a factor, the carrier is himself not actively suffering with the disease, although he is the factor in keeping it alive in his community. For this reason it was desirable to determine what proportion of a community showed infection and acted as carriers. Von Ezdorf (*Public Health Reports, 331*) found that the endemic index of malaria, that is the proportion of people having malarial infection without manifesting the disease, was about 13.5 per cent. The malarial rate, on the other hand, refers to the number of people having malarial fever at one particular time, which is about five per cent. Both the individuals in the index and in the rate can cause new infections. Of those harboring the plasmodium, however, only about one in four has the sexual form (gametocyte) necessary for infecting a malaria bearing anopheles, and is, therefore, a potential malarial carrier at all times.

The methods used for determining the endemic rate were the spleen method, the parasite method, and the combined method. The spleen, as indicator of the presence of malarial infection, is inaccurate because it is usually palpable in young children and in other conditions. The method does serve as a broad guide where a great number of people are to be included in the survey. The blood or parasite method is the method of choice. Thick blood smears are better, because there is a larger yield in a shorter examination time. It is estimated that about twenty-five per cent. of results with thick smears are not confirmed with thin smears of the same blood. The percentage of infections found by the blood smear is in inverse proportion to that found by the spleen method; in other words, the endemic rate by the blood smear method is in inverse proportion to the spleen rate. In malarial enlargements the plasmodia are hidden in the spleen and are not present in the blood stream. This occurs in the chronic malarial infections and cachexias which are so hard to treat.

For a real average rate all ages must be examined, but the best representative rate will be found in children between the ages of ten and fifteen years; at these ages the high mortality of children will have expended itself and cannot so much affect the statistical considerations. The percentage of cases, however, is highest between the ages of one year and three years; lowest between ten and fifteen years of age. The tertian type of malarial organism is found twice as frequently as the estivoautumnal.

With the endemic rate high, and kept high by conditions favoring mosquito breeding, the malarial rate will continue to be high and hard to reduce. The malarial rate is always in proportion to the endemic index—the carrier index that furnishes the infection for the malaria breeding anopheles. In malaria we have a condition that is very prevalent, and yet so preventible that there is no excuse for its existence in civilized communities.

THE DIET OF BRITISH MUNITION WORKERS.

The European war has already brought into a new light some interesting facts with regard to diet. It has been stated that the Germans, who were accustomed to a generous way of living, and who never stinted themselves in the matter of meat, on the restricted diet rendered necessary by the exigencies of war are now in better health.

The munition workers of Great Britain are, for obvious reasons, being put on a restricted diet. Dr. Leonard Hill, on behalf of the Health of Munition Workers' Commission, has published recently a report on the cost and nutritive value of the food supplied to this large class of the community, as an appendix to a memorandum dealing with questions in relation to the war. As to diet, he proceeds on the principle that the amount of food taken should be regulated solely by the loss of energy it is required to replace, and points out that fortunately the chief food stuffs really provide all the nourishment that is requisite to health, better, indeed, than the more highly flavored and expensive foods which stimulate the appetite artificially. The composition of the canteen meals for munition workers is based on the premise that a man engaged in light munitions work requires an energy produced by 3,500 calories of food. This was made the subject of careful analysis.

The average canteen dinner was found to be a good one, containing an energy value of about 1,000 calories, well distributed among the amounts of protein, fat, and carbohydrate. The cost of such a meal varied from ten to eighteen cents. An investigation was also made of the meals provided at home, and it was found that in a general way the meals of the men workers were adequate, but that in those of girls, there was a wide variation from 300 up to 1,000 calories. The meals of the latter before starting work often consisted of white bread and boiled tea. The memorandum finishes with a table of simple daily meals designed to secure a well balanced dietary for munition workers. Each of the five daily diets given contains about 3,000 calories at a cost of from forty-eight to fifty-two cents on the basis of prices ruling in April, 1916. It may be noted that the staple diet of the British munition workers consists of bread, oleomargarine, oatmeal, milk, herrings, cheese, beans, cabbages, oranges, and the cheaper kinds of meats.

The lesson to be learned from a study of the restricted diet prevailing in the belligerent countries of Europe, is that, provided there is a sufficiency of food, and that the various articles of diet are well balanced, the need for meals consisting principally of meat and potatoes is greatly overestimated. In fact, it might be affirmed that in prosperous times many persons not only eat too much, but meat forms a much too great proportion of their diet.

HEALTH TRAINING VERSUS PHYSICAL TRAINING.

One of our universities which has long had a department of physical training has recently organized a department of health. The change, even if it is rather one of words than of works, is significant.

Physical training, no matter what it has come to include, originated in, and consists chiefly of muscular training or exercise. This modern movement began in Germany and Sweden somewhat over a century ago, as a reaction against rapidly increasing sedentariness with the bodily results which this habit, and its companion, excessive feeding, bring to pass. The exercise movement, with all the fine theories and practices which sprang out of it, has spread until every educational institution in the land gives its daily or weekly dose (too often homeopathic) of gymnastics to all its pupils, and, in the same name, encourages practices that go to a strenuous extreme under the title of athletics.

While the department of physical training has often tried to do more than encourage exercise—and it has found even this no easy matter—it has come to stand, in the average mind, for nothing else, and though it has often tried to stem the tide of athletics for the few and bleachers for the many, the department has ever been confounded with athletics. That this confusion should arise is not to be wondered at, since most of the colleges have chosen for the head of this department either an acrobat or an athlete, who knew and cared no more about the principles of health than a babe unborn.

Muscular exercise is but one of the many essentials for health preservation, and as the formal exercise of the gymnasium is usually given at such long intervals and in such small amounts as to be practically worthless, and the interscholastic athletics are too condensed in time and in severity, the student who is excused from gymnastics, or who sits on the bleachers and waves his hands and shouts for the team, is about as well off as the athletic student so far as preserving his health is concerned. While it is difficult to impress on youth the importance of health, or to "train" him in the ways of health maintenance, the time is ripe for such an effort, and it is far better to have a department which stands, in name at least, for health, rather than for muscular exercise. The head of that department, even if he is the same person, takes on new dignity.

Our schools are slow in their efforts to teach the theoretical subjects which bear on health. Hours are given to Latin and ancient history where seconds are devoted to hygiene and sanitation. There are few colleges for men in which physiology and hygiene are required subjects, and fewer which present these subjects in an adequate manner. The colleges for women do better, and at least one of these gives an elective course in physiology that surpasses that of many medical schools. The general principles of public health should be carried from college into practical life, in the midst of which most graduates are immediately plunged.

The health department of a college has indeed plenty to do beside the important matter of looking after the health conditions under which its pupils labor. It is to be hoped that the management of such institutions will be so intelligent as to give this new department the opportunity to do what its hands find to do.

POLIOMYELITIS AND HIP DISEASE.

There are many, remarks in part the *Medical Press* for November 8, 1916, who can call to mind instances in which they have examined cases in which a tentative opinion has been given in favor of a tuberculous lesion of the hip, which on examination and inquiry turned out to be nothing else than the resulting deformity from an undiscovered, and perhaps almost unnoticed attack of anterior poliomyelitis. The number of articles that have been elicited by the New York epidemic all combine in describing an onset in this disease that may be as marked as possible, or yet be so slight as to escape attention were it not for the watchfulness and care on the part of the health authorities, and therefore the possibility of even a mother missing the slight symptoms of an evanescent attack is very large. In almost all cases, however, a careful cross questioning will bring forth the information that at some period, which the parents had not before thought of, the child either was off color, vomited, or manifested some of the protean symptoms with which the disease may manifest itself. The gradual shortening of a leg, with the consequent disinclination to use it that the postparalytic contraction causes, may then be traced with a fair assumption of being correct. The fact that specialists of all kinds have found something to remark upon as touching their divers realms in the points about poliomyelitis goes far to prove that many obscure little troubles that have come before the medical man in general practice have possibly their origin in a remote and happily mild visitation of a disease full of alarming possibilities.

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News Items

New York Physicians' Association.—At a regular meeting of this association, held on Thursday, November 23d. Dr. Alfred Stengel, of the University of Pennsylvania, delivered an address on Practical Differentiation Between the Various Types of Chronic Nephritis.

Leprosy in Milwaukee.—Senior Surgeon Banks, of the United States Public Health Service, reported a case of leprosy in Milwaukee, Wis., on November 2d. The patient is a Greek, aged twenty-two years, who was born in Turkey, and came to this country in 1910. Symptoms of the disease were noticed about a year ago.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, November 27th, Section in General Medicine of the College of Physicians, North Branch of the County Medical Society; Tuesday, November 28th, West Philadelphia Medical Society; Tuesday, November 28th, West Philadelphia Medical Association, Academy of Stomatology; Friday, December 1st, Kensington Branch of the County Medical Society.

Tuberculosis Prevention in Dallas, Texas.—A branch of the National Association for the Study and Prevention of Tuberculosis was organized in Dallas, Texas, on Tuesday, November 14th. According to health department estimates there are at present 1.500 cases of the disease in Dallas, but complete statistics are not available. It is believed, however, that in regard to tuberculosis the city ranks above the general average of cities of 100,000 population, and for that reason it has been decided to take active steps toward preventing the spread of the disease.

Physicians Wanted in the Indian and Panama Canal Services.—The United States Civil Service Commission announces that an examination open to men only will be held on December 13th, at various places throughout the country, to secure a list of eligible persons from which to fill the position of physician in the Indian and Panama Canal Services. The entrance salaries in the Indian Service range from $1,000 to $1,200 a year, and in the Panama Canal Service the salary is $1,800. For full information regarding this examination, address the United States Civil Service Commission, Washington.

Personal.—Dr. H. Brooker Mills has been appointed visiting physician to the Philadelphia Hospital for Contagious Diseases.

Dr. Elwood R. Kirby has been appointed chief surgeon of the genitourinary department of the Philadelphia General Hospital.

Dr. J. L. Greene, formerly superintendent of the State Hospital for Nervous Diseases in Little Rock, Arkansas, and Dr. M. F. Lautman, formerly medical director of the Levi Memorial Hospital, Hot Springs, Arkansas, announce their association for the practice of medicine with offices in the Dugan-Stuart Building, Hot Springs.

Philadelphia County Medical Society Aid Association.—At the annual meeting of this association, held on Monday, November 13th, the following officers were elected: Dr. J. R. Shellenberger, president; Dr. E. E. Montgomery, vice-president; Dr. John B. Turner, treasurer; Dr. Lewis H. Adler. Jr., secretary. Dr. James M. Anders, Dr. J. Solis-Cohen, and Dr. William H. Welch were reelected directors to serve for four years. Dr. S. D. Risley was elected chairman of the board of directors, and Dr. Lewis H. Adler, Jr., secretary. Dr. S. W. Morton was elected chairman of the Committee on Benevolence, and Dr. J. Solis-Cohen and Dr. I. P. Strittmatter were elected members of this committee.

National Board of Medical Examiners.—This board, which was founded in 1915 by the late Dr. William L. Rodman, of Philadelphia, held its first examination in Washington, D. C., October 16th to 21st. There were thirty-two applicants from seventeen States, representing twenty-four medical schools, and of these sixteen were accepted as having the necessary preliminary and medical qualifications. Ten of these candidates took the examination, and the following passed: Dr. Harry Sidney Newcomer, Johns Hopkins University; Dr. William White Southard, Johns Hopkins University; Dr. Orlow Chapin Snyder, University of Michigan; Dr. Thomas Arthur Johnson, Rush Medical College; Dr. Hjorleifur T. Kristjanson, Rush Medical College. The second examination will be in Washington in June. 1917. Further information may be had by applying to the secretary of the board, Dr. J. S. Rodman, 2106 Walnut Street, Philadelphia.

Testimonial Dinner to Eugene W. Scheffer, Secretary to the Board of Health.—A testimonial dinner to the retiring secretary of the Department of Health of the City of New York, Mr. Eugene W. Scheffer, was given at the Yale Club on Tuesday evening, November 14th, about 150 guests participating. Addresses were made by Dr. S. S. Goldwater and Dr. Thomas Darlington, former commissioners of health, by Rhinelander Waldo, Esq., and Thomas F. McAvoy, Esq., former commissioners of police, George Foulk, Esq., Professor William H. Park, Dr. Robert J. Wilson, and Assistant Corporation Counsel William J. Millard. Others present included Magistrate Nathaniel Marsh, Deputy Health Commissioner John S. Billings, and all the directors of bureaus in the Department of Health. Dr. William H. Guilfoy, registrar of records, acted as toastmaster. At the conclusion of the dinner Mr. Scheffer was presented with a handsome gold watch and chain. Mr. Scheffer entered the Department of Health as assistant chief clerk in 1895 and became secretary in 1902, serving under Health Commissioners Lederle, Darlington, Goldwater, and Emerson. He retires on pension at the close of the present year.

Gifts and Bequests to Hospitals.—Many charitable bequests are provided for in the will of Samuel Hirsh, who died in New York on October 8th, among them being the following: United Hebrew Charities, $100,000 for the establishment of memorial funds to be called the David and Lottie Hirsh Fund; $1,000 to each of the following hospitals: Jewish Maternity Hospital, Beth Israel Hospital, Lebanon Hospital, Sanatorium for Jewish Children at Rockaway, Hospital for Deformities and Joint Diseases, Mt. Sinai Hospital, and Montefiore Home.

Included in the will of the late T. Morris Wright are the following bequests: $10,000 to the Philadelphia Home for Incurables; $5,000 each to the Pennsylvania, Hahnemann, Jewish, Jefferson, and German Hospitals, to the Children's Aid Society, and the Society to Protect Children from Cruelty. The Philadelphia Home for Incurables becomes a residuary legatee.

By the will of Mrs. Caroline Augusta Wilson, who died in New York on April 19th last, the Presbyterian Hospital will receive $25,000.

The Memorial Hospital, at Morristown, N. J., will receive $5,000, under the terms of the will of the late Joseph W. Ogden.

Resolutions on Poliomyelitis.—At a meeting of the New York Neurological Society, held on Tuesday evening, November 14th, Dr. Walter Timme presented the following resolutions which were adopted unanimously by the society:

WHEREAS, Anterior poliomyelitis and its concomitant polioencephalitis are intrinsically neurological diseases, and

WHEREAS, Anterior poliomyelitis and polioencephalitis have been managed in all stages in the recent epidemic practically without the supervision and control of neurologists in the institutions of Greater New York, and

WHEREAS, In order to avoid faulty diagnoses, inadequate treatment, and poor methods of gathering important statistics, resulting not only in detriment to the present patients, but also in a final loss to scientific medicine of valuable data of great service in future epidemics; be it

Resolved, That it is the sense of the New York Neurological Society that anterior poliomyelitis and polioencephalitis being neurological diseases, the sufferers from such diseases ought at an early period to come under the care or supervision of neurologists, with the cooperation of orthopedists and other specialists as the cases may require:

And, in consideration of the unprecedented number of cases in the recent epidemic, in all public institutions and clinics where these diseases are treated, there should be a standardization of equipment and method. And be it further

Resolved, That the New York Neurological Society petition the Committee on Public Health of the New York Academy of Medicine that it consider the advisability of appointing at once a Commission on poliomyelitis which shall take into consideration the ways and means best calculated to meet and combat a future epidemic similar to the one we have just experienced and make definite recommendations for same. This Commission shall consist of four subcommittees as follows:

First a Committee on communicability and quarantine composed of bacteriologists and epidemiologists.

Second, a committee on the criteria of diagnosis and clinical management to consist of neurologists, pediatrists, and orthopedists.

Third, a committee on pathology and serology to consist of pathologists who shall devise the best means of caring for such pathological material as is obtained as a result of the epidemic.

Fourth, a committee on treatment and immunization to consist of neurologists, orthopedists, pediatrists and bacteriologists. This committee shall consider the therapeutic means best adapted to the acute stage and also to the aftertreatment.

Pathologists Wanted in the City Service.—The Municipal Civil Service Commission of New York is endeavoring to secure a number of competent physicians for the position of pathologist. Unusual opportunities are offered a man who is desirous of securing wide experience in the performance of autopsies, in microscopic diagnosis, and in chemical pathology. The competition is open to citizens throughout the United States over twenty-one years of age holding a degree of M. D. The examination will consist of an experience paper, a technical, and a practical test.

Candidates all over the country will recognize the fact that the salary of $1,500 per annum is made more attractive by the opportunities for unusual practical experience afforded a pathologist in New York city. The present vacancy is in Kings County Hospital, an institution with an average census of 1,500 patients. Applications will be received from November 20th to December 5, 1916. For further particulars see the *City Record*, published daily, or apply to the Municipal Civil Service Commission, Room 1400, Municipal Building, New York, N. Y.

Medical Society of the County of New York.—The annual meeting of this society will be held in Hosack Hall, New York Academy of Medicine, Monday evening, November 27th, at 8:15 o'clock, under the presidency of Dr. Frederick E. Sondern. At the scientific session the following papers will be read: Technic of Painless Radical Cure of Hernia under Local Anesthesia, illustrated by motion pictures, by Dr. John A. Bodine; Approach and Entrance to the Kidney for the Removal of Calculi, illustrated by motion pictures, by Dr. Charles H. Chetwood; Motion Photographs as Adjuvants to the Teaching of Surgery, with notes on the development of the operation of bloodless amputation at the hip and at the shoulder joint, of the operation of ligature of the external carotid artery, the use of boiling water for the cure of otherwise inoperable vascular neoplasms, by Dr. John A. Wyeth; Operation for Repair of Rectocele, demonstrated by motion pictures, by Dr. Thomas H. Morgan. At the December meeting of the society, which will be held on Tuesday, the 26th, a report on the medical aspects of birth control will be presented by a special committee appointed by the society to investigate the subject.

Clinic Physicians Wanted by the Health Department.—The Municipal Civil Service Commission will shortly hold an examination for clinic physician, applications for which must be filed before December 1st, for the purpose of filling vacancies in the department of health. The duties of a clinic physician are to diagnose and treat patients applying at the tuberculosis clinics of the department of health and to examine, at the occupational clinic of the department, applicants for licenses as food handlers. Eight hours of service each week are required. Candidates must be at least twenty-one years of age and must present evidence of one year's service as an intern in a hospital or sanatorium or at least two years' experience in outpatient work or its equivalent. Candidates for this examination must also be licensed to practise medicine in the State of New York and must present their licenses for inspection at the time of filing applications.

The fact that the occupational clinic, situated at 49 Lafayette Street, New York, is the second one of its kind in the world should arouse the interest of all ambitious physicians who are residents of the State of New York to enter the contest, because of the unusual fields it offers for research and invaluable experience. Aside from the experience and education connected with the work, the clinic physician is fitting himself for a new phase of medical practice—that of industrial corporation service.

The compensation rates proposed by the Board of Estimate and Apportionment for this position are $300 to $600 for not less than six hours work each week, or $900 to $1,140 for not less than eighteen hours each week.

For further particulars apply to the Municipal Civil Service Commission, Room 1400, Municipal Building, New York city.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M.D.,

Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-fifth Communication.

CATARRHAL GASTRITIS (*continued*).

Although important variations in the quantity of pepsin have not been demonstrated, it is well known that the hydrochloric acid content may show wide divergences from the normal, with corresponding influence on the digestive processes. When there is a deficiency in this mineral acid constituent of gastric juice the pyloric sphincter tends to remain contracted, with retention of food in the stomach. At the same time, the pepsin is relatively inactive through want of a suitable medium, and the food mass tends to ferment and decompose, resulting in irritating organic acids and abnormal gases. The logical treatment in such a case is the administration of the deficient acid.

A further important point in considering hypochlorhydria is the deterrent effect of this abnormal chyme on duodenal activities. The present teaching in physiology is that the acid chyme provokes the development of secretin in the duodenum, which is a hormone stimulant for the pancreas. In the absence of this initiating stimulus, the normal cycle of events is lost, and further aberrancies of alimentary activity develop in the bowels. All this may be alleviated and promptly cured by the timely administration of dilute hydrochloric acid.

An opposite factor in producing gastric disturbances, with unpleasant enteric sequences, is hyperchlorhydria. In this condition, the excessive acidity tends to undue relaxation of the pyloric sphincter, despite the added contrary stimulus from the duodenal side; this tends to a hastening of the highly acid chyme into the small intestine, which may result in an overpowering of the neutralizing action of the bile with serious disturbance in pancreatic digestion as a result, and a continuance of the disturbance further down the tract. In this condition, the administration of an alkali is the immediate need; this may be followed by a relative increase in the proteins of the diet; the secondary need is a search for the underlying metabolic factors at fault.

Just what may be the obscure factors producing variations in the acid content of the gastric juice does not appear. There seem to be indications that the oscillations of the H ions in gastric juice vary inversely with the relative alkalinity of the blood. There are also indications that diminished bile production is accompanied by heightened acidity of the gastric juice, but no immediate causal explanation is offered. Evidently we shall have to obtain a determination of these underlying factors before our therapeutic efforts advance much beyond the treatment of symptoms. The present rational method of attack is to discover whether there is excess or deficiency of hydrochloric acid in the gastric juice, and then to meet the definite indications by supplying promptly the particular chemical required, and to discover if possible what systemic dyscrasia may coexist.

When the temporary distress is too marked we may resort wisely to epigastric counterirritation for resolvent effect, and to codeine for depression of consciousness.

In the chronic type much relief may be had by an anteprandial dissolving of the viscid mucus by sipping hot water; removal of this mucus permits of a more ready attack of the food by the pepsin of the stomach.

Too much stress cannot be laid on the desirability of regulating the diet to the systemic needs of the individual, using more protein for the carnivorous type and more carbohydrate for the herbivorous type. Such articles as are difficult of digestion should be discarded altogether, or else partaken of at times only when digestive power is at an adequate maximum. Irritants and secretory depressants should be eliminated. The best prophylactic for gastric disorders is a diet of simple, wholesome food, spiced with variety, and seasoned with good cheer.

ENTERITIS.

Since most cases of catarrhal enteritis, as well as of gastroenteritis, are due to the presence of irritating substances in the alimentary canal, the leading indication, often unobserved, is to clear the tract of the offending material as expeditiously as possible; and for adults no cathartic is more efficient than castor oil. To this oil, to prevent griping as well as to relieve colic, may be added a few drops of laudanum or of paregoric—but not enough to depress peristalsis. Castor oil is best taken at the soda fountain, where it may be combined with a syrup, and then intimately mixed by means of the fine hard stream of vichy. For children, a preparation as a substitute for the oil is a combination of aromatic tincture of rhubarb with senna, both of which act by increasing secretions and the peristalsis of the small intestine. Following this purgation, the alimentary tract should be given a period of rest for a day or more; it will be well, also, if the entire body is kept at rest in bed. In fact, removal of the irritating material, followed by a period of rest, is practically all that is necessary in the treatment of a majority of these cases.

There are some cases of enteritis where the fault lies in a disturbance of secretion. Hypacidity of the gastric juice results in a failure to incite the secretion hormones which stimulate pancreatic activity; as a consequence, the duodenal digestive action is inadequate and imperfect. Abnormal split products act as irritants to the intestinal epithelium, and there ensues the defensive congestion termed enteritis. Or hyperacidity swamps the neutralizing power of the duodenal juices and pancreatic digestion fails because of an unfavorable medium, with the result that the products of abnormal food decomposition act as irritating substances. Or interference with the bile flow lowers the neutralizing capacity of the duodenal juice with a similar inhibition of pancreatic activity. In these circumstances again the first indication is to clear the alimentary canal of decomposing material as speedily as possible; the second indication is to give the inflamed mucosa time and opportunity to regain its normal condition; the third equally important indication is to correct the disturbed function. This duty, though difficult and requiring much scientific skill and patience, should not be neglected.

A few cases of disordered function are apparently psychic in origin, the emotional reactions inhibiting some secretions and overstimulating others, in either case resulting in perverted digestion products and alimentary disturbances of far reaching character. These cases are peculiar to themselves and require careful study; perhaps the rest cure is needed in some cases, wholesome mental suggestion in others, and strict alimentary regimen in all. Probably some of these cases would be benefited by one to three days' starvation treatment.

A word of caution should be given concerning the use of drugs in intestinal troubles. Acute pain may justly be alleviated, but discomfort only does not warrant an opiate. Intestinal and bodily rest are ordinarily adequate for recovery, unless there is an accompanying infection. Intestinal antiseptics and disinfectants are useless. Demulcents are sometimes beneficial because of the protection they afford. Internal astringents are rarely indicated. About the only drug that seems of general benefit is strychnine; the heightened spinal reflexes produced by this drug favor rapidity of metabolism.

Tartar Emetic in Protozoal Diseases.—Aldo Castellani (*Brit. Med. Jour.*, October 21, 1916) states that tartar emetic is most efficacious in yaws, but its action is not very rapid and prolonged treatment is necessary. An easy method of administration is therefore requisite and the oral route has been adopted by Castellani, who uses the following formula:

℞ Antimonii et potassii tartratis, ...0.065;
Sodii salicylatis, ...0.6;
Sodii bicarbonatis, ...1.0;
Potassii iodidi, ...4.0;
Glycerini, ...8.0;
Aquæ, ...q. s. ad 30.0

The foregoing is a single dose which should be given diluted with about four times as much water and administered three times daily. In children of eight to fourteen years half the dose, and in younger children one third the dose is given. Tartar emetic and potassium iodide are the active drugs; the sodium salicylate seems to hasten the disappearance of the yellow crusts; the sodium bicarbonate decreases the emetic action and to a certain degree prevents iodism; and the glycerin serves to maintain a clear solution. Tartar emetic is also very effective in kala azar and may be given either intravenously, intramuscularly or orally. For intravenous injection a sterile one per cent. solution in normal saline may be used in doses of two to ten mils daily for ten days and later every other day or twice weekly. The following is also a most useful formula for intravenous use in doses of half to two mils, diluted at the time of injection to five mils with normal saline:

Tartar emetic, ...4.0;
Phenol (two per cent.), ...100.0.

For intramuscular injection two formulas have proved satisfactory; the first is slightly acid, the second slightly alkaline, and the dose of either is half to one mil on alternate days injected into the gluteal muscles.

1.
℞ Antimonii et potassii tartratis, ...0.5;
Phenolis, ...0.0;
Glycerini, ...12.0;
Aquæ destillatæ, ...q. s. ad 30.0.

2. The same as the foregoing with the addition of 0.02 gram of sodium bicarbonate.

For oral administration to children from one to two teaspoonfuls of the following may be given three times a day in water:

℞ Antimonii et potassii tartratis, ...0.32;
Sodii bicarbonatis, ...2.00;
Glycerini, ... }
Aquæ chloroformi, } ....āā 30.00;
Aquæ, ...q. s. ad 90.00.

Twice the dose stated above may be given to adults. Oriental sore, and relapsing fever also respond favorably to tartar emetic, but in the latter condition salvarsan or neosalvarsan is much more effective. If tartar emetic is to be used in relapsing fever it should be given intravenously, either in the one per cent. solution or in the form of the phenol solution mentioned earlier.

Anesthesia in Hazardous Genitourinary Conditions.—M. Salzer (*Lancet-Clinic*, November 4, 1916) counsels careful preparation of these cases before operation, the outcome depending more on proper management of the anesthesia in genitourinary work than in any other branch of surgery. Barring strictly emergency cases, a functional renal test, preferably the phenolsulphonephthalein, should always precede the operation. If the test is low, rest in bed, increased fluid intake in the form of Vichy or other alkaline water, and careful dieting may improve conditions. The chief measure, however, is thorough alkalinization of the patient. The urine should be made persistently alkaline to methyl red—alkalinity due to ammoniacal decomposition being guarded against. Alkalies are given by mouth, or, if necessary, by rectum, or even intravenously. All water taken by the patient is alkaline. Under this treatment the urinary output shows a remarkable increase, and cases otherwise unfit can be successfully operated in. Saline cathartics may, if required, be used to insure daily evacuation. No cathartic should be given on the night before the operation, but an enema the next morning. Every effort should be made to bring about as normal a condition as possible. The blood pressure should be closely watched. On the morning of the operation, the patient is permitted to drink Vichy water *ad libitum* up to within a half hour before the operation. About an hour before operation one quarter grain of morphine and one one hundred and fiftieth grain of atropine are usually given, or preferably, the morphine given in two one eighth grain doses half an hour apart. As for the anesthesia itself, local anesthesia occupies a limited field; it should not be used where it would materially lengthen or interfere with the operation. Nitrous oxide-oxygen should alone be used as a general anesthetic. As soon as the patient regains consciousness, Vichy water is allowed, nausea rarely following nitrous oxide-oxygen. Fischer's solution is at once given by rectum by the drop method, and continued as long as it causes no discomfort, and if it does, resumed as soon as possible. If the least evidence of impending shock or oliguria appears, pituitrin hypodermically and Fischer's solution intravenously are the mainstays. Of forty-three consecutive suprapubic prostatectomies—fifteen in patients over seventy years of age—preceded by preparation as outlined above, all but three recovered. In no case following the operation was there enough disturbance of the urinary secretion to cause alarm.

Surgical Uses of Ozone.—George Stoker (*Lancet,* October 21, 1916) reports a series of twenty-one cases, mainly of cavities and sinuses in the long bones, in which the direct application of ozone was employed, and concludes that this agent is a strong and effective germicide; that it is a powerful stimulant to the circulation through the wounded tissues; that it powerfully increases the formation of oxyhemoglobin in the wound; and that, by virtue of these properties, it is a valuable agent in cleaning up old, indolent wounds, and bringing about rapid healing. His cases varied between three weeks and fourteen months in duration before the use of the ozone and were cured in from five days to seven weeks. Ozone also proved very serviceable in disclosing dead bone, foreign bodies, septic deposits, etc., through destruction of the unhealthy granulations. The wounds and sinuses were washed twice daily with boiled water and dressed with dry, sterile gauze. Ozone first produced an increase in the amount of pus which was replaced by clear serum and later by reddish serum, after which healing progressed rapidly.

Treatment of Achylia gastrica.—Albert F. R. Andresen (*Medical Record,* Nov. 11, 1916) gives the indications for treatment under four headings, the removal of infective foci, the treatment of causative or complicating constitutional abnormalities, the treatment of the stomach itself with special attention to its motor function, and lastly the dietetic treatment. Autogenous vaccines should be used, made from infective foci before proceeding to the operative treatment of these foci whether they be in the mouth, nose, throat and accessory sinuses, abdomen, pelvis, or other part of the body. The constitutional abnormalities to be corrected are the anemias, leucemias, malaria, syphilis, tuberculosis, cardiovascular renal disease, rheumatism, alcoholism, etc.

Ferric chloride and calcium chloride are combined with hydrochloric acid by Andresen although no effect upon the gastric secretion follows the use of bitter tonics. Exercise, especially in the fresh air, gymnastics, baths, and change of scene are valuable with the addition of abdominal massage and electricity. A glass of hot water one half hour before meals is cleansing while mineral oil in tablespoonful doses night and morning is of service as a sedative to the irritated gastrointestinal mucosa and to prevent constipation. The diet should be concentrated and should be given in small amounts every two and a half to three hours. Meat is best excluded as tending to putrefaction, and eggs should be likewise avoided as a rule. Gelatin is a valuable protein sparer while milk is an important part of the diet. Buttermilk and artificially soured milk are not well borne. Starches are important and may be given in the form of vegetable soups or purées of potatoes, peas, beans, lentils, spinach, or carrots.

Flaked or shredded cereals, bread, toast, and plain crackers may be given, but sugar must be used cautiously as it may produce acid fermentation in the bowels. Fats and oils while soothing in limited quantities are bad when used in excess. Alcohol and tobacco are strictly forbidden. Approximately between two and three thousand calories a day are required.

Recent Progress in Obstetrics.—Sylvester J. Goodman (*American Journal of Surgery,* November, 1916) says with respect to twilight sleep that not even the most enthusiastic advocate believes or can say that twilight sleep causes painless labors. They say that it causes the mother to forget her pains and not be averse to having more children. If you are an honest practitioner and are not using questionable methods to increase your business, you must admit that Nature causes every mother to forget her pains as soon as delivery is accomplished. You know that this is true. Then why inject into a mother something that you know to be unsafe and which you cannot take away once it is administered? Do you think that anyone in the average town in this State administers real twilight sleep? I know that not one of those practitioners who tells his patients that they are receiving twilight sleep is telling them the truth. How can they give it when there is not one hospital in Ohio equipped to offer the proper carrying out of the Freiburg technic? I know of one eminent obstetrician who says that he uses this method and yet he is so busy that he misses being present at a number of confinements for which he had been engaged. Anyone who has read or studied the technic of administering twilight sleep must at once recognize the manifest absurdity of such procedures when offered as the real thing. These accoucheurs merely inject a dose or two of morphine, and perhaps scopolamine, and call that twilight sleep. The men who are guilty of this deception are plainly dishonest to a woman who has entrusted herself to them at the most critical period of her life. It is not possible for me, at this time, to quote all that has been written for and against this much advertised technic. Suffice it to say that a large majority of honest and careful obstetricians are against its employment and there has been an increasing number of editorial articles in the leading journals denouncing this method as unsafe and unscientific. At the last meeting of the Association of Obstetricians and Gynecologists, held in Pittsburgh, twilight sleep was denounced in no uncertain terms. It was said that twilight sleep was dangerous; and safety first a good slogan.

Management of Labor in Borderline Contractions of Pelvis.—John Osborn Polak (*American Journal of Surgery*, November, 1916) concludes with regard to the management of such conditions as follows: 1. Accurate pelvimetry is absolutely necessary in order to recognize the type of deformity.

2. Pelvimetry without the relative estimation of the size of the fetus is of little value and the most accurate fetometry is the test of labor.

3. Every borderline case should be given a test of labor and this should be conducted in a hospital under the most scrupulous asepsis. All examinations should be made through the rectum. Only in making the ultimate decision as to procedure is a vaginal examination to be made. This is then done with the patient anesthetized and under the strictest surgical technic. 4. Spontaneous delivery will reward patience and vigilance in eighty per cent. of such cases:

5. Pubiotomy is safe in multiparæ with flat pelves of 7.5 cm. or over and in justominor contraction when the true conjugate is over 8.5 cm. and in funnel pelvis in primiparæ. The Dœderlein technic is the simplest and safest.

6. Extraperitoneal section should be elected as the method of delivery when the labor has been prolonged and the membranes have been ruptured for a long time. The classical operation should be reserved for the elective cases, and finally, that no hard and fixed rule can be set down for the management of any case. Each case has to be individualized.

Application of New Wartime Antiseptics to the Surgery of Civil Life.—Charles W. Hennington (*Buffalo Medical Journal*, November, 1916) writes mainly of the hypochlorites, the most widely discussed of which is sodium hypochlorite, often known as Dakin's fluid, that has been modified by Carrel. Dakin's fluid is made by decomposing chloride of lime with a solution of sodium carbonate, and adding to the filtered solution containing sodium hypochlorite enough boric acid to neutralize the excess of alkali. The resulting solution is a balanced mixture of hypochlorite and polyborates of sodium with small amounts of free hydrochlorous acid and boric acid. Two methods of preparing this fluid are as follows: 1. Dissolve 140 grams of dry sodium carbonate, or 400 grams of washing soda crystals, in ten litres of tap water. Add 200 grams of chlorinated lime of good quality and shake well. In half an hour the clear liquid is siphoned off from the precipitate of calcium carbonate anl filtered through a plug of cotton. Then add forty grams of boric acid merely to keep it neutral, and the solution is ready for use. It contains 0.5 to 0.6 per cent. of sodium hypochlorite. It does not keep longer than one week. 2. Dissolve 105 grams of dry sodium carbonate in one litre of water. Add 150 grams of chlorinated lime. The mixture is filtered and a measured portion is rapidly titrated with a boric acid solution of known strength, using phenolphthalein suspended in water as indicator, in order to determine the amount of solid boric acid to be added to the rest of the filtrate. It is best to add slightly less boric acid than the estimated amount because any excess is to be avoided. The solution thus prepared is much stronger, containing about forty-five grams of sodium hypochlorite. It must be diluted with six parts of water before using, but it will keep for one month.

Carrel's modification, which now is more generally used, is about 0.5 per cent. in strength and ready for use: Dissolve 200 grams of chlorinated lime in five litres of water, agitate thoroughly and set aside over night in a twelve litre jar. Dissolve 100 grams of dry sodium carbonate, and eighty grams of sodium bicarbonate in five litres of water. Pour the two together and agitate vigorously one minute. In half an hour the clear liquid is siphoned off and filtered through paper. Then test with phthalein powder that it is not alkaline. Remarkable results have been achieved in military surgery by the use of these substances, and it seems but a step to apply them to similar surgical conditions met with in civil life.

Treatment of Mucomembranous Colitis in Children.—Oscar Jaime (*Archivos de Medicina Interna*, July-August, 1916) writes that in many cases the establishment of a proper diet will alone suffice to accomplish a cure. Drugs must be used with care, as their improper use aggravates the situation. Carbohydrate diet is the first therapeutic measure followed by intestinal antiseptics. Sodium sulphate is a drug of great value in this disease, not used as a purgative, but in small doses two to four grams according to the age of the child in a half glass of Vichy on an empty stomach. In older children or adults the sulphate may be combined with the phosphate of soda and given in capsules at meal time. Pain in colitis should not be combated with opium except in unusual cases, on account of the constipation thus produced, but rather treated with belladonna, hot compresses, light massage, and potassium bromide in small doses together with extract of hyoscyamus.

Radium in Carcinoma of Bladder and Prostate.—Benjamin S. Barringer (*Journal A. M. A.*, November 11, 1916) reports nine bladder and five prostatic cases treated with radium. In two of the former there was rapid and complete disappearance of the neoplasm, and three of the prostatic cases have greatly improved. Insufficient time has elapsed to lay claim to a cure in any case. The method of treatment in bladder cases consists in the introduction through the direct cystoscope of 100 to 200 millicuries of radium, screened with 0.6 mm. of silver and 1.5 mm. of rubber and enclosed in a capsule an inch long and one eighth of an inch in diameter. To the end of the capsule a long, double linen thread was attached and allowed to pass out of the urethra to be used for the removal of the radium. The patient was encouraged to hold his urine during the treatment to aid in screening the bladder. If the carcinoma is lateral the patient should lie on the affected side. The exposures lasted up to eight hours. The application was not repeated until all effects of the preceding one had disappeared. In carcinoma of the prostate the application was made by enclosing fifty to seventy-five millicuries in the tip of a four and one half inch, eighteen gauge needle. This was then introduced through the perineum and guided to insertion into the affected lobe by the finger.

Treatment of Flatfoot in Old Patients.—Sigmund Epstein (*Medical Record*, Oct. 21, 1916) states that inflamed flatfoot, especially if complicated by senile osteoarthritis, should be treated by rest in bed with or without plaster of Paris before using Whitman plates. Some old people get most relief from a pad of corn plaster felt, while removal of infective oral foci often gives marvelous results. Tonics, thymus extract, pituitary extracts, and colchicum may be used in appropriate cases. At the menopause in women thyroid extract may be used: hot saline baths and spa treatment are advocated by some. Bier artificial hyperemia or hot air baking is a great pain relieving measure especially in stiff and sore feet after subacute rheumatism. Muscle exercises especially with the circumduction machine is of value, and exostoses may require removal.

Spinal Fluid in Iodide Medication.—Joseph H. Catton (*Journal A. M. A.*, November 4, 1916) reports two lumbar punctures made upon each of five patients under oral iodide therapy, the first to remove as much fluid as possible, the second to determine if the previous removal had increased the iodine in the fluid. In none of the five cases was there even a trace of iodine on either tapping. A second series of observations was carried out upon a single person to whom doses of one gram, increasing to nearly three grams, had been given and followed by a single dose of 16.5 grams. Fluid was withdrawn eighteen minutes and twenty-four hours after the large single dose of potassium iodide. No iodide was found in the spinal fluid. A week later, after no medication in the interim, another single dose of sixteen grams of sodium iodide was given and the spinal fluid subsequently was also found free from iodide. It was evident from these observations that iodide, given by mouth, did not pass into the spinal fluid.

Intravenous Use of Sodium Gynocardate in Leprosy.—Leonard Rogers (*Brit. Med. Jour.*, October 21, 1916) states that the fractionization of chaulmoogra oil yields several different portions, and that with the lowest melting point yields fatty acids the sodium salts of which are readily soluble in water, and relatively only moderately irritant upon hypodermic injection. These salts are also relatively nontoxic for animals when given intravenously. Rogers terms this fraction the gynocardic acid fraction and the sodium salt sodium gynocardate, since this acid forms the greatest proportion of those present. This sodium gynocardate may be given intravenously to man in leprosy in the form of a two or three per cent. solution to which one half per cent. phenol has been added, and which has been sterilized in an autoclave. Doses of six to fifty mgm. have been given to man without any toxic effects. Following such doses there is often a definite local reaction and sometimes fever, after the subsidence of which the affected tissues are softer than before and the nodules, if present, diminish in size. These results have not been obtained from the subcutaneous use of the drug, even in much larger doses. Some twenty cases of leprosy have so far been treated by Rogers with intravenous administration of the sodium gynocardate and in all in which it has been possible to carry out the treatment for a sufficient time there has been very marked improvement with healing and disappearance of the local lesions, disappearance of the bacilli from open lesions or tubercles, return of sensation in anesthetic areas, and restoration of function in paralyzed parts. The drug seems to be more effective in cases of the anesthetic variety than in the tubercular type, but in both the results are very promising. The use of the drug intravenously is a marked advance upon the older method of subcutaneous injection since it is much more effective and is free from the production of pain so that the patients will continue treatment without complaint.

Injection of the Gasserian Ganglion.—Lewis J. Pollock and Hollis E. Potter (*Journal A. M. A.*, November 4, 1910) state that the technical difficulties and the high mortality associated with operations for the removal of the Gasserian ganglion have led to the attempt to inject this structure with alcohol through the unbroken tissues. The authors have experimented with several methods suggested and have come to the conclusion that that of Härtel is the most certain of success. This method can be rendered more certainly successful and easier if combined with fluoroscopy during operation. The anterior portion of the petrous part of the temporal bone casts a shadow, with the skull viewed laterally, which forms a guide for the passage of the needle through the foramen ovale and the course of the needle itself can be watched by its own shadow. The perfected technic is described in full in the paper, and its accuracy is proved by the results of experiments upon both sides of fourteen heads of cadavers.

Magnesium Chloride in the Treatment of Wounds.—Marchak (*Presse médicale*, October 9, 1916), reports excellent results from the treatment of wounds by Delbet's magnesium chloride method, which aims to augment the defensive powers of the body by stimulating phagocytosis. The wound is first opened up so that it can drain spontaneously without any special drainage device, drains interfering with wound disinfection, as they are themselves foreign bodies. It is then irrigated daily with magnesium chloride solution, and a large wet dressing applied. In severe cases instillation of magnesium chloride solution by the drop method is practised and daily subcutaneous injections of the same solution, as in saline hypodermoclysis, are given. Marchak receives the wounded six to ten days after the injury, when the wounds are freely suppurating, but by the procedure mentioned succeeds in disinfecting them within six to eight days. In a fews days the wounds acquire a reddish color and the pus becomes thicker, viscid, and transparent, and then disappears. When the wound has become red, with a tendency to bleed, and the temperature has been normal for four or five days, Marchak closes the wound without drainage. By this method a large thigh wound about a foot long was closed in nine days, with a soft, linear scar. Similar results were obtained in a wound of the thorax after rib resection, in a large wound of the buttock, and in the case of a thigh stump closed secondarily after amputation for arthritis of the knee.

Miscellany from Home and Foreign Journals

Elimination of Strychnine by the Kidneys.—R. A. Hatcher and M. I. Smith (*Journal of Pharmacology and Experimental Therapeutics*, October, 1916) report from experiments on dogs that strychnine, injected intravenously, often appears in the urine within a few minutes, though only in traces. Producing diuresis by intravenous injection of sodium sulphate, however, caused elimination of strychnine in the urine at a rapid rate. They deem it possible that diuresis may contribute to the successful treatment of cases of strychnine poisoning where the amount taken has been only slightly in excess of the minimum lethal dose or where the absorption of the poison is unusually slow. Where very large amounts of strychnine have been taken, diuresis can only play a minor therapeutic role, artificial respiration with ether and chloroform anesthesia, remaining the chief measures.

Bacteriological Findings in Cerebrospinal Fluid in Poliomyelitis.—John W. Nuzum (*Journal A. M. A.*, Nov. 11, 1916) states that contrary to the general experience of others he has been able to cultivate a polymorphous coccus from the spinal fluid in forty-five out of fifty cases of poliomyelitis. The organism occurred as a minute, Gram positive diplococcus or streptococcus, identical with that cultivated from brains and cords in fatal cases. In old cultures it assumed a larger form. It was infectious for monkeys, rabbits, and lambs, producing flaccid paralysis and typical histological lesions in the central nervous system. It could be isolated from the spinal fluid of such animals after infection from intraperitoneal or intravenous inoculation. Cultures up to the fifth generation and others two weeks old were infectious. Control cultures from spinal fluid of other diseases were negative so far as this organism was concerned. Used as antigen, cultures of this organism caused hemolysis in the majority of cases tested. Controls were negative.

Dysmenorrhea.—J. W. Kennedy (*American Journal of Obstetrics*, July, 1916) lays stress on a most careful investigation of the case in the diagnosis of this condition, which is surgically much abused, and the etiology of which in many instances remains in doubt. The local condition in dysmenorrhea is greatly influenced or even dominated by the particular type of the patient. Thus, obstructive mechanical conditions may coexist with normal menstruation, while in the highstrung or nervous type of woman dysmenorrhea will result from a condition of the pelvic organs which would yield a normal menstrual flow in other women. Kennedy recognizes only two general forms of dysmenorrhea, the obstructive and the spasmodic. Most cases usually classified as obstructive are in reality spasmodic, as is frequently evident when we attempt to dilate a supposedly stenosed cervix. Practically all cases of true obstructive dysmenorrhea result from actual tumors or an amputation or faulty repair of the cervix. Spasmodic dysmenorrhea, comprising the larger proportion of cases, is often relieved by dilatation; this is not the result of the production of a more patulous canal, but is due to relief of muscular spasm. In most instances a squeezing of the dilator by the cervix is noticed as the instrument is withdrawn. In the most obstinate form of dysmenorrhea, that found in patients with an infantile uterus and often associated with scanty menstrual flow, the best results are obtained from insertion of a stem pessary, but this measure is not without danger from infection. Antipyrine will relieve painful menstruation oftener than any other drug. Where the condition is due to or aggravated by ovarian congestion, the patient is relieved by recumbency or other means depleting the pelvis.

Simplified Technic in the Preoperative and Postoperative Care of Patients.—John F. Ranken (*Bulletin of the Department of Public Charities*, October, 1916) advises the administration of sodium bicarbonate solution with or without lactose, in the proportion of one dram of sodium bicarbonate to one pint of cold water, just as soon as the patient enters the hospital. This practically does away with postoperative nausea. Castor oil should be given in the dose of from one to two and a half ounces without the use of an enema of any sort. Morphine, if given immediately before operation, prevents acidosis; if given after, it produces it. The administration of ten grains of quinine hydrochloride in a retentive enema of sodium bicarbonate solution every six hours for twenty-four hours does away with postoperative pain. On the morning of the fourth postoperative day six drams of castor oil are administered, and from then on the bowels are looked after every second day.

Defense of the Child against the Tubercle Bacillus.—Francis M. Pottenger (*Journal A. M. A.*, November 11, 1916) asserts that a nonspecific cellular and humoral mechanism of defense protects the young child and infant against bacterial infection. This is mainly accomplished by the lymphatic system through the tonsils, adenoids and Peyer's patches, and the deeper lymph nodes. With the destruction of the organisms, including tubercle bacilli, in these structures there arise specific defensive substances, which are increased as age advances and new invasions occur. If the tubercle bacilli are not all destroyed in the lymph glands they are held captive and set up a local tuberculous focus. Before the development of the specific protective agents tuberculosis is confined to the lymphatic tissues except in massive infections in which the organisms pass through the glands into the blood stream and cause a general tuberculosis. After the acquisition of specific defense the bacilli are attacked by the fixed cells and either destroyed or prevented from spreading by fibrosis and encapsulation, or ulceration and discharge. These facts show the great importance of the lymphatic structures as protective organs, and the consequent value of their preservation to the child unless there is absolute need of their removal.

Observations on Dysentery.—William Magner (*Lancet,* October 21, 1916), states that from a study of a large number of cases of dysentery he found a considerable proportion of latent amebic cases occurred in which the ulcers were confined to the cecum and produced no symptoms. These cases sometimes became active, but their greatest danger was as foci for the infection of others. Incomplete treatment of amebic dysentery proved dangerous for the same reason, since it often led to the production of latent cyst carriers. In a fair proportion of both bacillary and amebic cases there was a secondary invasion of the ulcerated intestinal wall by other organisms which intensified both the local and the general symptoms. Such secondary invasion was often the cause of the fever of the later stages of the amebic form, and in both types secondary invaders at times produced a septicemia. Agglutination tests showed this reaction to be a valuable means of diagnosis when it was distinctly positive in a dilution of one to 100 or over. Such a reaction was invariably present in the Shiga infections after the first week of the disease. Serological tests also showed that certain organisms which usually led a saprophytic existence in the intestine might produce specific reactions when they had invaded the intestinal ulcers. Finally, it was shown that the mannite fermenting dysentery organisms might exist in the intestine in a latent form and be present in the stools. In such cases the agglutination reaction served to prove their lack of activity in the host.

Diagnosis of Pulmonary Tuberculosis without the Stethoscope.—H. Longstreet Taylor (*St. Paul Medical Journal,* September, 1916) maintains that in the diagnosis of incipient pulmonary tuberculosis physical examination is of little value, as the signs are not pronounced until actual destruction of pulmonary tissue has taken place. A tentative diagnosis can be made from the history and symptoms, and should be made, at least in the physician's mind, before the chest is examined. Given a young adult with vague, indefinite indications pointing to the disease, the chances are decidedly in favor of its being present. Absence of tubercle bacilli from the sputum proves nothing. Careful exclusion of other toxemic conditions that may simulate tuberculous intoxication is, of course, indicated. The various possible modes of onset of the disease, other than the hemorrhagic, should be borne in mind. Thus, in cases with the "neurasthenic" onset, nervous depression, insomnia, and gastric disturbances are often the first symptoms. In other instances the onset is characterized by anemia of chlorosis, obstinate pleurisy, or unresolved pneumonia. A temperature curve is of distinct diagnostic value. A slight evening rise of temperature, possibly subnormal in the mornings, with a pulse rate at all times accelerated, and slight debility, in a patient somewhat short winded, easily tired, and with a tendency to what he calls dyspepsia, practically permits of a diagnosis especially in the presence of a slight hacking cough in the morning. Hoarse patients with a cough persisting over two weeks should be suspected of tuberculosis: the larynx may exhibit only an acute catarrh, but soon after infiltration of the arytenoids or a characteristic swelling and serration of the interarytenoid region will appear. The cough in the morning may consist of a few short coughs, with or without any expectoration. Other suspicious auxiliary signs are slight loss of weight, a persistent tickle in the throat causing uncontrollable cough and slight hoarseness, sweating at night, and protracted convalescence from an acute disease. Where a suspicion exists, skilful physical and x ray examinations, a tuberculin test, and especially, an autoinoculation test are in order. If none of these proves decisive, the patient must be observed for a time to insure correct diagnosis.

Congenital Urticaria pigmentosa.—George Pernet (*British Journal of Children's Diseases,* October, 1916), in presenting a child seven months old, points out that the long axes of the oval pigmented areas are mainly arranged transversely, that is, in the lines of cleavage. A wheal is produced on pressure. There is, usually, an enlargement of the various lymphatic glands, but the child reported showed only a slight amount of adenitis about the groins. Liquor magnesii carbonatis and sodium bicarbonate mixture and a lotion of sanitas one to eight were ordered. This led to a distinct improvement in the itching. The histological appearances in these cases are peculiar—and may be said to be pathognomonic, i. e., numerous mast cells arranged in columns and rows. Urticaria pigmentosa may be a manifestation of congenital syphilis, although in this case the Wassermann reaction was negative. In the mother the reaction was slightly positive.

Chronological Peculiarities of Restoration of Function in Injured Nerves.—Chartier (*Presse médicale,* October 9, 1916) presents a diagram showing by means of curves the chief clinical and electrical manifestations of returning function in injured nerves, whether this restoration is spontaneous, or follows liberation or suture of the nerve. The first sign of returning function, which appears before an appreciable change in the electric reactions, is a return of muscular tonicity. Next appears sensitiveness of the muscle to the faradic current. Its excitability to the galvanic current simultaneously rises. Only some time later are the first traces of voluntary contractility of the muscle noted, and immediately after, the excitability of the nerve to the galvanic current. Next the nerve becomes sensitive to the faradic current, and finally, after a distinct interval, likewise the muscle itself. By the time the motor power of the muscle has returned to normal, the nerve is normally irritable to the galvanic and faradic currents; yet the excitability of the muscle itself by these currents remains subnormal, and its contraction does not regain the normal briskness for many months or even more than a year. In the case of a suture of the radial nerve above the level of the branch to the supinator longus, performed soon after the injury, and under favorable conditions, with subsequent systematic electric treatment, returning tonicity may be noted after the twentieth day, beginning voluntary motion after the hundredth, and complete restoration of motor power about the five hundredth.

Intraspinal Administration of Mercurialized Serum.—Livingston Hunt (*Bulletin of the Department of Public Charities,* October, 1916) describes the treatment as follows: Fifty c. c. of blood is obtained from the patient's arm and collected in a sterile cylinder four hours after an intravenous injection of salvarsan. The blood is slanted, the clot separated, and then left over night in the ice box. The next morning a sterile centrifuge tube (containing about thirteen c. c.) is readily filled with clear serum and centrifugated for five minutes. A few red blood cells collect at the bottom of the tube and the supernatant fluid is poured into a sterile, freshly washed cylinder. To this one fiftieth grain mercuric chloride is added. The mercuric chloride is prepared as follows: One gram of Merck's mercuric chloride is weighed out carefully and added to a litre of sterile, distilled water which is then brought to a boiling point. This completely dissolves the mercuric chloride. Of this solution 1.3 c. c. contains approximately one fiftieth grain mercuric chloride. The mixture is brought up to thirty c. c. with sterile water and inactivated for half an hour at 58° C. It is then injected within an hour. The injection is given with the patient lying down on his side. A thirty c. c. syringe is used and the fluid allowed to run in by gravity. The foot of the bed is elevated for an hour after the injection, and phenacetin is used liberally for pain.

The Luetin Reaction.—William Fletcher (*Lancet,* October 21, 1916) reports a series of 130 supposed syphilitics tested with Noguchi's original preparations. Thirty-three per cent. of the primary cases gave positive reactions; fifty-seven per cent. of the secondary cases; and seventy per cent. of the tertiary ones gave a similar reaction. Only one of six doubtful cases gave a positive response to the test. One hundred and nine patients of this group were subjected to both the luetin and Wassermann tests, with the following results: In seven cases of primary syphilis there were six positive Wassermann reactions and only three positive luetins. In thirty-six cases of secondary syphilis the positive reactions were, respectively, twenty-nine and twenty-four. And in sixty-six tertiary cases they were, respectively, thirty-five and forty-eight. These figures showed that in the first and secondary stages the Wassermann reaction was more frequently positive than the luetin test, while the conditions were reversed in the tertiary stage. There was no agreement between the results of the two tests, other than that of chance, the results of the two being the same in fifty-six and at variance in fifty-three. It was evident that the substances causing these reactions were not the same. Of the total of 109 cases thus tested ninety-nine responded positively to one or both of the tests, ten being negative to both. Two of the negative cases were in the secondary and eight in the tertiary stage. These two tests were then applied to a group of eighty-two cases other than syphilis. In this group there were twenty-two cases of leprosy, seven of which were probably syphilitic. Of the whole number of lepers thirteen gave positive Wassermann reactions. All of the eighty-two cases reacted negatively to the luetin test except one who had had syphilis ten years before, while nineteen reacted positively to the Wassermann. More positive results from the luetin tests in the group of syphilitics would have been obtained if it had not been that the luetin had undergone some deterioration. It was concluded that the use of the two tests in conjunction was of great diagnostic value, since in the great majority of cases one or the other was positive. The negative luetin test had the disadvantage of not excluding syphilis, especially in the first two stages.

Internal Glandular Extracts in Mentally Retarded Children.—Walter Timme (*Bulletin of the Department of Public Charities,* October, 1916) gives the histories of several cases of this nature. In one case the symptoms pointed to an overacting thymus. This patient was given thyroid and showed improvement. Another showed a combination of an underacting pituitary with an overacting thymus. In this case pituitary was administered and thyroid given later. A third showed a marked status thymicus; she had been put on thyroid, which had been continued too long.

Separation of the Buttocks.—John C. Silliman (*Journal A. M. A.,* Nov. 11, 1916) states that when examination or treatment of the anus or its region has to be made in the absence of an assistant, much trouble is often encountered by the falling together of flabby buttocks. This can be overcome easily and effectively by applying a strip of adhesive plaster two inches wide transversely across each buttock for about six inches, beginning about an inch outside of the anus. The free ends of the strips may then be tied together in front by means of two pieces of bandage.

A Study of Chorea.—Isaac Arthur Abt and A. Levinson (*Journal A. M. A.,* November 4, 1916) reports material comprising a total of 226 cases occurring between the ages of three and one half and eighteen years. This group constituted about two per cent. of all children treated during the period of the study. Between five and fourteen years were the ages of the most frequent occurrence of chorea, and females were twice as numerous as males. Contrary to general opinion the relation of the disease to rheumatism and rheumatic manifestations was not at all marked—only thirteen having had a definite history of rheumatism. Tonsillitis also did not bear an important relation to the disease, but infectious diseases were observed to precede the onset of chorea in a large proportion of cases. There was, however, no apparent causal relation of these to the disease. Again, somewhat contrary to opinion, the disease was found to have a decided tendency to localize in one extremity or on one side of the body, or to be more marked on one side than on the other. The most frequent complication was endocarditis, though this was not at all constant. Two to eight weeks was the average duration of the disease with extremes of one day to over one year. Recurrence was not infrequent and several cases had more than one recurrence. Rest in bed, isolation, baths, and administration of the salicylates seemed to be the most satisfactory treatment. Arsenic did not seem to have any effect on the disease. Treatment apparently did not influence the tendency to recurrence.

Proceedings of National and Local Societies

JOINT MEETING IN PEDIATRICS.

Pediatric Section, New York Academy of Medicine; New York State Society; New Jersey Pediatric Society; Philadelphia Pediatric Society; New England Pediatric Society.

Held in Boston, November 4, 1916.

Dr. Alexander H. Eastman, President, New England Pediatric Society, in the Chair.

Medicoeducational Problems in the Treatment of Atypical Children.—Dr. G. Hudson Makuen, of Philadelphia, said that the mind or personality of the individual distinguished him from a mere laboratory receptacle, making psychology as necessary a study as physiology, anatomy, or chemistry. Upon psychical health physical health depended to a certain extent. To physicians who had the care of children, the idea that the prevention of disease was even more desirable than the cure should have a strong appeal. Finally habits acquired during infancy and early childhood were responsible for many of the diseases of subsequent years. Medicoeducational methods were especially applicable to the treatment of atypical children, and to be curative in every case should be instituted several generations before the birth of the child. Heredity played a large part in the development of a child, but environment was even more important and was subject to change and improvement. Education and training formed the major part of the child's environment. The period that came prior to the so called school age was the most neglected part of the life of a child. Fixed habits were formed in the first years of life. While the mind of a child had a physical basis, yet his mental activities determined to a great extent the character of this basis by regulating its development, and so it was that the general physical condition of the child might be influenced for good or ill by the character of his mental and emotional activities. Medicoeducation therefore as a preventive measure should be applied during infancy. Nervousness was common in children and its treatment should be first preventive and then curative. Child psychology taught that the brain was most susceptible to physical and functional development. During mental development the cerebral convolutions increased enormously in number and the cortex underwent a corresponding increase in surface growth. In childhood the association fibres of the brain were rudimentary and their full functional powers were attained only after years of growth and development. A notable difference between the mentally normal and the abnormal child appeared in the fact that the one developed automatically, while the other seemed to halt or sometimes to be retrogressive. The physician should aim to help atypical children in both physical and mental development. Medicoeducational methods should aim, not to remake the child, but to make the "absolute best" of what had already been made. Preventive treatment was applicable in the earliest infancy and consisted largely in an attempt to control the child's physical activities through a careful direction of his psychical and emotional activities. If the child was normal physically, this treatment should result in the development of normal physical and emotional faculties, but if the child inherited physical abnormalities, such as cleft palate or other irregularities of structure, surgery and some form of medication might be indicated in addition to the psychophysical training. Punishment should never be necessary, except perhaps at the very beginning and before the child was mentally susceptible to medicoeducational measures. It was said that there were upward of 300,000 stammerers in the United States alone, and if this vast army of defectives could have had the right kind of early training there would be few if any stammerers to contend with, and what was true of stammering, was true of similar and allied nervous diseases. The personality of the child was modified and moulded by what some one had called the reflex influences of its own acts and impressions. To make any act or gesture or mode of speech or motion habitual through deliberate repetition, was to stimulate in the personality the appropriate moral quality or emotion of which such an act or gesture was the expression. The Japanese had a theory that for a man to be what he would like to be, it was only necessary for him persistently to act the part. Doing things with purposeful intent was found to have a greater educational value than doing them carelessly even in play. The play instinct was an important factor in child development, but it was at the present time the most overworked of them all, both in the home and in the primary school. What might be called the work instinct was equally important and was now being greatly neglected in the training of children. The child should be taught to do things, not because they were easy, but because they were right, and the greater the difficulty in doing them, the greater the educational value. Atypical children should not be coddled, but encouraged, and like plants of slow growth and development, they might be forced. This might be done by furnishing favorable conditions for growth and development and by directing their physical activities into the right channels. Many a nervous child immediately began to improve physically as well as mentally when well directed pressure was brought to bear upon him in psychophysical education. This was due to the fact that the child was wearing himself out nervously by his aimless and ill directed activities, and judicious training in such a crisis often resulted in a much needed rest to both body and mind. It was said of older people that it was not work but worry that killed, and they had been inclined to overlook the fact that this was true, even in young children. The satisfaction of having done constructive work in a successful manner was not confined to mature men and women, but might come very early in the lives of children. The so called hereditary tendencies were frequently aggravated and encouraged by faulty parental attitudes, which were usually the result of ignorance, selfishness, and overanxiety. The most difficult thing in the treatment of atypical children was to control and direct this parental influence and enlist it in behalf of the child's welfare. In some cases the parents were hopeless and it became necessary to remove the child from home surroundings. In summing up, it might be said that correct postural attitudes and good respiratory, phonatory, and articulatory habits should have a conspicuous place in all medicoeducational methods, because of their esthetic value and because they tended to confer greater self respect, self reliance, and self control.

Intestinal Venous Stasis.—Dr. Fenton B. Turck, of New York, declared that synthesis of organic compounds, and the role of the physics of colloids in biology had created a new concept of normal and abnormal conditions in the body. He had been studying experimentally the factors involved in the permeability of membranes in the living organism. The membrane filter was itself colloidal in character, and it determined the rate of diffusion of the colloidal suspension that filtered through it. In the study of the phenomena of the passage of the colloids it was found that such substances as the white of egg passed unchanged through animal membrane. The study was involved in considerable obscurity owing to the difficulty of identifying the colloids after filtration. The speaker had demonstrated by experiments on animals that emulsion of bacteria, such as the colon bacilli, injected into the intestines of a fetal animal, would rapidly diffuse through the membranes and tissues. By the use of appropriate staining methods he had been able to determine the rate of diffusion and the route by which it took place. That the intestinal tube was permeable to intestinal flora he had proved some years before He had also shown that the degree of this invasion was greatly influenced by the splanchnic circulation; interference with the splanchnic circulation altered the character of the intestinal wall and rendered it permeable to all forms of bacteria. When bacteria were injected into the intestines of the fetus, distinct routes were taken from any depot along the entire tube. Thus the kidney or liver was the first involved when the injection was made into a certain part of the intestinal tract. Microorganisms injected into the intestines of a fetal animal rapidly diffused through the mucous wall of the intestine, between the glands, into the areolar tissue, and then along the wall of the intestines between the muscle coat and the mucous membrane. At this point many of the microorganisms underwent bacteriolysis. In the newborn there was no barrier, no arrest of passage by the mucosa labyrinth; a wall impervious to bacteria had not yet been sufficiently formed there, nor apparently were antibodies adequately generated, since so far they had not been needed. As the body grew, the tissues became less porous to bacteria. When disturbance of the splanchnic circulation and muscular atony of the wall of the alimentary tract were produced, then a reversion to the fetal state of the intestine followed, and the body needed to be protected from the toxins formed in the zona transformans, and antianaphylaxis was, it might be said, automatically established. The passage of bacteria took place from the intestinal tract into the intestinal wall between epithelial cells and not through or into the cells and between the muscle cells of muscular mucosa. As rapid bacteriolyses were seen to take place in this submucous zone, he had named it the zona transformans. The degree of permeability of the intestinal wall in a living subject was increased by a number of factors, namely: 1. Mechanical obstruction of the intestines; 2, an interruption of the circulation sufficient to cause atony; 3, an interference with the nerve supply; 4, a number of other pathological conditions. In order to induce permeability, fundamental changes in the flora of the individual and in the physiclogy of the organ must be induced; among the means of bringing this about were thirst, hunger, overfeeding, and shock. Autolysis of the tissues took place after venous stasis, with a resulting asphyxia of the cells. The muscle cells underwent the characteristic changes of Zenker's degeneration, with atony and dilatation. Ligations of the lower portion of the intestinal tract were not so evident in causing bacterial migration as in the upper segments. No bacteria seemed to enter the blood or lymph vessels. The feeding experiments further showed that fat and fatty acid increased the diffusion rate of the intestinal bacteria through the intestinal wall and hastened the fatal termination. Six monkeys fed with small squares of bread fried for thirty minutes in cotton seed oil, in addition to the usual vegetable feeding, died in from three to six weeks and showed an increase in the filtration of bacteria in the tissues. Lesions resulting from disturbances produced in the upper intestinal tract were shown to be more quickly fatal than those made in the lower intestinal segments. The passage of the living bacteria into the tissues caused a reduction (by absorption) of the protective bodies (antiferments), and resulted in autolysis. A study of the clinical picture as seen in the human being paralleled these findings. Stasis induced by frequent feeding caused precipitation and delayed digestion, and resulted in fractional digestion and the production of fatty acids. The changes produced in the cells were not due to lack of oxygen or increased carbon dioxide, but to acidosis, the result of fatigue to the muscle cells and asphyxia of those cells from venous stasis. This resulted in atony and permeability of the muscle wall and diffusion of bacteria and of the fractional protein products. Upon bacteriolysis and proteolysis anaphylaxis ensued, in other words, acidosis. The symptoms of this condition in its acute form were shock, distention, prostration, convulsions, etc. The symptoms of the chronic condition were wasting, marasmus, anemia, etc.

Treatment must have for its object the reduction of fatigue of the visceral muscle, prevention of fatty acid intoxication, intestinal retention, and absorption of intestinal flora; it must also correct the acidosis, reduce venous stasis, increase immunity, and maintain nourishment. Thus, in the acute cases, gastric and colonic lavage; lavage with weak nitrate of silver, followed by sodium bicarbonate; demulcents and venesection, followed by infusion of sodium carbonate solution, were indicated. In extreme cases the transfusion of autoserum might be indicated, also the continuous bath. In the moderate and chronic cases gastric lavage and colonic lavage, with gentle pneumatic gymnastics, were indicated.

together with demulcents, oil of cloves, and vaccines. The food should be reduced to the minimum fineness of particles, the interval between meals should be prolonged to the maximum point within the caloric safety, and regular feeding periods should be established to conform to the curve of muscle work and relaxation. Foods rich in mineral salts should be provided, such as vegetables steamed and made into a purée. The intake of fat should be reduced to a minimum; heated and stale fat should be prohibited. No extractives were allowed, though in older children they might give extract of fresh meat. For a time the total protein intake might be reduced. The medication consisted of alkalies by the stomach and an analgesic mixture. The object of the demulcent such as Irish moss or liquid petrolatum was to prevent the passage of bacteria through the intestinal wall. Absorption of the bacteria might be favored by the administration of fuller's earth, charcoal, or very fine bran. If laxatives were required, phenolphthalein and calomel might be given.

Epidemiology of Bacillary Dysentery.—Dr. G. W. SMILLIE, of Boston, had made a study in connection with the work of the Floating Hospital. That there was need of such a study was evidenced by the fact that the incidence of bacillary dysentery was greater than that of more feared and more widely advertised children's diseases, such as poliomyelitis, and among children the death rate was equally high. While the methods of treatment of bacillary dysentery had long occupied their attention, as well as bacteriological study of the disease, the mode of transmission had excited only indifferent and random speculation. The Floating Hospital furnished most favorable conditions for a study of this kind, because the victims of bacillary dysentery were usually infants under fifteen months of age; their activities were limited; they did not travel much, and therefore they came into contact with few people. They also ate but one or at most a few articles of food. Thus it was comparatively easy to trace the infection in a baby under one year of age, but after a child could walk it became most difficult. Other conditions favoring an epidemiological study of bacillary dysentery were the facts that the disease was clear cut, that the bacilli could be isolated from the stools, and that specific agglutinins developed in the blood of the patient. The fact that the bacillus was found in the feces only and not in the other excretions of the body made it evident that every case represented some short path between the infected feces of the patient and the mouth of the victim. It was known that the incubation period of adult dysentery was from three to seven days, and that the disease was one of summer incidence, being most prevalent in July, August, and September, and, finally, that bacillary dysentery had a preference for the children of the poor. In addition to this knowledge they had records of all cases that were reported to the city boards of health, thus bringing out nests of infection in all parts of the city. A spot map was made of all the cases of last year for purposes of comparison with this year. A record was kept of the daily maximum and mean temperature, and of the relative humidity for the whole summer, of the nationality of the parents, housing and home conditions with reference to sanitation, and of all the activities of the case for two days before the symptoms of the disease developed. In all, seventy-nine cases were studied, forty-nine being house cases and twenty-six related cases. While seventy-five cases were obviously insufficient as a basis for definite conclusions as to the influence of temperature and humidity, there seemed in this series to be no relation between high temperature, high relative humidity, and the case incidence. The case incidence seemed to be more closely related to flies than temperature, for the hot weather was almost over before there were many cases of the disease, and reports of new cases continued to come in well into September, though the humid weather had passed. The families chiefly afflicted were not the illiterate foreigners, but the neglectful, poorer American family. This was not attributable to the fact that the foreigners were more cleanly, sanitary. or intelligent than American parents, for in truth they were very much less so. It seemed to be due to the fact that most foreign mothers nursed their infants. Only one case occurred in a nursing baby, nursed only during the night, and fed with condensed milk during the day. Though bacillary dysentery was ordinarily a disease of poverty and filth, these were not necessary accompaniments, for the disease might be found in the better portions of the city. To estimate the relation between bacillary dysentery and housing conditions a score card was devised somewhat similar to that used for scoring dairies. In all, forty-one homes were scored; the highest score was ninety-four per cent. and the lowest fifteen per cent. The average score for cases of bacillary dysentery that were due to direct contact was only forty-eight per cent. The average score of cases that were a source of infection to others was forty-one per cent. The average score of cases due to infection from food was fifty-nine per cent., and the average for cases for which no source of infection was found was seventy-one per cent. An important fact with reference to the contact cases was that many were in the older members of the family, in whom the disease showed itself in a mild form. Undoubtedly many cases of summer ptomaine poisoning were truly bacillary dysentery, which might become a great menace to the community, particularly to the babies, for as this investigation showed, a mild adult case might readily infect a baby with fatal results. In almost every dirty, unsanitary house which the speaker inspected and in which the sick child remained for more than one week, there resulted a contact case. There was evidence that four babies contracted bacillary dysentery in the hospital wards, for each child was admitted with quite a different diagnosis and did not have the disease until seven to ten days after admission. These were the only contact cases that occurred in the hospital, though virulent bacillary dysentery cases were on board all summer. Since extraordinary care must be exercised to prevent cross infection, no child with bacillary dysentery should be admitted to a hospital unless all facilities for isolation were provided; the most rigid precautions were necessary, particularly fly exclusion. The tenement mother was usually careless in protecting her infant's stools from flies, as the diapers were seldom boiled, and since flies were so abundant and screens almost unknown, it was extraordinary that more cases were not transmitted. There was a Shiga epidemic last summer that gave an excellent example of the various modes of spread of the casual case of dysentery. The epidemic originated with the two year old son of a dairyman in Haverhill. The source of this infection was probably an ice cream cone eaten in Lawrence. The father, mother, and one other child contracted diarrhea; the father, being only moderately prostrated, kept on his work in the dairy. The milk of this dairy was sold almost exclusively to the Deaconess's Home, a fresh air farm for children between the ages of seven and fourteen years.

In this institution about twenty cases developed out of a total of seventy children. This epidemic began on July 22d, and on July 27th, the children were all sent home. One went to Pine Heights, Dedham, became seriously ill, and after five days was taken to the hospital, where she died. This child's brother and two sisters also became ill. The dejecta were thrown into an open privy without disinfection. A neighbor who came in to assist in the care of the children carried the infection home to her husband. A child living across the street contracted bloody dysentery and died within a few days. About the same time three adult members of one family living about one hundred yards away contracted severe dysentery which persisted for a few days only. The evidence seemed to point to flies as carriers. A case developed in the house adjoining to that in which the first child, the one coming from the Deaconess's Home, lived.

Dr. **Henry I. Bowditch** congratulated the previous speaker on the work he had accomplished and the results he had attained. It might be of interest to know the results of their study of the bacillary cases during the past three summers, since they were especially interested in dysenteries. In 1914, seventy-nine cases came under their observation, of which sixty-eight per cent. gave a positive Flexner organism; in 1915, there were seventy-five cases, eighty-five per cent. of which showed the Flexner infection; in 1916, there were sixty-four cases, and of these eighty-eight per cent. showed the Flexner infection. In three fourths of the cases the bacteria were recovered from the stools and in others at autopsy, and in a certain few the diagnosis was made by finding the agglutinins. At the same time they had constantly tried to find how much of a factor the gas bacillus or Bacillus welchii was. Bacillus welchii was found not to play an important part. It disappeared quickly in the early course of the illness and was frequently seen to appear later when other foods were given. In 1914, a closer investigation than usual of Bacillus welchii was made, and resulted in finding it in eleven per cent. of infectious conditions; in twenty-seven per cent. of digestive disturbances; in twenty-eight per cent. of malnutrition cases; and in twenty-eight per cent. of normal cases. The infectious cases were studied closely, while the others were picked at random. They felt at present that the Flexner organism was the main etiological factor, and that the gas bacillus, was a complicating factor, not the main etiological factor. This was different from the stand taken some years ago. On the Floating Hospital when a case was entered with the clinical picture of dysentery, the treatment was to keep the child on water for the first twelve hours, and then place it on a food with a high percentage of carbohydrates and moderate protein, for instance, fat 0, sugar 6, and protein 12; this food was usually given in the form of a fat free milk with sugar added. This was continued if the gas bacilli were not present, but when the gas bacilli did occur, the carbohydrates were diminished.

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Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Practical Bacteriology, Blood Work, and Animal Parasitology. Including Bacteriological Keys, Zoological Tables, and Explanatory Clinical Notes. By E. R. Stitt, A. B., Ph. G., M. D., Medical Director, U. S. Navy; Graduate, London School of Tropical Medicine, etc. Fourth Edition, Revised and Enlarged. With 4 Plates and 115 Other Illustrations Containing 505 Figures. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xvii-497. (Price, $2.)

The need for a fourth edition of this practical manual testifies to its value as a handy reference book for the laboratory. It is divided into four parts, devoted to bacteriology, hematology, parasitology, and clinical pathology. The subject matter is elementary, but complete and well arranged. The chapters on animal parasitology are of particular value, especially for those who are interested in tropical diseases. Intended primarily as a concise pocket manual for laboratory diagnosis in the Government service, this work has developed into a convenient reference book suitable for general laboratory work. It is to be especially recommended to those contemplating membership in the army or navy service.

Studies in Immunization Against Tuberculosis. By Karl von Ruck, M. D., and Silvio von Ruck, M. D. New York: Paul B. Hoeber. 1916. Pp. xvi-439. (Price, $4.)

The writers of this volume have long been known for their work in the prevention and cure of tuberculosis. Unfortunately, most of their papers have appeared in various medical journals and in reports, and are therefore more or less inaccessible to the general reader. The present volume is the more welcome in that, beside giving the latest views and experiments of the authors, it renders unnecessary the reference to their many previous scattered writings. The main theme in this book is the immunization method in tuberculosis, viewed as a prophylactic and also as a curative agent. The authors do not hold that vaccine is a specific which will cure any and every case of tuberculosis indiscriminately; but they do show that in their hands and in those of many other physicians, vaccine has proved of undoubted value when the cases were carefully selected and other methods of treatment were not neglected. The book consists of three parts, the first dealing with theoretical considerations on the tuberculosis problem in general, immunity in infectious diseases, acquired specific immunity, bacteriolysins and bactericidins, and the complement fixation reaction. The second part is concerned with practical immunization against tuberculosis, and contains chapters on specific prophylactic immunization against human tuberculosis, administration of the vaccine, practical results in prophylactic vaccination, and the specific treatment of pulmonary tuberculosis. The last part is concerned with experimental studies in the immunization against tuberculosis. The second part is that which will prove of greatest interest and value to the physician, and it should be read by all who are likely to combat the "great white plague."

Physiological Chemistry. A Textbook and Manual for Students. By Albert P. Mathews, Ph. D., Professor of Physiological Chemistry, University of Chicago. Second Edition. Illustrated. New York: William Wood & Co., 1916. Pp. xv-1040. (Price, $4.25.)

A lengthy review of the first edition of this book was presented to our readers as recently as February 19, 1916; so that it is unnecessary, on this occasion, to do more than call attention to the new edition of this capital work. Beyond the correction of a few mistakes, the addition of some references to papers which have appeared during the past year, and some trifling changes in the section on colloids, the book is the same as before. Physicians and students in search of a work on physiological chemistry will do well to examine the present volume; the facts presented are wisely selected and well arranged.

Manual of Chemistry. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Textbook Specially Adapted for Students of Medicine, Pharmacy, and Dentistry. By W. Simon, Ph. D., M. D., Late Professor of Chemistry in the College of Physicians and Surgeons of Baltimore, and in the Baltimore College of Dental Surgery, and Daniel Base, Ph. D., Professor of Chemistry in the Maryland College of Pharmacy, Department of the University of Maryland, Baltimore. Eleventh Edition, Thoroughly Revised. With 55 Illustrations, One Colored Spectra Plate and Six Colored Plates Representing Forty-eight Chemical Reactions. Philadelphia and New York: Lea & Febiger, 1916. Pp. xvi-648.

That this book is now in its eleventh edition is sufficient proof that it is a work of considerable merit and that it has, also, supplied a want. In the present revision the pharmaceutical titles have been brought into agreement with the recent (and long delayed) Pharmacopœia; we also notice some material and a rearrangement of the sections dealing with inorganic chemistry. The most noticeable changes, however, are in the line of omission. The chapters on light and electricity have been banished from the work; so, too, has the whole of the section on physiological chemistry. It is true that the section on organic chemistry contains a chapter of a dozen pages dealing with the proteins, but this cannot be considered an adequate presentation of physiological chemistry. The result of these omissions is that a student will now require three books where formerly one sufficed. Since the first edition of this work appeared the chemistry required of the medical student has been greatly changed, both in extent and in character. He is now expected to acquire a much greater knowledge of the facts of chemistry, and, what is far more important, to obtain an adequate idea of the fundamental principles of the science. So, while the book is good, so far as it goes, it will hardly suffice the medical student beyond his first year; and, owing to the omission of physiological chemistry, it will be of very little service to the physician.

La Cure de soleil. Avec 40 figures, 107 planches en noir et 16 en couleurs. Paris: Baillière et fils; Lausanne: Constant Tarin, 1914. Pp. cxvii-217. (Price, 20 francs.)

In this imposing work are comprehensively set forth for the profession at large Rollier's experiences with sunlight therapeutics and the details of the application of this treatment in tuberculous lesions of various forms. The author immediately issues warning that in heliotherapy, if the best results are to be obtained, a very precise management of the treatment, with nothing left to chance, is necessary. He admits that in the striking results obtained by him at Leysin, Switzerland, not only sunlight but also altitude plays a part. Similar results may, however, it is stated, be obtained elsewhere at a suitable altitude. Prudent progression in the treatment and careful individual study for proper adjustment of the dose are essential to success. Eight or ten days are allowed new patients before sunlight treatment is begun, for acclimatization and to accustom the skin of the affected parts to the open air. Increasingly extensive portions of the body are then exposed to the sun for progressively augmenting periods. Meat is largely excluded from the diet and, as a rule, no attempt at hyperalimentation is made. To the skin surface is restored a long lost function, that of absorbing from the air and solar radiations hitherto overlooked forms of useful energy. Plaster apparatus, with its many disadvantages, is no longer used, and in Pott's disease the ventral posture, with the back exposed to the sun, is generally employed, with excellent effect. In joint tuberculosis, recovery of joint function is nearly always obtained. Among two thousand cases treated, in but one instance did a tuberculous focus lead to secondary infection. Reparative processes soon set in even in previously obstinate, atonic foci. Emaciated children with multiple sinuses, after some months' treatment and training, are so transformed and fortified that ice skating and other winter sports are indulged in without clothing. Numerous photographs have been inserted in the text, and the second half of the book is occupied wholly by illustrations showing the results of treatment in tuberculosis in various portions of the body. No one who studies this work can fail to be impressed with the solidity of the therapeutic principles enunciated. Sunlight therapeutics has manifestly come to stay, and applied under the conditions described by Rollier, yields results superior to any hitherto obtained. Great credit is due the author—a pupil of Kocher—for bringing, by dint of energy and perseverence, the heliotherapeutic method to so high a pinnacle of efficiency.

Interclinical Notes

The question of prohibition in the States is discussed editorially in the *Outlook* for November 15, 1916. The results of the recent election, it says, certainly ought to give comfort to the prohibitionists and the antisaloon group. As a wine bibber might put it, among other States Michigan went *sec*, while Detroit went positively *brut*. The extensive vineyards of California seem to complicate the problem in that beautiful, but not unco guid State.

* * *

In the November *Century*, there are four camera studies by the late F. Benedict Herzog, extremely clever in their counterfeiting of painting. It is not art, however, to imitate another art. Pictures like these are good enough to stand on their own bottom. Another admirable camera portrait accompanies a tribute to the late Jean Webster, whose last serial in the *Century* we commented upon so freely and with such unrestrained enthusiasm. The young genius died in childbirth.

* * *

The New Public Health is an interesting subject interestingly discussed in the *Survey* for November 18th, by Dr. Alice Hamilton and Gertrude Seymour. Among significant statements is one by Doctor Rosenau, of Harvard-Technology, that a good class of students are willing to work long and hard to enter the new profession; many have accepted positions paying from $1,200 to $4,000 per annum. At Pennsylvania, too, it is said that the "pick" of the students are taking up public health. Already twelve of the best medical schools give the requisite training; Columbia has a program ready.

* * *

It is a great pity that the soldiers of all the armies engaged in the present war are fond of cigarettes. If only their use had been confined to one army and that army had been defeated, what a beautiful object lesson! The wretched soldiers, however, seem to rank cigarettes along with sweaters, canned pâté, socks, candy, and the like; so we learn from *Leslie's* for November 2nd. With sumptuary legislation trembling in the balance concerning tobacco, alcohol, white slaves, narcotics, length of the working day, and wages, we are inclined at times to envy the fighting men in Europe, for if their discipline is strict, it is also wisely directed.

* * *

The *Survey* for November 18, 1916, is almost exclusively medical, discussing as it does College Men and Alcohol, the National Drug Problem, the New Public Health, and Birth Control. As to the first problem, it is now some years since we wrote our opinion that while alcohol and tobacco might be allowed to tired men of middle age, it was a trifle absurd for a university undergraduate to advertise, by means of a gigantic pipe stuck between his teeth, that his shattered nervous system was in constant need of a narcotic. Do students still have individual mugs into which their beer must be drawn? Yea, there was such folly in the nineties.

Meetings of Local Medical Societies

Monday, *November 27th.*—Medical Society of the County of New York (annual); Poughkeepsie Academy of Medicine.

Tuesday, *November 28th.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otological Society (annual); New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York (annual); Therapeutic Club.

Friday, *December 1st.*—New York Academy of Medicine; New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Practitioners' Society of New York; Corning Medical Association; Alumni Association of Roosevelt Hospital.

Saturday, *December 2nd.*—Benjamin Rush Medical Society, New York.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 15, 1916:

Armstrong, Charles, Assistant Surgeon. Relieved at Ellis Island, N. Y.; will proceed to Arundel Cove, South Baltimore, Md., for duty on Coast Guard cutter *Itasca.*

Bahrenburg, L. P. H., Surgeon. Bureau letter dated November 4, 1916, directing him to proceed to Houston, Tex., cancelled.

Bryan, W. M., Passed Assistant Surgeon. Ordered to proceed to New Haven, Conn., to complete report on fatalities on steamer *Devonian.*

Faget, F. M., Assistant Surgeon. Ordered to proceed to New Haven, Conn., to complete report on fatalities on steamer *Devonian.*

Fox, Carroll, Surgeon. Ordered to proceed to South Bend, Ind., to study public health organization and administration.

Freeman, A. W., Epidemiologist. Ordered to proceed to New York city for conference on poliomyelitis.

Grubbs, W. B., Surgeon. Granted seven days' leave of absence from November 13, 1916, under paragraph 193, Service Regulations.

Guiteras, G. M., Surgeon. Directed to assume charge of Key West, Fla., Quarantine Station, during the absence of Acting Assistant Surgeon Light.

Harrington, F. D., Assistant Epidemiologist. Directed to proceed to Austin and other places in the State of Texas for conference relative to the most suitable county for studies of rural sanitation.

Holt, J. M., Surgeon. Directed to proceed to Toledo and Conneaut Harbor, Ohio, to inspect certain United States vessels.

Lloyd, B. J., Surgeon. Directed to proceed to Vancouver, B. C., to inquire into the practicability of an examination for cholera carriers under immigration law.

Oakley, J. H., Surgeon. Bureau letter dated November 1, 1916, granting four days' leave of absence from November 10, 1916, revoked.

Rhynus, C. P., Sanitary Engineer. Directed to proceed to the Great Lakes to observe operations of sewage steam disinfection on steamer *D. G. Kerr.*

Schereschewsky, J. W., Surgeon. Directed to proceed to Harrisburg, Pa., to attend the Fourth Annual Welfare and Efficiency Conference, November 21 to 23, 1916.

Sharp, W. K., Field Investigator. Directed to proceed to Berkeley County, W. Va., to make a resurvey of sanitary conditions.

Spencer, R. R., Assistant Surgeon. Granted seven days' additional leave of absence from November 13, 1916.

Stout, J. D., Assistant Surgeon. Relieved from duty on Coast Guard cutter *Itasca*, and will proceed to Norfolk, Va., for duty.

Tarbett, R. E., Sanitary Engineer. Directed to proceed to Spartanburg, S. C., to assist in the sanitary survey of cotton mill villages in connection with field studies of pellagra.

Thompson, W. R. P., Acting Assistant Surgeon. Granted two days' leave of absence from November 14, 1916.

Warren, B. S., Surgeon. Detailed to deliver an address on health insurance before the meeting of the Medical Society of the State of New York, at New York, N. Y., November 23, 1916.

Wheeler, G. A., Assistant Surgeon. Directed to proceed to Milledgeville, Ga., to observe dietary studies in relation to pellagra.

White, M. J., Surgeon. Directed to proceed to Topeka, Kan., to examine suspected case of typhus fever.

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Births, Marriages, and Deaths

Married.

Bierer-Hankins.—In Uniontown, Pa., on Tuesday, October 31st, Dr. Charles D. Bierer and Miss Gertrude Hankins.

Collins-Lefferts.—In New York, N. Y., on Thursday, November 9th, Dr. Charles Farnham Collins and Mrs. Helena Gillet Lefferts.

West-Rusk.—In St. Louis, Mo., on Saturday, November 4th, Mr. William Miles West and Dr. Elizabeth Rusk.

Sandberg-Peterson.—In Chicago, Ill., on Saturday, November 4th, Dr. Karl F. M. Sandberg and Mrs. Emelia P. Peterson.

Died.

Beckman.—In Rochester, Minn., on Tuesday, November 7th, Dr. Emil H. Beckman, aged forty-five years.

Brown.—In Germantown, Ohio, on Thursday, November 9th, Dr. Joseph A. Brown, aged sixty-one years.

Burgess.—In Sumner, Tex., on Thursday, November 2nd, Dr. Neal L. Burgess, aged thirty-eight years.

Buttner.—In Orange, N. J., on Thursday, November 16th, Dr. Carl Buttner, aged sixty-seven years.

Culver.—In Harrisville, N. Y., on Sunday, October 29th, Dr. David J. Culver, aged sixty years.

Finder.—In Troy, N. Y., on Monday, November 20th, Dr. William Finder, Jr., aged sixty-one years.

Flanders.—In Pittsford, Vt., on Monday, November 13th, Dr. Charles A. Flanders, aged sixty-eight years.

Franklin.—In Philadelphia, Pa., on Monday, November 6th, Dr. Marcus M. Franklin, aged seventy-three years.

Garwood.—In North Lewisburg, Ohio, on Saturday, November 4th, Dr. James Stokes Garwood, aged sixty-nine years.

Holt.—In Parker, Pa., on Friday, November 10th, Dr. John Floyd Holt, of Pittsburgh, aged thirty-nine years.

Ledbetter.—In Shreveport, La., on Thursday, November 9th, Dr. Jesse M. Ledbetter, aged sixty-two years.

McMaster.—In New York, N. Y., on Wednesday, November 8th, Dr. Nathaniel G. McMaster, aged seventy-six years.

Ohlmacher.—In Detroit, Mich., on Thursday, November 9th, Dr. Albert Philip Ohlmacher, aged fifty-one years.

Parsons.—In Trenton, N. J., on Sunday, November 12th, Dr. Richard H. Parsons, aged fifty-seven years.

Russell.—In Birmingham, Ala., on Sunday, November 12th, Dr. Ralph M. Russell.

Spencer.—In Newark, N. Y., on Sunday, November 5th, Dr. Elwyn L. Spencer, aged fifty-nine years.

Spiron.—In Collinsville, Ill., on Saturday, November 4th, Dr. Peter D. Spiron, aged sixty years.

Tinker.—In Sharon, Pa., on Wednesday, November 8th, Dr. Guert M. Tinker, aged forty-seven years.

Townsend.—In Bennettsville, S. C., on Monday, November 13th, Dr. Arthur S. Townsend, aged fifty-three years.

Verdery.—In Fort Sam Houston, Tex., on Sunday, October 29th, Dr. Lee W. Verdery, aged twenty-eight years.

Way.—In Saranac Lake, N. Y., on Sunday, November 5th, Dr. A. Crandall Way, of Perry, N. Y., aged forty-six years.

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Original Communications

PSORIASIS AS AN HYSTERICAL CONVERSION SYMBOLIZATION.

A Preliminary Report,

By Smith Ely Jelliffe, M. D.,
New York;

And Elida Evans,
New York.

Paleontology is the study of past plant and animal life which has been preserved in the form of what are called fossils. Paleobotany and paleozoology are the respective titles given to the individual subdivisions of this branch of science.

Chiefly through evidence obtained in these fields, the scientific theory of evolution has become a useful working formula, the full significance of which has not by any means been grasped, nor have its implications been completely realized. The evolutionary attitude of mind has given birth to the idea of recapitulation, which emphasizes the fact that every living plant and animal, in its own growth, goes through the phases which characterize the ancestors in the direct phylum or branch. Just as there are many minor details in controversy relating to the central doctrine of evolution, so similar debatable points relative to the doctrine of recapitulation are under active discussion at the present time. With these we are not now concerned. We are interested only in an attempt to apply the principles in order to see if greater uniformity of interpretation may not result in fields where such uniformity is markedly lacking.

We wish to maintain the idea that there may be other types of fossils to be studied than those derived from plants and animals, namely, thought fossils, and that to paleobotany and to paleozoology we may add a science of paleopsychology. The happy hunting ground of the paleopsychologist is not, however, in the rocks and clays of old sea bottoms, but in history, in literature, in art, in customs, ceremonials, religions, institutions, and possibly diseases. Throughout all of these, evolutions from earlier, simpler to more complex types are recognizable. These customs, ceremonials, institutions, concepts, theories, diseases, etc., they too recapitulate the chief phases of earlier stages, and in order to understand them, as thought fossil recapitulations, special modes of study become needed, the general features of which are foreshadowed in the mode of approach to their more structural homologues.

One of the many principles which has brought about the development of the special changes in form is that of condensation. As the five toed eohippus of early Eocene days now walks as a stately horse upon one toe, so many concepts of former stages of civilization are condensed into a single formula, and thus function more advantageously than their many sided prototypes.

Few can estimate the greatly increased energy value of a new generalization, which, gathering up, condensing, as it were, the vast hordes of previous concepts, creates new intellectual tools of great constructive capacity. These new generalizations mark milestones in the progress of civilization. We may speak of them as inventions, such as the printing press, gunpowder, and aeroplanes; as laws, such as the Ten Commandments, the Twelve Tables, the Justinian Code, or the Code of Napoleon; as institutions, such as slavery, feudalism, socialism; as customs, which we term folkways, religions, etc. From the standpoint of the science of the evolution of thought, as interpreted through the concept of paleopsychology, all of these are capable of being interpreted in the light of their origins. In fact, unless they are genetically and dynamically so interpreted, other interpretations prove to be incomplete and faulty.

Other types of change by which the evolution of psychical structures may be measured are displacements, distortions, etc., all bringing about what we shall term in general *resymbolizations.* There is absolutely nothing new in this mode of looking at things. Back to the Greek is the present cry. Back to Heraclitus and to Protagoras we can go for a fairly good statement of this genetic dynamic unity, which present day psychiatry is insisting upon, in its endeavor to correlate psychical and physical phenomena, as seen in disease. But even if Heraclitus, with the flashlight of genius, irradiated the path from which man has so often diverged, he nevertheless has left us no clues as to practical every day appreciations in medicine, by which we may demonstrate the relationship between the patients' thought fossils and their mode of showing themselves in the body as symptoms. He gave us no practical rules for tracing out the evolutions of resymbolizations. Such a modern Heraclitus is Freud, and by means of the direct practical technic

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of psychanalysis, the student of medicine is in a position to understand a host of disease phenomena which, up to the present time, were in a chaotic state of misinterpretation.

The present paper will confine itself to a study of some resymbolizations as showing themselves in the skin area, and as classed under various symbols which dermatologists treat of as diseases, because of their different clinical course or morphological characteristics.

Dermatologists themselves, possibly more than any other group of specialists, complain of the chaotic state of their science. We read this in the preface of practically every standard work on dermatology published within the past twenty-five years. It is not the purpose of this paper to endeavor in any way to correct this, but it has for one of its purposes the wish to widen some present day dermatological conceptions.

Current etiological factors, such as inflammation, heredity, toxic, neuropathic, and other designations are a collection of meaningless truisms. They have little that is really dynamic or interpretative behind them.

There are good and sufficient reasons why the interpretating of skin disorders, particularly, should suffer from a paucity of dynamic concepts, but this is not the place to discuss them. This presentation deals solely with emphasizing the fact that, here in dermatology, as is true for all other disorders of the body, no real dynamic and genetic disease concept is adequate if it neglects the massive truth that the most important and undeniable fact of human existence is man's psychical inheritance. Without a study of man's thought fossils as intimately related to the health of every structure of the human body, no human pathology is complete.

What we, as physicians, have been satisfied to call pathology may be and has been practically expedient, but it is far from being a satisfactory pathology. Psychical factors, it is true, have less and less genetic significance as we move from the purely psychogenic disorders, such as hysteria, compulsion neurosis, etc., to such purely physical ills as hemorrhage from a bullet wound, or the burning of the skin by means of a fire, or rhus toxicodendron poisoning, but, nevertheless, such psychical factors, if present, should be understood in terms of energy.

So far as the skin is concerned, the present paper limits itself to an intensive study of a particular case. It is one chosen from a host of skin anomalies and disorders which have been seen by dermatologists and treated to no avail. The failure to modify the skin condition in these cases has been due largely to a fundamental failure to take into consideration factors of dynamic import, resident in the psyche of the individuals in question. These factors have been handled by the patients unconsciously through skin symbolisms. These skin symbols are the thought fossils of the individuals under consideration. The particular case we shall report is one in which the skin symbol has been termed psoriasis by dermatologists.

In the first place, it should be specifically emphasized that there is here not the least scintilla of a claim to state what psoriasis is, neither is there an attempt made to allege psoriasis to be always an hysterical conversion syndrome, but it is most emphatically held that this particular psoriatic affection in this patient is chiefly psychogenic in origin.

The analysis of patients with psoriasis who have come for other ailments may tempt us to make an inference that a large number of psoriasis lesions are undoubtedly psychogenic in origin. This larger phase of the subject will be discussed separately. The present case represents an attempt to understand the dynamics of the skin reactions in terms of the hidden psychological factors of the individual life, the patient's thought fossils, to wit, the more primitive and earlier (phylogenetically speaking) ways of accomplishing life's destiny. No amount of working on the outside of this patient's body is likely to change her mode of expression of this life desire. A reconstruction of her attitude toward life and its realities must be gained, or she will bear the marks of her failure to live up to life's opportunities.

CASE. Young woman, of twenty-six years, American born, of Austrian Jewish parentage. Her father died in 1909, of an "intestinal obstruction." The patient lived with her mother and an older sister and younger brother, both unmarried. A married brother lived a short distance away. All were healthy except the younger brother, who had a tendency to tuberculosis. The patient as a child had measles and whooping cough, otherwise was healthy. She had had no adult disease nor operation.[1]

The complaint of the patient did not begin with psoriasis, but with a pain in the back of the head, and the findings in the study of the case pointed to the fact, that psoriasis was not a thing to be treated by itself, but a symptom of a hysterical conversion, whereby the patient sought relief and an outlet for the libido with infantile desires. In the history of this patient, for a few years previous to her analysis (to be given in more detail later on), it was important to see how she had gone from one physician to another, and how all treatments advised would succeed for a while, then the complaint would suddenly become active again without apparent cause. The most careful physical examination failed to reveal organic trouble or disturbance in the daily functioning. The patient slept well, with good digestion, and no decrease of efficiency in her daily work in an office downtown.

From earliest childhood she had craved love and care in the form of some physical attention. At three years of age, her mother occasionally combed her hair a long time for purposes of cleanliness, dandruff, etc., which always gave the patient the greatest satisfaction; in her words, she just "loved it," but the mother seldom had time for a quiet hour to give to the little daughter's hair; she was very unhappy when left to herself and constantly demanded attention. The father and little brother, she said, understood her better, and tears flowed freely when she told of her family's indifference to her troubles. "They do not seem to care, neither my mother nor my sister," she exclaimed angrily and bitterly. Previous to her father's death, in 1909, during her twenty-first year, she had developed along the usual lines of jealousies and affections of a girl who forms one of a large family. She had passed through a high school with credit, and worked as a commercial stenographer for three years in the office of an importing house.

A few months after the father's death, she began a restless wandering from one physician to another, complaining of a pain in the head in the occipital region, and finally was advised to consult me, through Doctor Casamajor of this city. After working with her a few weeks, she was provisionally classified as belonging to a group of patients for whom psychanalysis was not impossible, but from whom we could expect little by its application except through great rearrangement of her character trends. Such a patient was generally not cured by psychanalytic methods. Some help might be derived, but in fact such patients did not want to get well. They received a certain satisfaction from their complaint and used it for an excuse for continuing the neurosis. These patients have been called "The little bird group." Jelliffe (*Psychoanalytic Review*, II, 1) says:

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[1] We call this a preliminary report as the case was not begun until May, when only six weeks could be given to the analysis, but it is impossible, in these few pages, to present the mass of detail which accumulated in that short time. The literature bearing on psychanalytic studies of psoriasis are very meagre. I shall consider them in a later paper. Owing to limitations of space, there are many dreams and associations which cannot be given.

"It is highly important to recognize this group with the subgroups, for there are many individuals in them, and as it is the habit of such individuals to go from doctor to doctor, they are the chief factors in carrying gossip, and in giving usually very tenuous basis for the misinterpretations which result, not directed to psychanalysis alone, but in all branches of medicine. I call them the 'little bird group.' They are all types of personalities, but most of them have little interest in anything, are somewhat introverted, but are capable of establishing a superficial rapport with great ease, and fall away quickly to seek a new attachment. One cannot escape them. Whether one treats them or not, they will say things to the next claimant for their favor which conscious, as well as unconscious, rivalry seizes upon to augment bad feeling among us. They are not infrequently superficially clever. There is an active and a passive subgroup. The women are chiefly in the former, the men in the latter. The former are more malicious in their comments on the other doctors. Many of these patients do not care to get well. They use their neurosis to keep up a type of 'peeping.' They will not see themselves, and have little courage to do any real work. When once embarked on an analytic treatment with these patients, they hang on and on, so long as their small vanities and foibles are undisturbed. When the analytic probe bears heavily on these, they pout and fall away. A strong insistence upon having 'backbone' and 'standing up to their task' causes a further flight, this time to the gastroenterologist, or the gynecologist, or what not, and the analyst wakes up to find that his work has only contributed to the fantasies, usually of an autoerotic 'infantile or adolescent type.'"

Jelliffe accordingly advised this patient to consult one of his assistants, as the superficial rapport, easily established, gave unconscious evidence of a new attachment whereby the hysterical symptoms could serve as a direct unconscious sexual gratification in the restricted sense, so that a very strong transference would result in new symptoms of the neurosis. He therefore telephoned to his assistant that he was sending a case of psoriasis for analytic study. Two weeks passed before the patient, Miss K., called her up. She then assumed an attitude of surprise and wonder, did not understand why Doctor X. should want her analyzed, did not see why he asked her to come to his assistant, did not know what he wanted, etc. It thus became evident that her resistance was not only to analysis, but to coming to a woman for analysis. Doctor Jelliffe's assistant suggested her coming on the following day for a call so that she might have the pleasure of meeting a patient in whom Doctor X. was so much interested. I now give the patient's history in the terms of my assistant, Mrs. Evans, to whom Doctor Jelliffe is indebted for parts of this record. "'Do you think he is interested in me? He does not act as though he were.' I assured her Doctor X. was very much interested, and with the promise of learning more about Doctor X.'s interest concerning her, she agreed to come on the following day, at six o'clock.

"The patient came as appointed and proved to be a tall, athletic looking young woman, with the manners of a school girl; she had books under her arm. Her hair, of light chestnut color, was wiry and crinkly, like mulatto hair. It was worn as a low pompadour, coming well down over the forehead and coiled in a loose knot at the back, low in the neck, which concealed the spots of psoriasis of the skin, on the edges of the scalp, on the forehead, and nape of the neck. She began by repeating her remarks made over the telephone, that she did not understand what Doctor X. wanted, why he asked her to see me, etc. When told it was probably because Doctor X. was interested in her and wanted her to recover her health, she declared she was well. When asked why she went to Doctor X. if she were well, the resistances were broken for a time. There were floods of tears. The question had touched a complex, a sore spot which hurt. I questioned further, if she were well, why should she seek medical advice. She began protesting very emphatically, that she was not a psoriatic, that she did not have 'regular' psoriasis, that she had no time for analysis, she was very busy with her studies, preparing to go to a western university in the fall to 'take up' her studies. Tears flowed constantly during the entire hour, but there was no sobbing, no convulsive movement of the face as in the efforts for relief in hysteria; she acted like a child with wounded feelings. It was difficult to obtain much clinical history, she changed nervously in conversation from one subject to another, saying she knew what was the matter with her and what she wanted. She evidently had learned, in her previous analysis of some of her complexes, but had concluded in her own mind they would be cured by marriage, at the same time refusing to see that those complexes prevented her marriage, as she did not attempt to attract by development of character and personality, but used her psoriasis as a means of obtaining the attention and interest of physicians, who represented to her the father. She said that she had to get away from her family, she could not live with them, and that she was going west in the fall. When asked why she used the words, 'take up' rather than the word 'study,' a fresh flow of tears came as she declared it meant the same thing, but as may be seen by her later confession how important the choice of words used by a patient may be in determining the latent meaning. In looking over the appointment book to see which hour could be given on the following day, she begged to be allowed to come in the evening, in order to get away from her family. She finally concluded to come at five o'clock, and asked that that hour be kept for her future visits.

"She came promptly the next day and stayed two hours, talking constantly, telling of her troubles at home, where no one understood her and no one cared about her psoriasis, which she said had also appeared in the pubic hair and was followed by boils. She had had them cared for by a young physician in the Y. hospital. More tears with the description of visiting the young physician, but no mention of any pain or inconvenience with the boils. She talked much of her married brother, whose wife had a month old baby, and attempted to tell of her sister's visit there, when the brother was found 'diapering' the baby. At each attempt, as she approached the climax of her story, where the sister opened the door and saw the brother arranging and folding a diaper while the baby lay exposed and crying, the patient became excited, and violently protested that her sister-in-law, the baby's mother, was not all that her brother's wife ought to be. Eight times in an hour the patient repeated the sentence: 'And as A. opened the door to go in, there was B. diapering the baby.' When asked why she repeated that eight times, she did not know she had done so, was surprised and incredulous.

"The patient described the psoriasis which existed on the scalp and in the pubic hair. Her mother told her she had had dandruff when a child of three years, and how she used to comb her hair. The patient remembered that she always felt good after she had had her hair combed and scalp rubbed, and did now, when her mother attended to her. 'I feel like a queen when I have had my hair fixed.' Tears started again when telling of her mother's indifference.

"On the next visit she brought a dream, which is given in full as the first dream not infrequently contains the chief problem causing the neurosis:[2]

"'Went to a man to ask his advice about some poetry. He said it was fine poetry and quoted a little of it. Then I left him and walked down a street. When I turned around he was considerably behind me. He had light eyes (not the very light, insipid kind) and rather olive skin. He was very big and very fat, with a great big corporation, and he had an overcoat and large Fedora hat. He looked at me rather intensely, more interested than flirty. Saw a body of water and a continuous fence, very high, like a wall. I was holding on to the fence. At one time I thought I had to hold on and slide along because there was no room to walk, also at one time I thought my feet were off the ground, I was all up in the air. I saw some docks.'"

"The analysis of the dream was slow and difficult. Her mind wandered from associations to conversation. Association of asking the man about some poetry was the doctor to whom she had been to ask about the boils she had on the vulva, a young doctor in the Y hospital. He had operated on the boils and said the case was interesting—*'said poetry was fine and quoted some of it.'* The doctor said something to her, she said, and she wished she had answered him differently (a pleased smile spread over her face); the next time she went to the hospital, he would not look at her boils (tears), he hardly looked at her, said he was too busy and left her (by projection in the dream she left him and walked down a street, leaving him behind). In the dream she described a composite man, several of the physicians she had been to, Doctor X., and a Doctor M., who, she averred, had pinched her cheeks on several occasions, and had kissed her once—with mysterious references to something not done. Then suddenly with a burst of tears came a remembrance, and she exclaimed angrily, 'Once I went to Doctor M. and he would not look at my boils either, just gave me something; I know why he would not look,' and she hinted that M. was a weak man, although he had a 'good, strong nose, such as my father had.'"

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[2] Jelliffe: Technique of Psychoanalysis. *Psychoanalytic Review*, i, ii, iii.

The composite man, in the dream, made of several physicians, wore an overcoat and a large tan Fedora hat. As is known, the latent content of the dream differs greatly from the manifest, where one must dig deep to find the symbolism. The resistance of the patient prevented direct associations for the overcoat and tan Fedora hat. The teleological meaning of the dream is apparent to any psychanalyst, and further on, the dreams will show plainly why the censor of the unconscious used a tan Fedora hat with its color corresponding to the patient's hair, its surface soft and fuzzy, its shape of an indentation between mounds to express the object, which covered the head of the man wearing an overcoat; the association of "overcoat" was "protection from rain or wet," and the symbolism of coitus appears with the polyandrous desires of the patient which frequently recurred during the analysis. The man *"looked intensely, more interested than flirty,"* she has already compared him to her father in the resemblance of the nose, and so she seeks the father in man. There is the father love and protection in the man who looks at her "more interested than flirty."

There now follows "a body of water and a continuous fence, very high, like a wall. I was holding on to the fence. At one time I thought I had to hold on and slide along it because there was no room to walk; also at one time I thought my feet were off the ground. I was all up in the air. I think I saw docks."

Water, containing the invisible life swimming in its liquid element, is a frequent symbolism of the liquid containing the seed of human life; this body of water (the father element) is separated in the dream, from the earth (the mother element) by a high fence or wall which the patient has built of resistances to efforts, necessary for self control and adjustment to life, which would destroy the wall, thus enabling the patient to marry, and the mother earth would absorb the life-giving water. The unconscious of the patient portrayed that she was clinging to this wall of infantile desires, built by resistances to adult life with its responsibilities and demands for self control, in order that she might remain in the period of childhood and adolescence. She had to *"hold on and slide along because there was no room to walk."* She cannot live at home with her family because they will not indulge and sympathize There is no ground to her reasons—*"my feet were off the ground, I was all up in the air,"* and she is indeed "all up in the air." Spell the word "docks," "Doc" slang for doctor, and a clear view of the cause of the neurosis may be revealed. Throughout the hour the patient constantly interrupted the analysis to tell of her success in attracting the various physicians she had called on to examine her psoriasis.

At the third interview, the patient brought several dreams; the first one was:

"Bouquet of flowers in the parlor. 'Why, in her married sister's house?' I thought in the dream. Oh! she lives with her married sister. She can go up (in the parlor) and look at the flowers every night. I am associating some one else's parlor with these flowers."

It is an illustration of the thought quoted, showing the establishment of a superficial rapport with great ease. The patient has no married sister. Her analyst is a married woman, a piano is in her office and flowers. The association with flowers was, "Faces sometimes look like flowers; once I had a teacher whose face was like a flower when she smiled."

The second part of the dream is: "Fair, fat, unshapely girl ran past us with two beautiful hairy dogs. Both were large and well developed, but quite a difference in size, due to difference in breed. I was sitting with mother and brother some place in the open. Called brother's attention to the dogs, but he missed them, they were running very fast. Then they turned around and came to us. She was hot and out of breath. She threw a gold medal against the fence for some one, in the hope it would stay up there. It didn't, it fell down. She was looking for some one to give it to and couldn't find him. I said, 'Is he a graduate of Columbia? If he is, you can leave it for him with some one on the grounds.' She said, 'No, Brown's.'"

There is too much material in this dream to crowd into a small space. We see again the symbolism of the hair, covering "two beautiful hairy dogs." When asked for associations, she said none came, then after a moment's pause, began telling how she had told Dr. X., her former analyst, all about Dr. M.; and when she asked his (Dr. M.'s) advice about boils on the vulva he would not look at them, but prescribed for them (which she described on second interview), so again in third interview the patient is "running hot and out of breath" with two dogs of different breed (German and American) covered with hair. She was out in the open, showing exhibitionistic desires. The climax of the running was shown when the dogs turned around and "came to us," she was hot and out of breath (orgasm). The gold medal brought associations of the scholarship which she had been working for in Y university, as she had no means with which to take up her further studies. In the dream the medal fell down (she failed to win the scholarship) and she looked for some one to give herself to. "Will it be a graduate of Columbia" to be attracted by her mental efforts? "No, Brown's." The association of Brown brought the color and not the university of that name, and showed a play upon words, which often occurs in the dream and waking hours,[3] very valuable in psychanalysis. In this instance, it shows the presence of fecal fantasies so frequently found in the patient seeking satisfaction in the infantile fantasy life. In other words, she will not give herself to one who is attracted by her finer efforts in intellectual work or to scholarship, but to one who is attracted by her childish fantasies (that is, her sexuality), and, unable to find him, she gives herself to her brother, as shown in the third part of her dream, as follows:

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[3] Freud: *Psychopathology*, etc.

"In the distance there was a large hammock. It did not look like one; it was very elevated, so high that I could not get in it. I looked around for a ladder, but there was none. I could see it was made from white canvas and light brown wood. Neither did it look as though it could be swung. Brother picked up the fallen medal. Hammock was very large, and I thought, 'How many will be able to get into it?' It had no shade and I thought how terrible it would be if the sun was strong."

The associations of "hammock" led to the menstrual napkin—to her own sex which was calling, but the demands it made were so high she could not reach them. She had surrounded herself by a high wall of resistances, as had been seen in the first dream, and in trying to overcome them by her scholarship, she failed, and fell down to her family. "There is no ladder." Her brother picked up the fallen medal. The associations with her brother touched another sore spot, and there was a flood of tears while she told of the deep understanding between herself and younger, unmarried brother. They always exchanged glances when anything was said by other members of the family. The patient constantly interrupted her associations to tell how she had attracted some man whom she had met, or knew only slightly. The one absorbing topic was her desire to attract men. The exhibitionist desires were shown again, "the hammock had no shade." She thought how terrible it would be if the sun (son) were strong, like her father. When asked why she added the words, like her father, when she had spelled the word, *s u n*, and why terrible, if the sun was strong, she said she did not know, and began talking of her psoriasis, the boils on the vulva, and then changed to her married brother, and his care for the baby.

The symbolism of the sun as the strongest creative power, needs no explanation. The other parts of the dream, which are too long to give in full, were of exhibitionism, carrying clothes on her arm, and seeking to attract the men she formerly had worked for, as stenographer.

During the third and fourth interviews, the dreams showed sexual desires of the patient: "Heavy upholstered sofa; saw Doctor B. very distinctly. He was in very high spirits and very playful; at the same time he was serious, forceful, and resistant. I had all I could do to resist. I was more insistent than he; so he did not have his way (he used to say he would never do anything against my will). I do not recall the position, but I think I felt strong hands around my arms, trying to hold me down."

There is not much veiled symbolism here, but there is hysterical contradiction in her language. In the other dreams she was with a man with light brown hair, the color of her hair, who wore a tan spring overcoat, as in a former dream.

Her exhibitionist desires now extend to the woman analyst, my assistant. "All day yesterday I thought my teacher, Miss Short, would examine her class, and last night I dreamed she was really going to do so. I was not prepared and foolishly ran downstairs to study" (going down in her memory to study herself is foolish).

The patient was very contradictory, saying she heard all that was said to her, but did not believe any of it. When told the dreams were her own unconscious thoughts showing her real desires, she declared she knew her desires and when she married they would be gratified. She complained very much of her scalp condition, and said the psoriasis was very bad. No one at home cared anything about it. She thought boils were again on the vulva, she lifted the hair from the forehead to show the bright red spots of psoriasis on the edge of the forehead, also on the nape of the neck. In her dream the analyst had ignored the desire to examine the psoriasis in the pubic hair, and attention was riveted on the next dream to see if it would express her disappointment. This she did, as shown in the fourth part of her dream, of the sixth interview.

On the sixth interview she brought dreams in five parts. The first part was as follows: "Saw a boy and girl I knew (brother and sister) married, and living in the country. I was with them in a barn. He was working, perched on some elevation. When he saw me he said, 'Hello' (calling patient by her name), jumped down, passed me, and went in a room where he intended to undress."

The analysis showed the patient was married and living with her brother in a country barn (with uncontrolled animal desires). In second part of dream, she is being received by a professor, who had a "good, strong nose" like her father, in his private office. Third part of dream showed childish fantasies. Fourth part of dream showed her resentment of analyst not examining pubic hair for the possible beginning of boils at previous interview: "In a room with Miss Short and girls of zoology class, door with two curtains pushed aside. Miss Short had her blue suit on and did not look as pretty as usual, ears seemed very small, neck was full of powder, even under the powder her skin seemed dark. She asked a question in mathematics, the three parts of a proposition or theorem, and embarrassed one of the girls who couldn't answer."

As the analyst did not use powder, it was evident the patient was thinking she did not want analysis with a woman who said embarrassing things to her. Fifth part of dream: "Mr. L. was seated at his desk. He was looking at a feather that had two parts, so that it could be worn on the upper and under side of a hat. He had two stenographers. I was one, but the feather—the nicest of two gifts—was not intended for me. As he was seated at his desk, looking at the feather, the other girl came over to me with, I think, a string of beads. I was not satisfied and didn't like them."

This dream was very important. It showed again the infantile desire of the exhibitionist, to attract attention and receive sexual gratification by means of the psoriasis. The analysis of this fifth part of her dream was: She thinks of her analysis with Doctor X., sitting at his desk, looking at her hair (upper and under side), the head and pubic hair. He would not indulge her fantasies, but sent her for analysis to his assistant, a woman, from whom she received the string of beads or something like beads. The associations of feathers and beads lead from Indians and primitive people to the Druids and mistletoe, the berries of which resemble drops of seminal fluid. In our customs the first kiss given beneath the mistletoe is symbolic of marriage, and receiving later the new life, from the life-giving fluid. The patient was not satisfied with analysis by a woman, and receiving new life from her.

As the patient was always admiring strength, there was probably some masochistic tendency. Different technic was required, stronger language, and treatment rather than the more gentle methods. She had admired the doctor who was "forceful and insistent," henceforth her analysis must be so, even though it hurt. The patient had been quiet and not interested throughout the hour, said she did not believe she would get any help from analysis, did not know whether she would continue. She only smiled and looked pleased when talking of men, saying she could attract them. She said she was going to hunt up a new doctor she had heard of, one who had a secret way of treating psoriasis and she was going to see him, perhaps tomorrow. With a quick jerking up of the reins, she was forbidden to see any physician for her psoriasis, and told, in very forcible language, what a disgusting exhibition she made of herself when asking doctors to examine the vulva for boils. She was reminded that the genitals were never beautiful and when diseased they were loathsome. How could a mind filled with fecal fantasies and anal eroticism (shown by the "gold medal" and many other symbols) create a fine personality? She must overcome the infantile fixation of the libido on herself, she must firmly stand and face herself, and look directly into the depths of her reasons for going from one doctor to another, trying to arouse the father in every physician by asking for his care, protection, and interest in herself; but also seeking the virile man. To seek both the father, or brother, and lover in one man was incestuous.

The outburst of strong words on the patient did not hurt, but, on the contrary, resulted in a childlike submissive attitude of the patient, who promised to obey implicitly and not go again to a physician during her analysis, no matter how strong her temptations to do so. It was necessary to make her feel within herself, that it was impossible to see a physician for a month in order to watch the effect on the psoriasis. The firmer grasp of the analysis broke her resistance for a while.

She talked of her troubles at home and her envious feelings as she watched her sister, when reading, let down her hair and sit for hours running her fingers through her hair, gently rubbing the scalp. And then again, how her sister holds her head under the warm water faucet while the water trickles over it. The patient tearfully declared how she would like to do the same, and how she almost hated her sister. It was pointed out to the patient that this was an unconscious masturbatory practice, and that the most primitive people known have discovered the ill effects resulting from the frequent use of the erogenous zones of childhood, in rubbing their scalps after puberty, at which time they undergo certain rites of initiation, lasting from two to three months; and then they are forbidden to scratch the skin or scalp with their hands.[4]

On the next visit she brought no dream, and again was indifferent to analysis. The former dream of marriage to her brother was reviewed. The Electra and Œdipus complexes were then discussed. The Greek play of Œdipus was at that time on the stage of a New York theatre, vividly portrayed, and one felt intensely the terrible mental anguish of Œdipus, when he discovered he had married his mother, the incest horror of which drove him to stab out his eyes that he might not see the results of incest in his two daughters, by his mother; also the mother's suicide, after the terrible realization of the sickening incest with her son and their two children. And again the patient's resistances broke down. Unwilling to face herself, with her libido fast to father and brother, she runs from man to man, looking not for *the man*, but for *the father*. The men of her dreams are married men. Unable to attract them with her fine physique and mental attainments and personality, she finds a sympathetic attitude comes from physicians when showing them her psoriasis; thus has arisen the fascination of the visits to physicians. In fact, she not only finds a fascination in those visits, but it is the nearest approach she can find to the satisfaction she craves for the instincts of her strong psychic makeup.

On the next visit she brought several dreams: She was on an open car and saw a man carrying a cane. She was embracing a man very tightly around the neck, to whisper something in his ear—a sort of confession. Then she was in a large kitchen where there were two classes of people, the maids and a better class; the maids were throwing away frankfurters and creamed potatoes, which she could not understand, as they looked very appetizing; the patient was in her nightdress, the kitchen seemed to be in Eighty-eighth Street; they all felt embarrassed because her sister went to the sink to get something, or for something.

In the analysis of those dreams the man carrying a cane was her father, who carried a cane; once he hit her with it. Embracing a man and whispering to a man, brought associations of going to a doctor and asking him to look and see if she was not carrying psoriasis in her ear, and he refused to treat her ear unless he could also treat her scalp; that, she refused, saying only Doctor M. could do that; associations of kitchen, cooking, preparation for the satisfaction of desires and needs of the inner self; the lower nature was the maids who live by attending to the wants of the animal nature: frankfurters a fecal fantasy; creamed potatoes led to associations of the potatoes resembling the testicle, and the creamed potato, the seminal fluid; the sink, a urinal. The patient constantly interrupted the analysis by speaking of a man she had met and saying, "I think there was some attraction there." It was necessary to remind her of her exhibitionist desires, by always insisting upon the examination of her psoriasis when she would not use the remedies prescribed, only those of Doctor M., who she declared was attracted by her and attempted familiarities. She was told of the childishness of wishing to show her body, which did not interest, but, as she had seen with Doctor M., and the young physician at the hospital, produced disgust.

On the following visit there was no dream. The hour was passed in explaining the regression of the libido which she must endeavor to bring up again, to overcome the degradation of the infantile fantasies. The libido, like all of nature's forces, must be under one's control or it becomes one's master, driving the individual along the line of least control, and destroys. A week had passed since the patient had been forbidden to visit a physician for her psoriasis, and it was interesting to see that the bright red color of the spots had changed to a dull pink.

The analysis of the dreams of the next visit showed the patient seeking sexual satisfaction and the father. She saw her wall of resistance, but would not stop to think about them ("was in Wall Street, but was in a hurry"). The father (Mr. K., her father's friend) is willing to give her the satisfaction she seeks, but she remembers that Mr. K. killed himself, which is the dream by projection—the father must be killed, for if he helps her, it will kill her. In another dream, which the patient had written out and handed me, saying, "Here is another hair dream," she sits in the front row of a class (exhibitionist). Each of the class were given a piece of paper and told how to use it. She did not obey and wanted another piece, but could not get it. The teacher said '8 off'; the figure 8 brought associations of the buttocks, showing another fecal fantasy, using toilette paper. In the latter part of the dream was "a dirty hat with feathers on it. I put it on my head, then, under the desk. Doctor X., in the 'middle of the whole thing,' put it on. It was shapeless and dirty; then he started to eat an apple, this, while he was writing on the board." Associations of "dirty hat" was the patient's hair, which needed cleaning and brushing; eating an apple led to associations of the Biblical narrative, thus it may be seen that she wished to have Doctor X. put on her hair (coitus) before eating of the fruit of knowledge (her analysis), while he wrote down her dreams and their associations.

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[4] Spencer and Gillen: *Northern Tribes of Central Australia.*

The next visit brought a dream of: "A number of hats, among them I saw a hat with a white satin band and bow." Going over the associations of hat brought, "covering, something I need very much, a sore spot with me (the need of a hat), associations of white satin—bridal; white satin which she had taken from the lining of a coat her father had given her; the coat was red, with skirt of same material and color. She had been very fond of the suit."

Pointed out to the patient was the close relationship between her association of hat as a sore spot with her, and her psoriasis, and the bridal association with her father. She talked more of her home life, how she likes always to have her clothes in sight, so that she remembers she has them to wear. She likes to have them lying on the piano and on the chairs. If her clothes were put away she would go on wearing the same ones forever. Her clothes, lying around on the piano and chairs, are closely connected with her exhibitionist desires and are infantile.

The psoriasis is now very dim, could not be seen in the patient's hair.

The next dream of the following visit was: "I saw a girl, about thirteen or fourteen years old. She wore a bright red ribbon in the hair, or I suggested her getting one, and she wore a bright red plaited skirt, short."

The patient said she had had another hair dream, and declared she was very fond of a red dress, but that no decent man would wear a red tie. Asked what was indecent about red, she did not know, but to her red meant danger and excitement. It was pointed out to her that excitement caused the red spots of psoriasis. The analysis of her dream showed further desire of the exhibitionist in the red in her hair and around the body. The patient told of her psoriatic condition being much better, and showed the spots without color. For the first time, she talked freely of her resistance to analysis, because she did not want to work within herself, to get over her wall where she would have to face the world, but hid behind this wall, away from people, to stay and indulge all her infantile fantasies. She said she knew there was something wrong with her, because she had wasted all day Saturday; she had seen a man with her father's figure, who was in the department of ——— in the university. She could not get him out of her mind, pictured herself married to this man. She said, further, she had plenty of time for her analysis, but was always unwilling to write down her dreams, and did not want them analyzed because she did not want to work and overcome her troubles at home, by seeing within herself that she herself was the cause of them; she had no sense of responsibility, she wanted to get away from her family, and hoped when she went west to college she would marry before her first year was up, and then she thought her neurosis would be cured. It was explained to her that her complexes were those which prevented a happy married life. The Œdipus complex, with the libido fast to the father, made it impossible to give real love to any man; it made prostitutes, but not real wives and mothers.

In the next dream, "the doctors were doing something to her knee, putting something in or taking something out," she said. Associations, knee cap, water on the knee, under the knee cap. Pointed out that dream was again of something to cover the head—water on the knee under the kneecap was sexual association with doctors. The dream on the next visit was: "My sister and brother were fighting violently. Sister was furious, especially when she saw that her hand was bleeding. She had on her glove, but the blood came through. Then she walked over to her brother and hit him on the back with a strap. He cried aloud and writhed with pain. What surprised me so was that mother was so passive about the whole thing."

Here occurs the very first dream in which the patient is fighting to kill her complex, but even then she cannot face it, but hits from the back. She has at last overcome some of her resistances, and sees how her complexes have taken away her power, disabled her with her right hand bleeding. But the strength of climbing over her wall of resistance had not come from her; the analysis had held her in forbidding visits to physicians. While leaning on another's strength (the mother, her analysis) she had faced her complex and saw her wounded hand; what she had clung to, or held for support, had hurt her. She talked much of her hatred and jealousy of her sister, said that was what kept her psoriasis active, and kept her in a constant nervous condition. She thought her mother cared more for her sister than for her.

The next three appointments the patient did not keep, but telephoned that she was taking her examinations at the university. This date brought her analysis to a partial close. She came to say goodbye, and wept nearly all the time. When she had been forbidden going to a physician two weeks previously, she had disobeyed and taken her mother to a physician for treatment for constipation, much to the disgust of the old lady, who refused; the patient persisted; the mother went once and would not go again. "She did not appreciate it one bit," wept the patient, who could not understand why the mother did not consider a visit to a physician with the same satisfaction as the patient did. Oil enemas were prescribed for the mother; she refused to use them; the patient attempted to give them to her mother, but had to give it up. The patient again said that in going to a medical college she hoped some one would marry her before she got as far as surgery. Wasn't even sure she could go into the dissecting room; sure she would faint away. Admitted she did not care anything about the study of medicine, but wanted to get away from her family. We explained that was probably true, but it was also true that she was taking the surest way of keeping herself surrounded with doctors. The psoriasis was still quiet, no color nor scales being present.

We have fortunately been given the clinical history, taken by the first physician she applied to after her father's death, and the histories of several other physicians, and skin specialists. The first history taken gives the physical condition good, appetite good, sleeps well, bowels regular; the complaint is a "pain in the back of the head." The same history reads: "The patient, in June, 1910, struck her head against a bedpost in her sleep, getting a slight bruise, was not inconvenienced by it and her head (occiput) pained only 'as a bruise would.' Later, the pain became worse and was constant." The history goes on to state that the physician gave her some ointment and suggested that she see a nerve specialist. This she did not do, as she said the ointment helped her and the pain gradually subsided after two months. "She was well until three weeks ago, when it returned with increased severity, getting rapidly worse. She stated that she has 'been incapacitated for the past two weeks,' but in spite of this, she has not missed one day of her work. She had been studying at night to enter college, but now feels unable to do her studying. She works all day, with no decrease of efficiency. Her hair is coarse and rather dry. Skin, however, feels normal and there are no other signs of dysthyroidism." This is the first mention of her hair, but there is no psoriasis yet. Notice the hysterical contradiction, that she has been incapacitated for the past two weeks, and at the same time, she says she works with no decrease of efficiency.

We begin to see, here, the regression of the libido from her work and environment, and later the lost libido strives to effect a transference to the young, unmarried brother. He, however, does not prove a sufficient outlet, perhaps from his own efforts to free himself from the family. He loses his health and has a severe illness in a hospital; she has no one to depend upon and reverts to the past, where the father was the ideal, and finally constructs a sexual exhibitionistic substitute—a resymbolization in the form of red spots on the skin—psoriasis.

64 WEST FIFTY-SIXTH STREET.

FOCAL MOUTH INFECTIONS, THEIR SYSTEMIC EFFECTS, AND TREATMENT.*

By ROBERT H. BABCOCK, M. D.,
Chicago.

It is not intended in this paper to deal exhaustively with this important subject, but to point out the close relationship which exists between chronic, often hidden, alveolar abscesses and certain painful, even serious states connected with remote structures or organs. In an empirical way clinicians recognized the connection between systemic disturbances and diseased processes in the gums or about the roots of the teeth, as long as twenty-five years ago, but the real significance of mouth infections has been made apparent only within the past few years through the bacteriological studies and experiments of laboratory workers mainly in Chicago, A. M. Moody, E. C. Rosenow, D. J. Davis, the clinician, Frank Billings, the surgical dentist, T. L. Gilmer, and others. Moreover, the development of röntgenology has made possible the exact recognition of hidden alveolar infections which previously could only be surmised or detected by extractions of the teeth. Finally, the investigations of bacteriologists have proved the existence of pathogenic organisms in such foci and of them chiefly streptococci, in particular Streptococcus viridans. Other bacteria are sometimes associated, as the anaerobic fusiform bacillus, or in the more acute alveolar abscesses, Streptococcus hæmolyticus, but in chronic blind abscesses it is Streptococcus viridans that is responsible for the constitutional symptoms.

The mere existence of this organism in the focus would probably not be a menace to health, but in the light of animal experimentation by Rosenow and others, it is apparent that the passage of the streptococcus from the abscess into the blood stream and its lodgment in distant parts is a source of positive danger to the individual aside from pain or invalidism. That obstinate neuritis, arthritis deformans, nephritis, muscular rheumatism, and general weakness may result from these alveolar abscesses is well known, but in this paper it is desired to emphasize the connection existing between myocardial incompetence and the kind of mouth infections of which mention has just been made.

That a streptococcus viridans endocarditis may result from the combination of a valvular lesion and an alveolar abscess may be reasonably assumed, although no such case has come to my notice, for, as we know, any focus harboring this streptococcus is a menace to the individual who has had a rheumatic endocarditis. But I desire in particular to direct attention to the possibility of invasion of the heart muscle by this organism, a possibility no more remote in the human subject than in the rabbit used in experimentation. Thus A. M. Moody, after injecting young healthy rabbits with diluted pus obtained from the teeth of one of the patients soon to be mentioned, found at the end of eight days in two, and thirteen days in two others, distinct evidence of the presence of streptococci in the myocardium as well as suppurative arthritis of the knees in some of the animals, subcapsular hemorrhages in the kidneys, and also hemorrhages in the maxillary and other muscles and in the wall of the stomach. Such experimental results shed light on the symptomatology of patients whose mouths show hidden abscesses about the roots of the teeth. Clinical corroboration of such experimental findings appears in the following cases.

CASE I. Mrs. T., aged fifty-two years, seen in May, 1914, stated that she had been an invalid for two years because of general asthenia and weakness of the heart, for which her physician in Canada had kept her confined to the house, some of the time in bed. Ten days prior to consulting me, she had suffered such lameness of the muscles of the extremities and shoulders as to render her incapable of rising or turning in bed unaided. Examination of the heart disclosed no murmurs, but feebleness of tones, a moderate increase of dullness to left, with a systolic blood pressure of 130 mm. Hg. Her temperature was 99.2° F., and her leucocytes numbered about 17,000. The urine was negative. Her anamnesis was unusually free from acute infections, but the existence of one loose tooth in the lower jaw and of one crowned tooth led to a Röntgen ray examination, which disclosed a large alveolar abscess. Three teeth were extracted and the abscess cavity was evacuated of a pus so foul smelling that the nurse was obliged to leave the room; yet no suspicion of the presence of this focus had ever been entertained. Cultures showed Streptococcus viridans and an anaerobic fusiform bacillus. Under autogenous vaccines and other treatment improvement proceeded very slowly, owing probably to the existence of still another abscess in the upper jaw which was not discovered until several months later. This experience convinced me that films should be made of all the teeth and not merely of such as might be suspected. At last report this lady, though still somewhat lame, was going about quite free from cardiac symptoms.

CASE II. Man, thirty-one years old, who because of anginoid chest pain had been told he had angina pectoris due to coronary sclerosis, the pain being so intense, he asserted, as to compel him to desist from walking. There was no history of acute infections, and two Wassermanns had been reported negative. Examination disclosed no murmurs, but moderate dilatation of the heart to the left, feeble tones, and a marked fall of systolic pressure after hopping in my office. Because of two suspected teeth, he was referred to a röntgenologist, with the added instruction to fluoroscope the heart before and after stair climbing. The x ray examination disclosed an alveolar abscess, and a marked dilatation instead of contraction of the heart after exercise. The extraction of the diseased teeth, the employment of autogenous vaccines made from the pus, treatment of the heart by rest and digitalis at length resulted in compensatory hypertrophy, as shown by a satisfactory response to exercise, and the almost complete disappearance of pain, so that the man could walk with slight discomfort. In fact, his pain now seemed restricted to one hyperalgesic spot directly above the heart, where firm pressure caused considerable pain. The result substantiated my opinion that the anginoid pain was not due to coronary sclerosis, but was a myalgia or manifestation of myositis, the movement of the shoulder and pectoral muscles incident to walking causing aggravation of the pain and bringing the man to a standstill. Muscular tenderness persisted, but no longer suggested coronary angina.

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*Read before the American Therapeutic Society, at Detroit, June 9, 1916.

CASE III. Physician of fifty-two years, whose history, if detailed, would be found not only interesting, but highly instructive. The main facts were as follows: Tonsillitis, acute articular rheumatism, and complete freedom from such joint attacks since a tonsillectomy six years ago; a chronic arthritis of the sacroiliac synchondrosis necessitating the persistent wearing of a back support; two attacks of acute dilatation of the heart, the last one about two years ago followed by a low blood pressure and urinary findings suggesting nephritis; evidence in December, 1915, of moderate myocardial incompetence, with slight enlargement to the left, considerable general asthenia, and moderate stiffness and lameness of the muscles and joints. Convinced that some infective focus still existed, and that if it could be discovered and removed the heart could be restored to a fair degree of working efficiency, I instituted a thorough examination of the teeth. The physician had always suspected these of being more diseased than was apparent, or would be admitted by his home dentists or eight of his medical friends whom he had consulted. Films were made and these, when submitted to Dr. Thomas L. Gilmer, disclosed such a truly shocking condition as to necessitate the removal of all but four or five teeth in the lower jaw. Incidentally it may be stated that a well known Boston dentist refused to extract the teeth on the ground that they were not causing pain or fever. The pus in this case yielded Streptococcus viridans, and when injected into rabbits produced the topical lesions mentioned above.

Coincidently with the work on his teeth this physician underwent treatment addressed to a restoration of cardiac efficiency with the result that he now is free from symptoms referable to his heart, and has resumed his practice, though in a less strenuous manner than before. Also he is gradually losing his muscular rheumatism and his back is far less painful. Without ignoring the possible influence of his two attacks of acute articular rheumatism, I believe the mouth infection played a distinct role in this man's ill health, and that its removal was essential if he were to regain his ability to work.

Finally, without citing cases, I may state that in several patients alveolar abscesses have been found to be the cause of spasmodic asthma. One lady attributes her freedom from asthma to the removal of badly infected teeth followed by the use of autogenous vaccines made from the pus. Certainly it is quite reasonable to conclude that an alveolar abscess may be the focus from which is absorbed the foreign bacterial protein causing the anaphylactic phenomenon known as spasmodic asthma.

In conclusion, it may be stated that the successful therapeutics of cases such as are here outlined must suppose the total eradication of the infective focus by a surgical dentist, and in many cases the employment of vaccines made from the contents of the cavity. This, it is believed, is essential to the successful employment of other measures addressed to whatever organic or structural effects may have been caused by the bacteria in the diseased focus.

77 EAST WASHINGTON STREET.

Observations on the Opsonic Index.—Wolf (*Journal of Infectious Diseases*, October, 1916), although not making dogmatic statements, finds that the opsonins can be increased by injections of the proper bacterial vaccines, and that this increase is associated with a favorable influence upon the infection.

TRADITIONAL FALLACIES ABOUT TUBERCULOSIS.*

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Careful students of science often complain about the various fallacies which encumber learned publications, and textbooks on logic invariably devote pages to explanations of the nature of fallacious reasoning. Though based on painstaking and conscientious scientific research, applied medicine, including diagnosis, prophylaxis, and treatment of disease, very frequently meets with stumbling blocks because of assumptions made by some writers, past or present, leading to fallacies which are very difficult to eradicate. I believe I am not exaggerating when I state that medical literature, more than the literature of any other subject which lays claim to scientific accuracy, is apt to contain fallacies based on the assumption that, because of concomitance of time and place, two or more phenomena are caused by the same forces. Indeed, I would not be astonished to read in a medical paper or book that, inasmuch as during the past fifteen years motor cars have been increasing in number, and concomitantly poliomyelitis has been prevalent, there must be a causal relation between the two phenomena.

Tuberculosis, being the most widespread of serious diseases, is burdened with many more fallacies of this character than any other morbid process, perhaps because it has been treated more as a social malady than as a pathological phenomenon, and the social workers have taken a hand in the attempts at its control. As long as the fallacies are mere individual assumptions and opinions for discussion, they are, as a rule, harmless; they may stimulate research or contribute to the gayety of nations. In this particular domain, however, the numerous fallacies have wrought great harm to both patients and profession, and I believe that an enumeration and discussion of some of the more important of them may prove instructive.

Infection and disease. It has been noted from time immemorial that tuberculosis is apt to occur in several members of the same family. It was also noted that the disease at times appears in persons who have come in contact with consumptives. It was but natural that the inference should be drawn that it was transmitted from the sick to the well In former times numerous cases have been published in detail, showing that a consumptive infected several persons living with him under one roof. When, in 1865, Villemain proved conclusively that inoculation of tuberculous tissue into healthy animals produces tuberculous lesions, the proof was complete. And when, in 1881, Koch demonstrated the microorganism invariably found in tuberculous tissues, and that pure cultures of this bacillus may produce tuberculous lesions when inoculated, ingested, or inhaled, the proof was final.

In fact, soon after the discovery of the tubercle bacillus, great hopes were entertained that, knowing the biology of this microorganism, we should be able to eradicate the disease forever. Considering that prophylaxis aims mainly at the prevention of *infection,* it appears that it has utterly failed in its aims. All energies have been directed toward killing the bacilli outside the human body, or preventing their entry into the body; yet the tuberculin test, as well as careful dissection of the human body after death, have shown that over ninety per cent. of human beings in large cities have been infected during their lifetime. Indeed, it is difficult to find a person who does not react to tuberculin, or in whom active, latent, or healed tuberculous lesions cannot be found when a careful autopsy is made.

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*Read before the Eastern Medical Society, October 13, 1916.

When we speak of tuberculosis, we must always draw a sharp line of distinction between *infection* with tubercle bacilli, and *disease* which disables the victim, requires careful treatment, and perhaps kills.

It is a fact not generally known that not every infection with tubercle bacilli is followed by that train of symptoms which we call tuberculous disease in its various forms; it seems that the vast majority of infected subjects continue in good or fair health, and only exceptionally become sick, or die as a result of the infection. If this were not so, over ninety per cent. of humanity would be sick, and succumb to the various forms of tuberculosis. It appears that infection alone is, as a rule, powerless to produce consumption; there must also be an organism which is peculiarly predisposed; though we are still in the dark as to the nature of this predisposition.

Infection and reinfection. The most important fallacy about tuberculous infection is the belief that a person may be infected several times with the virus of this disease. In fact, the warnings given to consumptives are that they must not expectorate indiscriminately because they are likely to infect others, and they are explicitly told that they may reinfect themselves, and thus acquire new lesions in parts of the lungs hitherto unaffected. Tuberculosis is thus considered different from other infections, which can be acquired only once.

Recent research has shown, however, that tuberculosis is no exception to the rule in pathology, that one attack of a specific disease immunizes against further and renewed infection with the same virus. In fact, experimentally it is difficult or even impossible to reinfect a tuberculous animal with tubercle bacilli. That this apparently holds good as regards spontaneous tuberculosis in human beings, is clearly shown by certain facts proving that no person is ever infected with tubercle bacilli more than once. I shall cite some of them, considering the immense bearings they have on our attempts at the prevention of this disease.

We have good proof that inoculation of tubercle bacilli into the body of a human being hitherto free from this virus, is deadly. This is best seen in infants, who, when inoculated with tubercle bacilli, almost invariably succumb to acute general tuberculosis. It is also seen in adults who have never come in contact with tubercle bacilli, savage tribes, for example; they succumb to acute tuberculosis when infected. On the other hand, city dwellers, who come into daily contact with persons affected with this disease, and undoubtedly inhale the bacilli, which are ubiquitous, are spared and only exceptionally manifest active tuberculous disease. Similarly, bacteriologists and pathologists who frequently handle tuberculous sputum or tissues, are very rarely if ever infected. When inoculated accidentally, they are troubled with the so called "pathologist's warts," which are innocuous. Indeed, Klemperer and Baumgarten inoculated subjects with tubercle bacilli and no generalized tuberculosis was observed, but only local lesions akin to those we have just mentioned as pathologist's warts.

The explanation of this paradox in pathology is found in the fact, already mentioned, that nearly all human beings living in civilized countries have been infected with tubercle bacilli before reaching adolescence. In some, tuberculous disease has developed, but most have remained healthy and, in addition, have thus been immunized against reinfection. They are therefore safe when coming in contact with tubercle bacilli, which they cannot avoid, since they have not been eradicated by the strenuous campaign which has been waged against them.

The safety of adults as regards reinfection with tubercle bacilli is proved by the following uncontrovertible facts: The hospital staffs in institutions harboring tuberculous patients do not suffer from tuberculosis more than others. Even laryngologists, who are often coughed at while examining patients, are safe, as has been proved by carefully collected statistics on the subject. Of course, we find charming fairy tales in books and papers on tuberculosis about doctors, nurses, and others who have been infected through contact with patients; but close examination shows conclusively that none of them can be substantiated. Behring investigated a widely circulated story by an American physician, to the effect that several people in a city in the middle west were infected by reading books from a public library, but found it to be groundless. Most of the stories of hospital infection are of similar untrustworthiness.

It may be suggested that the rarity of tuberculous disease among hospital workers is due to the prophylactic measures which have been taken in these institutions during the past thirty years; but investigations have shown that in hospitals in which no precautions are taken in the disposal of sputum, and also in the hospitals during the first half of the nineteenth century, no excessive morbidity or mortality from tuberculosis was observed.

There is even better proof that adults are safe against infection with tubercle bacilli, though they are very liable to acquire the disease due to this microorganism. We are well aware of the ravages wrought by syphilis and gonorrhea among consorts when one contracts either of these infections. There is no doubt that over seventy-five per cent. of wives whose husbands suffer gonorrheal infection, contract the disease through intercourse; hardly any wife, unless immunized by a previous infection, escapes the ravages of syphilis when she comes into intimate contact with a luetic husband. We know that tuberculosis is even more easily transmitted than syphilis—the latter may be considered an inoculable disease—that it is as easily transmitted as is measles. Yet it is a fact than conjugal phthisis, consumption in both husband and wife, is exceedingly rare.

I feel that many of my readers are rather startled by this statement. All have read in books and papers of the dangers of tuberculous infection, and carefully recorded cases in which tuberculous husbands infected their wives; all may have read about a husband who infected one wife; she died, and the villain married again, infecting his second spouse, and after she perished, he repeated his nefarious marital activities several times until Providence removed this incubator of tubercle bacilli, thus saving womanhood. There is no doubt that such isolated cases may be cited. Any one may have seen one or more cases in which both husband and wife suffered from consumption; but some have also seen rare cases of cancer, diabetes, appendicitis, etc., simultaneous or consecutive in husband and wife. I have recently seen a fracture of the femur in an old man, and three months later, his wife also sustained such an injury. To attribute such coincidences to infection is a fallacy due to ignorance of the facts.

In my long experience as physician for the United Hebrew Charities in this city I have never observed a case of tuberculosis transmitted from one consort to the other. This is despite the fact that our applicants are dependent, poor, underfed, and live as overcrowded as human beings in this city can. Most of the couples sleep in one bed, thus showing that they come into intimate contact, yet they do not transmit the disease to their consorts. They have children while sick with tuberculosis, and while most of their progeny become infected, the unaffected consort remains so indefinitely. J. Petruschky has recently named "mother immunity," a phenomenon which has been observed for generations by physicians. I refer to the frequently occurring cases in which a healthy woman marries a tuberculous man and has by him children that succumb to tuberculosis one after another, yet she is spared and remains in good health.

FALLACIES IN PROPHYLAXIS.

What is the explanation of these paradoxes? In former times such facts were cited as proof against the contention that tuberculosis is transmissible; but in the light of recent research we can no more cite cases in which the healthy consort of a tuberculous mate escapes infection as a proof against the infectiousness of tuberculosis, than we can state that because a person covered with pock marks is not infected by contact with a smallpox patient, this disease is not infectious.

We have already stated that nearly all persons living in civilized communities are infected with tubercle bacilli during childhood; we have also mentioned that infection with tubercle confers an immunity against endogenic and exogenic reinfection with the same virus. It is therefore clear that adults cannot be infected, and in our attempts at prevention of tuberculous disease in adults we need not employ the strenuous measures which have been taken by the authorities, as well as by the members of our profession during recent years.

When I speak of our modern methods of prophylaxis, I know that I am treading on dangerous ground. The work of the health authorities has become a fetich, and any one who suggests that some of the methods are fallacious is in the same danger as when he attempts to discuss critically some religious dogma. Indeed, before I proceed I know that many readers think of the great results attained by the campaign against tuberculosis, and feel satisfied that if the health department erred, it did so on the side of laxity. Indeed, it has been repeatedly stated that if the municipal, State, and Federal governments spent several millions a year along the lines laid down by certain savants, this country would be free from tuberculosis within ten or fifteen years.

The fallacy of these assumptions is clear when we consider that of late we have been spending more than twenty millions a year in preventive work, for hospitals, sanatoriums, and dispensaries, as well as for literature and salaries of those engaged in the vigorous "campaign" against the White Plague, and the disease is still with us, presenting the same problems as before the campaign was inaugurated. Those who want to point to the declining mortality as proof of the utility of the campaign should bear in mind the following facts: The mortality began to decline long before the fight was begun. Statistical facts from the registrar's data of England, and many States in this country prove this conclusively. Moreover, the decline has been observed in countries where no campaign has been waged. In Ireland, France, Italy, Norway, etc., where measures have been taken to prevent the disease, the mortality has not at all declined. In Belgium it has declined, while in France it has not.

Considering that the campaign has not produced the results which its votaries have ascribed to it, it is but just to ask whether it should be continued. Inasmuch as adults cannot be infected with tubercle bacilli, it is problematical whether the vigorous "follow up" system practised by the health department in this city is justified. If a tuberculous husband cannot infect his wife we may assuredly conclude that a tuberculous workman cannot infect his neighbor in the factory. It is therefore a vain, and often a cruel procedure to exclude tuberculous workmen from factories, as has been done by the authorities and the labor unions of this city.

The methods of those engaged in the campaign against tuberculosis are often not only fallacious, but also dangerous to individual patients as well as to the community. It is a great injustice to exclude from human intercourse and activities one whose sputum has once shown tubercle bacilli, although he feels healthy and well able to work; to "follow him up," to send after him inspectors, doctors, nurses, relief workers, charity investigators, and others who visit not only his home, but also his place of employment, and warn all those who may come in contact with him. The same stupid bureaucrats teach that a consumptive who is careful, i. e., who disposes properly of his sputum, is not at all dangerous even to infants and children, which is decidedly fallacious. The truth is, that it is very dangerous for an infant to remain in the same room with a person suffering from active tuberculosis, no matter how careful he may be.

FALLACY OF HEREDITY.

One of the most widespread fallacies with which many physicians are obsessed, is that the disease is apt to run an acute or malignant course when it attacks a subject derived from tuberculous stock, whose parents or grandparents have suffered from, or succumbed to the disease. Recent careful statistical investigations have shown clearly that there is no foundation for this belief. In fact, it has been demonstrated that patients from tuberculous stock, when attacked by tuberculosis, are apt to suffer from the chronic type of the disease which runs a mild course, while those whose parents were free from tuberculosis, and have lived in an environment free from tubercle bacilli, are more likely to suffer from the acute or subacute forms of the disease. This is best seen in young men or women in the large cities hailing from rural districts. When attacked by tuberculosis they succumb, as a rule, more or less quickly.

A similar fallacy is entertained about subjects who have suffered from scrofula, or tuberculosis of the glands, bones, and joints during childhood. They are always warned that the sword of Damocles hangs over their heads, that they are particularly likely to have phthisis, and I know of many who have been so terrorized that they are in constant fear of consumption. The fact is that just this class is relatively immune. Just think, how rare it is to see a consumptive who shows scars which are the result of glandular, osseous, or articular tuberculosis during childhood.

FALLACIES IN DIAGNOSIS.

There is one fallacy which is responsible for a considerable part of the distrust of the laity for the medical profession. I refer to the belief that if tuberculosis was invariably detected in its incipient stage, all patients would be cured. Most patients in the advanced stages of the disease blame their first doctor for all their troubles, and substantiate their grievances by the literature published by the societies for the prevention of tuberculosis in which it is distinctly and unequivocally stated that to cure the disease, it must be detected in its incipiency, nay, in the so called "pretuberculous stage," which can be done by the proper physician in all cases.

It is a clinical fact, however, that these propositions are not altogether true. I do not know of a single physician who, after applying all the scientific and empirical tests at the command of medical men, can tell who is likely to acquire tuberculous disease, on the one hand, and who has sufficient resisting power to carry him through life without this malady on the other. I say this, knowing well that medical men are apt to tell some patients that they are "strongly predisposed to lung disease," and that unless vigorous measures are taken in time, there may be good reasons for regrets.

Moreover, it is impossible to detect the so called "pretuberculous stage," and in many cases it is more than difficult to detect active disease in its incipient stage. If we adopt the methods of diagnosis pursued by admitting physicians in sanatoriums, and consider every person who coughs, loses flesh, etc., and shows no other cause for such symptoms, suffering from a case of incipient tuberculosis, we shall detect thousands suitable for treatment; and we should fill sanatoriums with even larger numbers of patients who do not belong there. We must remember, however, that a diagnosis of tuberculosis should be made only when there are uncontrovertible proofs of the existence of active disease, and it is not always possible to discover these during the first visit of the patient. Indeed, in many cases it is necessary to keep the patient under observation for weeks before a diagnosis is arrived at.

But even if we could diagnose all cases in their incipiency, i. e., as soon as the patient begins ailing, we should not save many more than we do at present. Many cases, called acute, are advanced as soon as treatment is begun, and, no matter what is done for them, they perish within a short time. Others are subacute, and all treatment in vogue at present does not help them—they pursue a more or less rapid course and end fatally sooner or later; even sanatoriums, specific, dietetic, and climatic treatment fail to cure them. A very large proportion is of the chronic type. The patients last for years, and suffer from several acute or subacute exacerbations, interspersed with several periods of "recovery." They are admitted to sanatoriums several times, each time as presenting incipient or moderately advanced cases, and no sooner are they discharged, as cured or with arrested disease, than they suffer relapse and have to be readmitted.

That it is not promptitude of recognition and the application of treatment which are always responsible for the cure of pulmonary tuberculosis, is clear when we bear in mind that autopsies show conclusively that more people recover from tuberculosis without treatment than suffer and perish from the disease. The belief that promptness in recognition and treatment of tuberculosis will eradicate the disease, is fallacious, and the sooner we realize this fact, the better for the patients and the profession.

FALLACIES OF PHYSICAL DIAGNOSIS.

A fallacy difficult to eradicate is that to diagnose tuberculosis in its incipient stage the physician must be a virtuoso in physical diagnosis. This is one of the main reasons why so many cases are not recognized in time. But as a matter of fact the diagnosis of early phthisis is made by considering first the constitutional symptoms; the signs elicited by percussion and auscultation only localize the lesion. Physical examination of the chest alone is usually inconclusive unless there are constitutional symptoms, such as cough, fever, night sweats, anorexia, tachycardia, etc. Without these symptoms, there may be signs of airless areas in one or both pulmonary apices shown distinctly by physical signs or the radiogram, yet the patient is not afflicted with an active tuberculosis requiring prolonged and costly treatment. In fact, I may say that, in attempting to diagnose early phthisis, if I had the choice between symptoms and signs, i. e., between inquiring into, and observing the constitutional symptoms on the one hand, and making a physical examination, and a radiographic plate of the chest, on the other, I should feel much safer when considering the data supplied by the former rather than those by the latter. This is a fact which general practitioners should bear in mind, because every physician is competent to study the constitutional symptoms of early phthisis, even though he may have to ask a colleague to localize the lesion.

TUBERCULOSIS IN CHILDREN.

Because it has been found that nearly all infections with tubercle bacilli take place during childhood, those engaged in the campaign for the control of the disease have maintained that if the disease is to be prevented at all, children are to be protected first. But here the fallacy of confounding *infection* with *disease* has again manifested itself, and when a child coughs, loses flesh, sweats at night, etc., and the tuberculin reaction is positive, a hasty diagnosis of tuberculosis is made, the little patient is prohibited from attending school, and often prolonged and costly treatment is instituted.

It is a fact, however, that while extrapulmonary tuberculosis is rather common in children of school age, real pulmonary tuberculosis—*chronic phthisis*—with lesions similar to those seen in adults, is exceedingly rare. When examining many thousands of children descended from tuberculous parents, I hardly saw a dozen cases of chronic pulmonary tuberculosis in subjects under twelve years of age. To be sure, pulmonary tuberculosis is frequently seen in infants under two years of age in the form of tuberculous bronchopneumonia, but between two and twelve years of age, if tuberculous disease occurs at all, it is of the osseous, articular, and glandular types, the tracheobronchial glands are especially apt to be affected.

Children with tracheobronchial tuberculosis, however, are not all in danger; death due to this cause is so rare that it may be disregarded when formulating a prognosis in the average case. Nor are these little patients a menace to those associating with them because, as far as we know at present, they do not disseminate the bacilli. As to whether they are all destined to suffer from phthisis in later years, we cannot answer with certainty. One view, supported by recently discovered facts, is that they are rather benefited by the mild infection with tubercle bacilli; indeed many authorities speak of "benevolent infection" which immunizes them against renewed exogenic reinfection. These are the infections which protect adults when they come in contact with persons suffering from open pulmonary tuberculosis.

It is a fallacy, therefore, to treat every sickly, underfed child as tuberculous; even when the tracheobronchial glands are discovered to be enlarged, there is no reason for prohibiting school attendance, or to institute prolonged and costly treatment, except such measures as will enhance the nutrition of the child. We must not interfere with a child's opportunities to acquire an education, except in extreme cases, and tuberculous infection in children of school age is rather harmless. This fact has been realized only during recent years. Some six or eight years ago, when the cutaneous tuberculin test was considered a valuable diagnostic procedure, a positive reaction was considered a sure indication of tuberculous disease in a child of school age. When we found that over seventy per cent. of children gave positive reactions to tuberculin, we ceased to consider it of importance.

FALLACIES IN PROGNOSIS.

A fallacy amounting to more than a superstition is the fear of pulmonary excavations, and the ill omen always feared when a cavity is diagnosed in a tuberculous patient. The truth is, that in chronic cases the best that can happen to one with an extensive lesion is that the diseased area should be eliminated by expectoration, leaving a cavity surrounded by a connective tissue capsule. Many patients with such excavations live for years in comparative comfort and efficiency. Moreover, often the acute cases of pulmonary tuberculosis succumb before excavation has taken place owing to rapid extension of the process, toxemia, etc.

THERAPEUTIC FALLACIES.

We now come to the therapeutics of tuberculosis, in which there are traditional fallacies which should not be omitted when discussing the subject. We know that nearly all remedies vouched for as being efficacious in the treatment or cure of phthisis, be they medicinal, specific, dietetic, climatic, or institutional, work wonders in selected cases. And they really do. Even the "grape cure" and the "song cure" have to their credit quite a comforting proportion of recoveries. A survey of the literature on tuberculosis for the last one hundred years shows that nearly all the remedies suggested have cured about sixty per cent., and improved about twenty-five per cent. of really incipient cases, while in only from ten to fifteen per cent. were they impotent, and the patients remained sick or died despite the treatment. Moreover, we have been told by each sponsor for a new remedy, that some twenty-five to forty per cent. of advanced cases were benefited by his treatment. These are the kind of statistics which we read in the annual reports of most sanatoriums; we also find them in the writings of those who, some twenty years ago, extolled creosote or its derivatives, and today again those who advocate tuberculin report similar results.

That the laity is impressed by such statistics is not astonishing, considering that to them tuberculosis is a fatal disease invariably, unless treated in time and properly. As a rule, however, these statistics have a like effect on medical men, and in this manner creosote, arsenic, iodine, allyl, ichthyol, mercury succinimide, and a host of other drugs gained reputations in their day, and for several years after their introduction were considered specifics. I can unhesitatingly add that the success of the modern specific treatment, of various climatic regions, and of the sanatoriums as at present conducted, etc., depends on such statistics. I suspect that without the normal tendency of tuberculous lesions to heal, the sanatoriums would have to close their doors.

Close analysis shows clearly the fallacy of testing statistically a remedy for tuberculosis. The fact is that, without treatment, five years after the onset of the disease, over fifty per cent. of patients suffering from pulmonary tuberculosis are alive and more or less efficient at their occupations. For this reason, any one who has a new remedy for this disease, provided that the therapeutic agent is otherwise harmless, may count on being able to prove that fifty per cent. of his patients will survive more than five years. If he asserts that only selected cases are suitable for his cure, provided of course that he is an experienced clinician, which is rare with this sort of discoverer, he may prove that seventy-five per cent. of the cases are benefited. In fact, he may use distilled water, bread pills, or even prayer, and he will get the same results.

Here we have the cause of the many cures for tuberculosis which are introduced annually; this fact is responsible for the large number of people who believe they have discovered safe and sure remedies for the disease, and pester us for help to establish their claims to immortality, and incidentally to the material gains which go with a cure of a disease from which about one seventh of humanity suffers. It appears, however, that these remedies almost invariably work only during the first two or three years after their introduction, and it has been suggested that tuberculous patients should hasten to take a new cure immediately upon its introduction; delay may mean disappointment—the remedy is sure to lose its beneficial effects.

Another class of remedies against which we should be on our guard are those which are stated to work best in cases of osseous, articular, and glandular tuberculosis, and it seems that during recent years nearly all cures have been said to work well in "incipient" pulmonary tuberculosis, but that they were almost infallible in disease of the bones, joints, and glands. In these forms of the disease, we can guarantee that practically no mortality will be observed, because it is very rare that a patient dies from tuberculosis of the glands, bones, or joints, unless a radical surgeon operates. The fallacy consists in forgetting that in extrapulmonary tuberculosis, except of the meninges, the prognosis is good. The patient may remain disfigured or crippled for life, but he does not die from the disease.

57 East Ninety-third Street.

COLUMNAR AMNIOTIC EPITHELIUM.

Its Clinical Significance,

By Herbert K. Thoms, M. D.,
New Haven, Conn.

The amniotic epithelium covering the placenta at term is usually stated to be of one type—namely, cuboidal. That this epithelium may be either columnar or cuboidal, depending upon early or late rupture of the membranes, it is the purpose of this paper to demonstrate.

During the past year, while the author was engaged in carrying on the routine examination of placentas in the obstetrical and gynecological laboratory of the Yale Medical School, his attention was called to the fact that occasionally a type other than that of the so called normal variety (cuboidal) was present. Bearing in mind this possibility, great care was used to preserve the epithelium if possible in a series of placental sections with a view to determine the incidence of any variation from the cuboidal epithelium covering the full term placenta.

It has been my observation that in the great majority of placental sections seen in different clinics, the amniotic epithelium covering the placenta is usually lacking. This is no doubt due to the fact that it is very easily separated during the process of cutting, hardening, and imbedding. In some specimens, even with great care, I have found it almost impossible to preserve the epithelium for purposes of study.

The picture of cuboidal epithelium covering the placenta is too well known to require elaborate description. We have a single layer of cuboidal cells resting on a basement membrane which is immediately adjacent to the subamniotic connective tissue. The nucleus, which is large and spherical, is situated at or near the centre of the cell (Fig. 1).

The picture presented by the columnar type is essentially as follows. The epithelium is of the high columnar type, and in the majority of cells the cell base seems much narrower than the free border of the cell, giving a pressed in or squeezed appearance. The nucleus is as a rule situated at the extreme end of the cell near the free border. In places they are more or less elongated and otherwise distorted from the spheroid type (Fig. 2). Occasionally in very high cells the nucleus seems to have burst the end of the cell and left a craterlike appearance at the free edge (Fig. 3). This appearance gives the observer a further idea of some sort of cell compression having taken place.

In the study of 100 placentas during the routine examination, columnar epithelium was noticed sixty-nine times, grading from low columnar types to the extreme high variety. The remaining thirty-one placentas presented cuboidal epithelium.

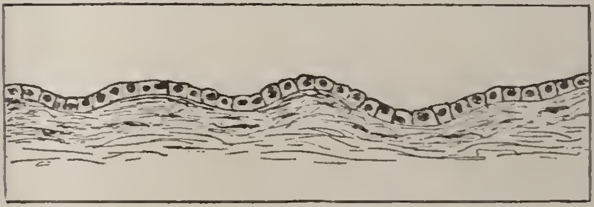

Fig. 1.—Cuboidal type of amniotic epithelium covering placenta.

The marked incidence of this columnar type must demand some explanation for its occurrence, and some mechanical process by which the cuboidal type is changed at once suggests itself. That the amniotic epithelium covering the placenta at the onset of labor in all cases is cuboidal is presumably well established. In three of the thirty-one cuboidal variety the placenta was studied with the same conditions as regards mechanical pressure that would obtain at the onset of labor, i. e., before labor pains had begun; one case of premature separation of the placenta at term, and two cases of Cæsarean section at the onset of labor. In all these epithelium was distinctly cuboidal, as we should expect.

Having then a change in cell type presumably due to a mechanical force, the question arises regarding its source and application. That contraction of the uterus during severe labor pains exerts pressure upon the fetal surface of the placenta must be granted. This force, while the membranes are still intact, is, on account of the liquor amnii, of course exerted equally in all directions, and no change in epithelium due to any mechanical compression can be expected. When the membranes have ruptured, however, and the liquor amnii drained away, severe uterine contractions may distribute the force upon the placenta in an entirely different way. Here we should certainly expect surface compression to a much greater degree than when the membranes were intact.

Granting this possibility, we should then expect to find, in cases of early membrane rupture, columnar epithelium to be the rule, and in late rupture or rupture at birth to find undistorted or cuboidal epithelium. In a special study of forty-five cases of the series these facts obtained. In thirty-five cases in which the presenting type was columnar, the membranes ruptured three or more hours previous to birth in twenty-one instances, one to three hours in twelve instances, and in the remaining two, one half hour and three quarters of an hour respectively.

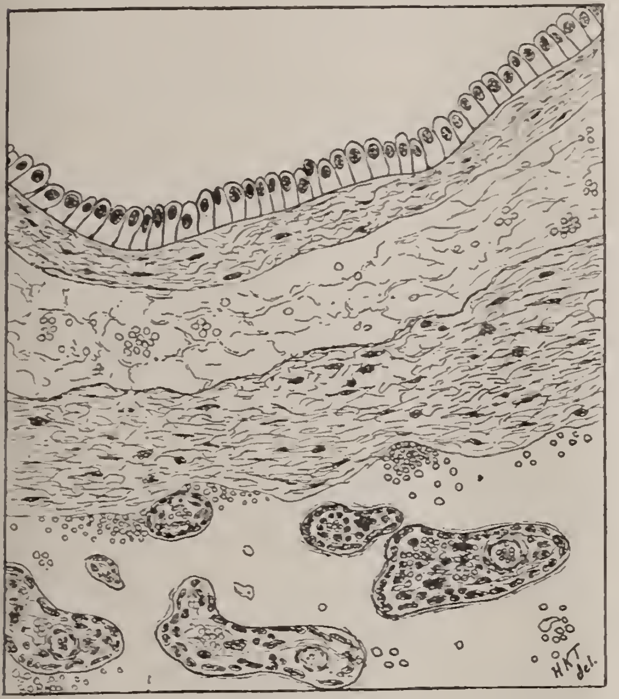

FIG. 2.—Columnar type of amniotic epithelium.

In ten cases in which the type was cuboidal, the membranes ruptured at birth in three instances, ten minutes before birth in three instances, fifteen minutes before birth in two instances, forty minutes in one instance, and eight hours previously in the remaining instance. This last case, in which the membranes were said to have ruptured eight hours previous to birth, is interesting. In order to preserve the cuboidal type according to the foregoing explanation, the liquor amnii could not have escaped entirely. It is probable, if the membranes actually did rupture at the stated time, that the head descended almost immediately, forming a ball valve and thus holding *in utero* the greater part of the liquor until at or near the moment of birth.

From the foregoing findings the following deductions may be drawn: In cases in which the membranes have ruptured at least two hours before birth and the amniotic fluid has escaped, the amniotic epithelium covering the placenta will be of the columnar type. This change may also be expected in cases in which the liquor is unusually scanty and the contractions are severe, even though the membranes have ruptured late. This fact I have not as yet determined. On the other hand, in cases in which the liquor is normal in amount and in which the membranes have remained intact until at or near the time of birth, the amnion covering the placenta should present epithelium of the cuboidal type.

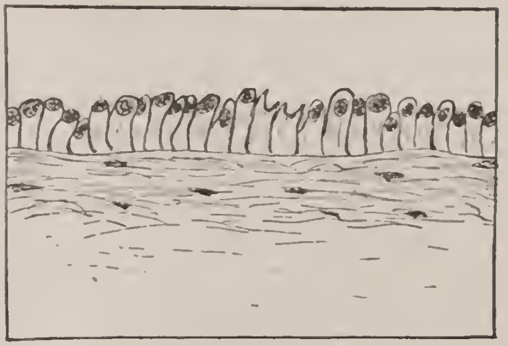

FIG. 3.—Two columnar cells, showing crater appearance after extrusion of nuclei.

It is not within the scope of this paper to take up the study of amniotic epithelium under various pathological conditions, but it is interesting to note that in cases of hydramnios the amniotic epithelium usually presents a flattened or squamous type. This is well known and shows the effect of long continued pressure exerted directly upon the surface of the placenta.

During the study of the series, the problem presented itself whether or not in a well marked instance, different portions of the same placenta might not show variation in the type of cell present; this was not noticed in any instance. Sections cut from different portions of the same placenta always showed the prevailing type. By way of experiment, in one placenta where the epithelium was distinctly columnar and the cord centrally inserted, a cut was made in the gross specimen completely through the centre of the placenta and cord,

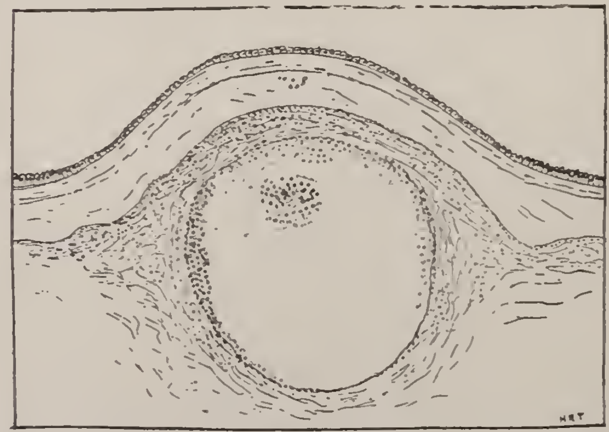

FIG. 4.—Cross section of vessel near surface of placenta, showing preservation of cuboidal type.

and by means of careful sectioning the epithelium over the entire cut surface was studied. The findings were as follows: At the periphery of the placenta near the membrane attachment the type was cuboidal for a very short distance. The entire fetal surface showed columnar epithelium throughout, except at the insertion of the cord and over the large vessels near this point. Here, owing to the support given the epithelium by these underlying structures, the epithelium retained its cuboidal shape. In the study of all columnar sections where the cross section of a large vessel is found at the surface, the epithelium, as a rule, immediately over the vessel remains unchanged (Fig. 4). Here the vessel wall gives support to the overlying cells and admits of only slight compression, if any, during contraction of the uterus. It will be noted that the transition is not an abrupt one, but is more or less gradual as would be expected.

Two of the cases studied presented placental bacteriemia, that is, after premature rupture of the membranes, the placenta became infected. In both cases the rupture was very early, one or two days previous to delivery; in both cases also bacteria were easily demonstrated in great abundance in the subamniotic connective tissue by means of the Gram-Weigert stain.

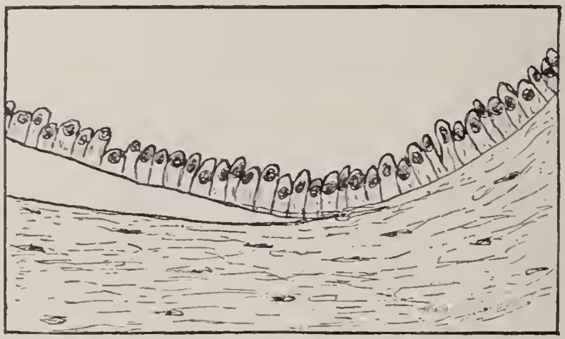

Fig. 5.—Showing stripping of epithelial layer.

In one case in which several sections were made no epithelium of any kind was found, and the whole subamniotic connective tissue showed intense leucocytic infiltration and swarms of bacteria. In the second instance some of the sections showed high columnar epithelium and some showed an entire lack of this layer. In one section (Fig. 5), a layer of columnar cells was found in the process of stripping from the subamniotic connective tissue. Bacteria were not demonstrated in any of the epithelial cells, although careful search was made. The leucocytic infiltration was found to be as marked under apparently normal columnar epithelium as in places where this layer was lacking. I am of the opinion that unless we have an actual stripping or a break in the amniotic epithelium, bacteria cannot by this route find their way to the placenta, and that infiltration noticed under apparently normal columnar epithelium is but an extension in the subamniotic space of an infective process from some nearby field where the epithelium has been cast off and the bacteria have gained a foothold.

419 Temple Street.

OXYGENATED MILK.*

By Clifford G. Grulee, M. D.,
Chicago.

In 1903, there appeared in *Milch Zeitung* an article on a process of sterilizing milk by means of hydrogen peroxide. This work had been used in Copenhagen under the direction of Doctor Budde, and is commonly known as the Budde process. The process as outlined in this article was as follows: To each litre of milk 0.9 gram of hydrogen peroxide was added. This was mixed thoroughly and kept at about 50° C. (122° F.) for five or six hours. The statement is made that bacteria can be grown only after the effect of the oxygen wears off. The theory of this process was that the catalase enzyme of the milk split the hydrogen peroxide into oxygen and water, the nascent oxygen acting as a sterilizing agent. The efficiency of this process, so far as I know, has never been questioned. There has been a question raised, however, as to whether it would be possible to market milk at a low figure which had been treated by this process, the expense of which would be rather great.

In March, 1915, Mr. N. D. Neilsen, a Danish milk chemist, came to the Presbyterian Hospital, Chicago, and asked to be allowed to demonstrate a process similar to the Budde process which he felt could be commercialized. He arrived at an understanding with Mr. Bacon, the superintendent, and myself, and placed a plant in the hospital at his own expense. The plant was on a small scale similar to the one shown in the plan. It was his desire to have a milk which could take the place of certified milk, be perfectly safe for children and infants, and at the same time distinctly reduce the cost. From the beginning, the man and his proposition appealed to me, and I seconded his efforts. His process is as follows: In the first place, good raw milk is obtained directly from the farm in ten gallon cans, as accurately four per cent. as possible. This milk is treated with hydrogen peroxide, one quart to twenty gallons (a litre of hydrogen peroxide to eighty litres of milk). This milk is then heated to 122°-128° F. for one half hour, being stirred by a fan in the reservoir so that it is kept in motion the whole time. It might be stated here that the reservoir in which this is carried out is connected with the hot water apparatus of the hospital, the fan being run by water power. The milk is then withdrawn and bottled hot. It is then kept on ice until used. The theory of the action here is the same as that of the Budde process. I have therefore termed the milk "oxygenated milk" in order to do away with any misunderstanding of the process. In one sense of the word this is a preserved milk, but it is a preserved milk without preservatives, because at the end of a half hour's treatment only a trace of the hydrogen peroxide can be obtained. At first we had difficulty in obtaining pure hydrogen peroxide, but this difficulty has been overcome, and practically all danger from the hydrogen peroxide as such may be discounted. Bacteriological examinations have been carried on with this milk by Dr. B. O. Raulston, resident pathologist at the Presbyterian Hospital. His results I submit herewith:

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*Read before the American Therapeutic Society, seventeenth annual meeting, Detroit, Mich., June 9, 1916.

PATHOLOGIST'S REPORT.

Cultures were made of the usual stock supply of milk to the children's ward before and after it had been treated with hydrogen peroxide in the usual manner. Plates of the raw milk contained bacteria in the proportion of 3,250,000 per c. c., while those of the oxygenated milk remained made, but no bacteria grew during seventy-two hours of incubation.

Known virulent strains of hemolytic streptococci, typhoid, and diphtheria bacilli were then added to separate specimens of raw milk. One loopful of a heavy suspension of the organisms was added to ten c. c. of salt solution and 0.1 c. c. of this dilution added to each 100 c. c. of the milk, which was then treated with peroxide in the usual way. Cultures of the milk containing streptococci were sterile, except in one instance when there appeared approximately 100,000 streptococci per c. c. The bacteria which appeared in the cultures of raw milk were chiefly streptococci, colon bacilli, and staphylococci.

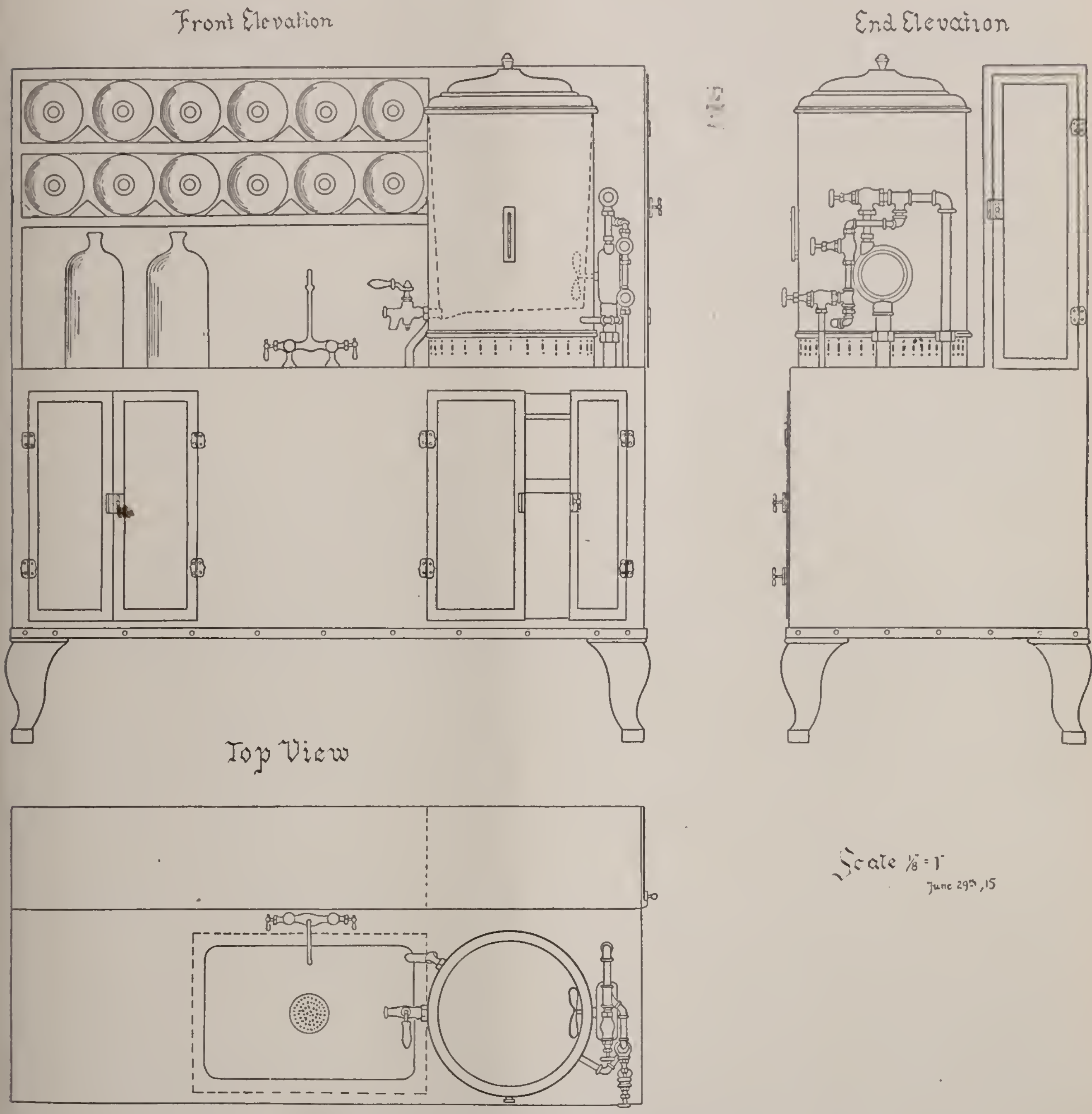

Fig.—Details of apparatus for preparing oxygenated milk.

Specimens were then taken from the stock supply of milk in the diet kitchens, which is pasteurized milk, and cultures of it contained bacteria similar to those found in the raw milk and in the proportion of 3,000,000 per c. c. This milk was then oxidized and similar cultures were made on blood agar plates, of that to which typhoid bacilli had been added on litmus lactose agar and blood agar; and of the part containing diphtheria bacilli on Loeffler's serum, plain, and blood agar. All of these remained sterile during seventy-two hours of incubation, while blood agar plates of this same milk previous to oxidation contained from 2,500,000 to 3,000,000 bacteria per c. c.

Cultures of the stock of milk supplied to the children's ward of the hospital have been made at four different times recently, and in each instance the sample taken before the process of oxidation had been applied gave large numbers of colonies on blood agar plates, while that taken after oxidation gave no colonies, except in the one instance noted above.

Further examinations are being made. The chemical changes produced have not been so definitely studied. It would be impossible without the most expert chemical analyses to be able to determine minute changes in the character of the salts and perhaps of the organic constituents of the milk. It can be said, however, that no gross changes have been noted. Cream rises on this milk as on other milk, and all the digestive processes, such as the coagulation with rennin and the usual digestion with pepsin, occur as with raw or cooked milk. Theoretically the chemical change is only a destruction of the catalase enzyme in the process of splitting the hydrogen peroxide. We have noted no changes from ordinary raw milk in the preparation of infant foods, except, of course, in the preparation of soured milks, such as buttermilk. Here the presence of oxygen inhibits the growth of the bacteria, and makes it impossible to prepare buttermilk from the oxygenated milk.

After the use of this milk in the wards of the hospital for over a year, the number of patients daily in the infants' ward varying from twelve to twenty, and in the children's ward from twenty to twenty-five, together with ever increasing use of the milk throughout the hospital, we have never had reason to think that anything had developed which could be ascribed to a deleterious influence of the oxygenated milk. Our feeding cases have apparently done as well as did those previously fed on certified milk. The personnel in charge of the wards has not changed, so that we are able to make accurate comparisons in this respect. One of the advantages of the oxygenated milk is that with its use in the infants' diet kitchen, we have fresh milk at any time of the day or night, and the diet nurse can start as early in the morning as she wishes, and is not subjected to a delay because of late delivery. This milk has stood at room temperature as long as two weeks during the summer months without souring.

CONCLUSIONS.

1. It would seem from our experience that oxygenated milk has a definite place in hospital régime. It offers us the safest milk from all standpoints at a very much lower cost than that at which certified milk—to which it compares very favorably—can be obtained (about six cents a quart).

2. There is always fresh milk to be had, a great advantage to a diet nurse who is in a hurry.

3. All danger of infection from pathogenic organisms in the milk is removed.

4. There is no danger to the infants from sour milk which contains no specific pathogenic microorganisms, whatever this danger may be.

Whether it would be possible to market this milk on a large scale, or whether this would be desirable, I am not willing to put myself on record. Certain things have led me to think that this could be done and possibly to advantage. That it has worked out to our entire satisfaction in the Presbyterian Hospital of Chicago I have no hesitation in asserting.

OZENA.*

A Summary of Recent Studies Relative to the Etiology and Treatment,

By HENRY HORN, M. D., F. A. C. S.,
San Francisco,

AND ERNST ALBRECHT VICTORS, M. D.,
San Francisco.

(From the departments of Rhinology, and of Pathology and Bacteriology, San Francisco, Polyclinic and Postgraduate School of Medicine.)

In a recent paper (1) this subject was presented by us in detail, and it is purposed here to give a brief summary of our studies and conclusions, with special reference to the bacteriological consideration of the so called Coccobacillus fœtidus ozœnæ of Perez.

The previous publications of Perez (1), Hofer (2), Guggenheim (3), Horn (4), and Burkhardt and Oppikofer (5), have all erred in their description of certain morphological and biochemical characteristics of the organism. M'Gowan (6) described certain sugar reactions induced by the organism, but strangely failed to observe its motility.

Briefly described, the morphological and biological characteristics of the Perez bacillus as determined by us are:

Two types of organism are encountered—a distinct coccoid rod and a longer, heavier bacillus (0.75 and 1.5 by 0.4 and 0.6); stains with ordinary dyes, uniformly Gram negative; never spores or capsules; never in chains in fluid medium. Agar plate colonies (twenty-four hours) are round, slightly elevated, one to two mm. in diameter, and resemble young Bacillus coli colonies. In plain broth a diffuse turbidity is produced. Granular deposit in several days. No scum formation. A sickening odor is given off, but is uncharacteristic. The organism is definitely motile in all instances. Motility usually slow, with marked activity of occasional organisms. Some cultures show active typhoidlike motility of all organisms. Six to eight flagella are demonstrable. Gelatin is not liquefied. Growth on potato is characteristic. In forty-eight to seventy-two hours growth becomes distinct and raised, surface uneven and coppery yellow in color. Litmus milk usually acquires acidity with coagulum. Acid production is slow and rarely occurs before forty-eight or seventy-two hours. Occasional cultures produce no change. Carbohydrate fermentation is not fastidious. Dextrose is most readily cleft with the development of from ten to fifteen per cent. gas and about three per cent. acidity. Lactose is usually uninfluenced. Maltose, mannite, and saccharose are variably and indifferently fermented. Reduction of nitrates to nitrites was effected in about half of the cultures examined by us. Anaerobiosis is readily effected. In fermentation tubes both arms are at first uniformly turbid, with increasing turbidity of the open arm.

Comparison with Bacillus bronchisepticus. The studies of Ferry (7), M'Gowan (8), and Torrey and Rahe (9) concerning the etiology of canine distemper determine conclusively that Bacillus bronchisepticus is the causative agent of this malady. A striking similarity exists between this organism and the coccobacillus of ozena. Both organisms are readily grouped according to nitrifying and nonnitrifying ability. Both are Gram negative, motile rods, of like size and shape, and both divisible into a coccoid and more bacillary type. Pleomorphism is more common with the bronchisepticus, and long chains may develop in broth and medium. Agar plate and stroke colonies are macroscopically indistinguishable. Culture on potato is a characteristic raised copper yellow growth for both organisms, although the Perez organism is more tardy in this development.

The most apparent biochemical difference of the organisms is in their behavior toward carbohydrates, reaction changes, and oxygen demand. Bacillus bronchisepticus ferments no sugars and produces no acid. It produces a characteristic increase in the surface alkalinity of litmus milk. Although it may develop in an oxygen free environment, its growth is weak and the organism may be considered as a fairly strict ærobe. The coccobacillus of ozena, on the other hand, facultates with ease. Comparative fermentation tubes present a clear, closed arm with bronchisepticus and a turbid arm with Perez.

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*Read before the twenty-second annual meeting of the Urological Society, White Sulphur Springs, W. Va., May 5, 1916.

Another striking feature common to both organisms is their effect upon animals during immulogical procedures. Both organisms are highly toxic in killed suspensions, while suspensions of live organisms are borne in relatively large doses intravenously. Bacterial infarcts are produced which do not suppurate. Antiserum is readily and rapidly produced. Animals rapidly lose in appearance and weight and ultimately succumb to inanition.

AGGLUTININS AND COMPLEMENT DEVIATIVES.

A potent agglutinating serum is readily produced by immunization of rabbits with living organisms. The agglutinating titre reached one to 1000-2,000 for homologous strains, a relatively lower titre for allied strains. Perez bacillus antiserum is ineffective for cultures of Bacillus bronchisepticus, even in low dilution.

Complement is also readily deviated with antiserum of any strain, using filtered autolysate of the ozena coccobacillus as antigen. So also is complement deviated with Perez antiserum, using a filtered autolysate of Bacillus bronchisepticus as antigen. This demonstrates beyond question the similarity in the protein structure of both organisms.

CLINICAL OBSERVATIONS.

Of eighty cases of ozena of all types observed by us, forty-nine were diagnosed as true clinical ozena and selected for special study. Of this number the coccobacillus of ozena was isolated in thirty-seven instances. In the remaining cases (12) the Abels or some member of the Friedlander group was isolated. It is of interest to note that in certain instances of apparent Abels bacillus infection the Perez bacillus ultimately was isolated after the administration of a vaccine of this organism.

In isolating the organism, cultures are best taken from the anterior end of the middle turbinate after removal of crusts. Small crusts may be used as inoculating material, but these render recovery of the organism in pure culture more tedious. We have recovered the organism in pure culture by submucous aspiration. Blood cultures, except for inoculated animals, have been negative.

VACCINE THERAPY.

Thirty-two cases of typical clinical ozena have been treated by us with coccobacillus ozena vaccine. To avoid a possible conflict of the efficacy of various therapeutic agencies, no other treatment was instituted or allowed. In a small percentage of these cases the bacteriological findings were Abels or Friedlander bacilli with negative Perez bacillus findings. These cases were nevertheless treated with coccobacillus ozena vaccine.

The vaccine used was polyvalent, several groups of strains being incorporated. As our work progressed the more dissimilar strains were assembled after animal passage. To sustain the virulence of the organism and for the insurance of fresh bacterial suspensions, we have established a routine procedure of animal passage, recovery and suspension, so that a fresh potent vaccine was at hand at three or four weeks' interval.

Vaccine administration was instituted with 125,000,000 as initial dose and increased 100,000,000 every third or fourth day until some evidences of reaction were manifest. A reaction occurred not infrequently after the initial dose, subsequent injections being tolerated until the dose of six to 800,000,000 was reached. When this point of intolerance was reached, the interim between injections was lengthened from five to ten days, and the dose relatively increased so that ultimately one to two billion organisms were administered. Some patients received even larger doses.

In many instances the effect of vaccine therapy was immediate and striking. We have seen patients whose stench was so pronounced that to be in the same room with them was intolerable, lose their odor after one injection so that it could be detected only in a nose to nose examination. Disappearance or lessening of odor was the most gratifying result of this method of treatment and was effected to a marked degree in almost all instances. Likewise there was a rapid reduction of the crusting. In several cases the disease was absolutely cured—with a return of the mucous membrane to normal, no recurrence of crusts or odor, and negative bacteriological findings. The most disappointing feature of treatment lies in the tendency to relapse after it is discontinued. Many patients are apparently well or with slight crusting as long as they receive vaccine. The patients, though, enjoy such marked relief from their unfortunate affliction that they willingly submit to the inconvenience of a weekly injection. We feel that the vaccine equals in efficiency any specific vaccine, yet shares in the shortcomings of vaccine therapy in general.

COMMENT.

Upon a clinical basis, the hypothesis has been frequently suggested that the origin of ozena in man can be traced to contact with dogs. Our studies have not been influenced by this assumption, and Bacillus bronchisepticus, the etiological organism of canine distemper, was selected by us merely on account of it being the best bacterial comparative with which we were familiar. The trend of our investigation has led us to the belief that Bacillus bronchisepticus and the coccobacillus of ozena are intimately related. Their protein structure is identical. Future investigation will determine whether or not the organism of distemper in dogs when implanted upon the nasal mucous membrane of man, undergoes certain biological changes due to the changes in its environment. For the time being we shall consider the organisms as distinct entities.

We are inclined to group the ozena coccobacillus with the colon typhoid group, although it has certain characteristics of the hemorrhagic septicemia group. Bacillus bronchisepticus is classed with the latter group and the similarity of the coccobacillus of Perez makes its classification with it advisable. We have suggested that the name of coccobacillus fœtidus ozœnæ of Perez be changed to that of Bacillus rhinosepticus, and the organism will be so designated by us in the future.

The consideration of the etiology of ozena cannot be dismissed without some allusion to the Abels bacillus and other organisms of the Friedlander group. In our earlier studies we were inclined to consider these organisms as being coetiological and that certain cases of clinical ozena were a result of Friedlander group infection. This assumption precluded a more thorough search for the ozena coccobacillus in our earlier cases when the Abels or allied organisms were found with negative Perez findings. As the work progressed we could isolate the coccobacillus in all cases of clinical ozena regardless of the presence of organisms of the Friedlander group. This, though, may be very tedious and bacterial investigation may not be successful until after the taking of many cultures. We have found that the injection of coccobacillus vaccines in such cases enhanced the isolation. We are inclined today to dismiss entirely the Abels and other Friedlander bacilli as etiological factors in clinical ozena and believe that they are merely saprophytic.

CONCLUSIONS.

Certain characteristics of Coccobacillus fœtidus ozœnæ (Perez) have been heretofore described erroneously, in that the organism is motile, frequently ferments certain carbohydrates, and may produce acid.

Coccobacillus fœtidus ozœnæ is the bacterial factor in the etiology of true clinical ozena.

The Abels and other organisms of the Friedlander group play no part in the etiology of clinical ozena and are purely saprophytic.

The coccobacillus of ozena is made up of many subvarieties or strains.

Coccobacillus fœtidus ozœnæ and Bacillus bronchisepticus, the specific organism of canine distemper, are strikingly similar organisms.

Bacillus bronchisepticus and the coccobacillus of ozena should be grouped together.

A change in the name of the organism of ozena from Coccobacillus fœtidus ozœnæ to Bacillus rhinosepticus is proposed.

Vaccine therapy is the most promising of all methods in the treatment of fetid ozena yet suggested. Its value and limitations are similar to those of vaccine therapy in general in combating chronic local infections.

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MALINGERING.

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The prison surgeon is beset with many problems in his work, but none is more difficult or more frequent than the vexed and never ending question of malingering. Medical officers of the army and navy also have to contend with pretended illnesses of the soldiers and sailors who would shirk their duty, but to very much less extent than the medical officer of a penal institution.

Every evil seems to have its compensation. Therefore, beside being extremely annoying and a potential source of trouble, malingering has its interesting side. It taxes the physician's ingenuity, his judgment, and his skill in differential diagnosis. The physician who has never had experience in dealing with large numbers of men as in the army, navy, or State services, would find himself seriously handicapped in taking charge of the medical work of a penal institution because of the large number of malingerers that are to be found in prisons and reformatories.

The prison surgeon, to be successful in his work, must be endowed with an abundant stock of common sense, broad views, and knowledge of human nature, a kindly disposition supplemented by skill in diagnosis. If he comes to regard the majority of prisoners as malingerers, he will do a vast amount of harm, for he may overlook the illness of a convict. On the other hand, if he regards every prisoner who applies to him for relief as ill, he will be much imposed upon, and the discipline and work of the institution will suffer. It has always been my policy to allow a dozen undeserving prisoners to pass as sick than to allow one deserving of treatment to go without attention. The possibility of making a mistake in diagnosis must always be kept in mind. The question at once arises: What are the causes of malingering in prison? There are several, and among them the most important is the desire to escape work, a chance to change occupation, a visit to the prison hospital, and to secure transfer from prison to insane hospitals where the chances for escape are better, and where life is less active and devoid of strict discipline.

The prisoners practise the art of malingering in three ways: First, by feigning insanity; secondly, by pretending physical sicknesses and disabilities, and, thirdly, by the self infliction of injuries and mutilations of the body, whch, while not technically malingering, amounts to the same for all intents and purposes.

The practice of feigning insanity is as old as history itself. It is recorded by Homer, that Ulysses feigned insanity to avoid going to the Trojan war; he plowed the sand of the seashore and sowed salt in the furrows instead of grain, but like the usual pretender, he overdid the matter, and his sanity dodge was promptly discovered. King David, remembering the insanity of Saul, feigned madness when he "was sore afraid of Achish, king of Gath. And he changed his behavior before them and feigned himself mad in their hands and scrabbled on the doors of the gate and let his spittle fall down upon his beard." (I. *Samuel*, XXI, 13.)

Since many insane are to be found in all prison populations, the criminal simulator of insanity has a pretty fair advantage or opportunity to study at close range the behavior of the mentally unbalanced. My personal experience has led me to believe that most frequently the forms of insanity the malingerer attempts to imitate are the acute maniacal states which are probably the easiest. The prisoner assumes an apparent state of excitement, he is restless, talkative, yells, screams, tears his clothing, makes wild gestures, and keeps up a constant rehearsal of silly, extravagant behavior when he believes he is under observation.

A condition or state of dementia is probably next most frequently essayed. The prisoner pretends to be disoriented, stupid, forgetful, childish in his manner, silly and puerile in his judgments; he disregards the rules of the institution with apparent indifference to consequences. Melancholic states are often pretended, but this is probably the poorest attempt a malingerer can make, for remorse, introspection, self analysis, sorrow, and self accusation are rarely seen in penal institutions. When a melancholic form of insanity is attempted, the prisoner generally pretends to be in a stupor, a state of irresponsiveness, indifferent to his environment, and neglectful of the calls of nature.

Some of these simulated states of insanity are so well carried out that the untrained are often deceived. The simulator usually overdoes his part because he generally entertains the idea that the insane are always absurd in their actions, their manners, and conversation. Their replies to interrogations are made with such studied silliness, absurdity, and systematic regularity that the careful examiner at once becomes suspicious. They seek to impress their observers with the idea of insanity whereas the real lunatic, if he has any insight into his condition, generally does the reverse. In one instance a malingerer who came under my notice put his food in his shoes and his shoes into his pockets, and emphatically insisted that such behavior was indicative of insanity.

Simulations of insanity, while presenting possibly some of the symptoms which belong to the form that is copied, are incomplete, or else additional inconsistent signs may be added which are entirely out of place. The symptoms of a terminal dementia would make an extremely poor combination with those of the manic phase of manic depressive insanity, and yet the feigner often attempts this combination.

Relatively speaking, few persons succeed in deceiving physicians who are familiar with mental disease. It is a difficult thing to portray accurately the symptoms of insanity, at least for any length of time, and many of the evidences of insanity cannot be simulated. The feigner often mixes the symptoms of more than one type of insanity which cannot possibly coexist. The alienist recognizing the difficulties he may encounter, must be exceedingly slow and careful in making decisions. A searching inquiry must be made into the family and personal history, and here we must be exceedingly careful, for the information supplied may be biased, prejudiced, and untrustworthy.

In States where the sane or seemingly insane prisoner is transferred to civil hospitals for the insane, the playing of the "crazy game" is quite prevalent, but in States where insane prisoners are transferred to hospitals for insane criminals which are especially constructed, and especially administered to prevent escapes, the insanity dodge is becoming very much less popular. At the Indiana State Prison it is now scarcely employed at all for the reason that this State has provided a special hospital for the criminal insane.

In the noncriminal classes insanity is simulated for the purposes of avoiding military services, to escape from unhappy matrimonial ties, to prevent the settlements of estates, to prevent divorce proceedings, to arouse sympathy, to avoid legal responsibilities, and for other reasons of a similar nature.

In one instance that came under my notice, a woman who had been detected in illicit intercourse feigned insanity in an effort to prevent her husband from securing divorce. She deliberately planned her efforts and pretenses. Among other things, she filed the plunger pin off the hammer of a revolver and then snapped the gun in the face of her attending physician whom she had threatened to kill. She placed the chinaware in the clothes closet, draped her husband's picture in mourning, and executed other carefully thought out deceptions. When I was called in consultation in this case, it was at once apparent to me that she was malingering. She tried to prove to the medical examiners that she was insane by telling them of the strange and erratic things that she did. In the course of the examination it was explained to her that her husband would give her $12,000 as a divorce settlement. Then she promptly lost all signs of insanity. That evening, she was observed parading the streets with one of her lovers.

Prisoners, in order to escape the daily duties that are imposed upon them, exaggerate their physical ills or disabilities, and even go so far as to employ a certain method of making themselves sick or even mutilating their bodies, and the prison surgeon must ever be on the lookout to prevent such practices.

When prisoners discover they have been detected in the violation of prison rules and discipline, and know that punishment and demerit are imminent, they often come to the prison hospital pretending illness and making most insistent claims, exhibiting a variety of apparent symptoms to prove their contentions. This practice is so common that in almost every instance where the prisoner is very demonstrative or vociferous when presented at the hospital for medical inspection and treatment, the trained medical officer knows that it is well to consult the disciplinary officer to learn if the prisoner is charged with offenses against the institutional discipline, and in about seventy-five per cent. it will be found that the convict has been so charged.

It will be well to consider separately the most common methods of malingering according to the personal experience I have had in dealing with prisoners. Not infrequently epilepsy is feigned. The simulator falls in a comfortable spot, his body is convulsed and twisted as he attempts to perform the movements of the grand mal seizure, and he froths at the mouth with the assistance of a little soap. His tongue is never bitten, and a careful inspection of the patient together with a dash of cold water is usually sufficient to detect the fraudulent character of his trouble. The use of soap, however, is not restricted to the simulation of epilepsy, for often it is taken in the form of soap pills to produce intestinal trouble, and the poor deluded prisoner often succeeds in producing a most intractable mucous diarrhea. Various other substances are used for the same purpose, the most common being toothpaste, toothpowder, pepper, tobacco juice, ear wax, clippings of fingernails and toenails, pills made of feces, vinegar, urine, wood alcohol, paint, limewater, antiseptic solutions, turpentine, and other available fluids.

One malingerer produced phosphorus poisoning with its attendant symptoms by secretly eating matchheads; another, to avoid certain tasks and to show his displeasure concerning the institutional rules, swallowed on three different occasions parts of his mirror, the face of his clock, and the electric light globe of his cell. Each time glass was recovered in the usual manner from this apparent human ostrich without evident harm.

Amputations of fingers and other mutilations of the body are occasionally indulged in by the psychopathic prisoner. In one instance the convict made the request that he be taken out of the institutional butcher shop; when he was informed that his wish could not be granted, he became very irritable and on his return to work chopped off several fingers with a meat cleaver. This same process was repeated by a prisoner in the chair shop, who cut his fingers off with a buzz saw. Prisoners have burned themselves with fire, alkalies, and acids to escape work. "Putting on the bug" is produced by placing small poultices of lime on the body long enough to bring about inflammation; after several applications discharging ulcers are produced, and several of these "bugs" soon render the offender unable to work.

I have noticed peculiar swellings of the limbs in the morning sick lines unattended by constitutional symptoms. Being suspicious of their origin, I set to work to investigate the cause, and in the course of time discovered that a sock or piece of wet cloth was drawn over the limb, hand, or ankle, which was then pounded until it was reddened and swollen, although evidences of traumatism were not produced.

Feigning blindness is not a rare practice, but the usual tests for this condition are sufficient to discover the subterfuge. It is well known among some of the criminal fraternity that the instillation of an atropine solution into the eyes will produce temporary blindness. On several occasions I have heard some of the light fingered gentry boast of the manner in which they escaped punishment by employing this drug in jail while awaiting trial, for their lawyers would make the successful plea that a blind man could not pick a lock or pockets.

Prisoners have produced the oral symptoms of septic sore throat by long continued sucking of pieces of brass, which produced grayish white ulcers in the mouth and throat; this manner of deception was so carefully planned and carried out in one institution that a quarantine was established. Belladonna has been employed to produce dryness of the throat and redness of the skin; belladonna plasters have been boiled to obtain the drug.

In some instances I have known pieces of wire to be inserted into the urethra to produce hemorrhage, also into the rectum. In one instance a glass stopper was used, but in the manipulation it got beyond the control of the pervert and slipped so high up into the rectum that an anesthetic was required to remove it. Not seldom the gums are picked to produce bleeding and simulate hemorrhage from the stomach and lungs. The manners of producing these deceptions, and the methods which are employed are as numerous as the circumstances, ingenuity, and means at hand permit.

In conclusion, it is well to say that the malingerer is generally a psychopath, who resorts to simulation and often produces physical diseases and disabilities to enable him to escape the unpleasant or painful situation in which he may find himself.

It is a mistake to believe that every malingerer is fully responsible for his acts, for it is well known that the frankly insane are given to deceptions of this nature, and since this is the case we should be extremely careful in our diagnosis.

SYPHILITIC AND PARASYPHILITIC AFFECTIONS OF THE URINARY BLADDER.

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Syphilitic lesions of the bladder are not common; Paul Asch (1), in twelve years, has been able to observe only three cases. There was a belief among many authorities that the urinary bladder escaped the invasion of lues. Guyon (1) states that it is generally accepted, and rightfully so, that the urinary tract escapes luetic invasion; Morris (2) states that exemption of a hollow viscus from gummatous deposits is a truism of syphilology.

Among the many well known textbooks on urology some allude to the subject very briefly, while others do not mention it at all. Casper (3) in his *Lehrbuch für Urologie* states that he dare not say whether syphilitic ulcerations of the bladder exist because he, as well as many other cystoscopists, has never had occasion to observe any. He does not see any reason, however, why gumma formation, with breaking down of same causing ulcerations, could not exist in the bladder.

Scholtz (4) finds that in rare cases the bladder is invaded by gummatous growths secondary to rectal involvement. The symptoms, he further states, are obscure and do not differ from those of chronic cystitis and of tumor of the bladder. Finger (5) states that luetic ulcerations of the bladder are unknown, except in a very small number of cases. Chetwood (6) finds it to be a very rare condition and recognizable by circumscribed areas of inflammatory infiltration in the interior of the bladder, accompanied by a positive Wassermann. Virchow (7), however, in 1859, recognized the fact that syphilis does attack the urinary tract. He states that luetic ulcerations of the urethra are found similar to ulcerations and scar formation in the larynx. He described the findings of an autopsy in a woman of eighty years, in whom luetic ulcerations extended from the posterior urethra well into the bladder.

Matzenauer (8) was the first to demonstrate cystoscopically a gumma in the bladder. The patient was a girl who had acquired syphilis four years prior to the formation of the gumma. MacGowan (14) reported a case of a man who suffered from bladder disturbances eight years after the initial lesion. The symptoms consisted of greatly increased frequency of urination, severe pain over region of bladder, and finally development of incomplete retention, which was not influenced by the usual medications. The bladder showed a large ragged ulcer which had evidently resulted from the merging of a group of ulcers. A von Engelmann (9) described three cases of syphilis of the bladder, one of which is very similar to a case in our own experience. He found multiple incrustated ulcerations with a general diffuse cystitis. Mixed treatment cured all three cases, in some leaving visible scar formation.

PARASYPHILITIC AFFECTIONS OF THE BLADDER.

To this group belong the affections of the bladder which, while they may show no luetic lesion in the bladder proper, are primarily due to lues of the central nervous system. The most prominent diseases belonging to this group are general paresis, syphilitic spinal paralysis—described by Erb (10), and, most important of all, tabes dorsalis. The tabetic bladder is of particular importance because it is found not only in fully developed cases of locomotor ataxia, but is frequently the first complaint for which the patient will seek relief—as was true in the case we describe. In a case reported by Paul Asch (1), the bladder symptoms preceded the other classical tabetic signs by ten years. The history of our own case is as follows:

CASE. W. R., fifty-three years old, born in Scotland, a mason; admitted to the clinic March 28, 1916. Personal history: Married, had three grown up healthy children, wife never aborted. Thirty-five years ago had gonorrhea, at which time he also had a sore on penis, which was treated locally and never received specific treatment. Present history dates back to one month ago, when patient noticed that he had partially lost control of his bladder so that he frequently had incontinence, especially at night; urine had an ammoniacal odor; had never noticed blood in his urine. Physical examination showed knee reflexes absent, moderate Romberg, also moderate Argyll Robertson pupil. No ataxic gait. Felt strong in both lower extremities. Prostate by rectum not enlarged. Cystoscopic examination showed no stricture. Urine cloudy, bladder held two ounces of residual urine. Bladder showed severe form of chronic cystitis, with marked trabeculation, especially at base. Both ureteral openings normal.

April 4th, Wassermann reaction doubtful. Advised a provocative intravenous injection of salvarsan, but only neosalvarsan was at that time procurable, so that was injected. Subsequent Wassermann test was then negative. In spite of this he was given intramuscular injections of salicylate of mercury emulsion. His urine continued to be cloudy, and his residual urine was at times from four to six ounces with no let up in the incontinence. April 11th, complained of headache and dizziness; sent to Bellevue Hospital for lumbar puncture. April 27th, report of spinal fluid examination—direct smear negative; culture negative; Wassermann test fifteen units (3+). April 28th, in addition to the foregoing treatment he was put on increasing doses of potassium iodide, while bladder irrigations with silver nitrate were continued from the outset. May 2nd, bladder symptoms had markedly improved, but lower limbs were becoming weak, in spite of the active mixed treatment. One month later, the patient began to show ataxia, complained of dizziness, his bladder symptoms reappeared, the incontinence being most marked when he was in recumbent position, while the Romberg sign became more pronounced. July 13th, treatment continued, at times to salivation, but patient complained of paresthesia of lower extremities, and incontinence, especially at night; in his opinion he was worse than before treatment. July 15th, Wassermann reaction from blood negative.

It will be noted from the history that although the patient was under active mixed treatment, new signs appeared showing that the spinal lesion was progressing and other symptoms were being aggravated. The question now arises as to what relationship there is, if any, between the antiluetic treatment and the appearance of tabetic signs not observed prior to the treatment; also as to the relationship between latent tertiary syphilis and active mercurial treatment. The literature was consulted with the following findings:

Syme, Hughes, Bennett, and others (11), explain the true cause of tertiary syphilis in excessive administration of mercury by patients being already weakened by syphilitic dyscrasia. Lancereaux connects tertiary syphilitic affections of the central nervous system with excessive use of mercury.

A. Kussmaul (11), however, stated, in 1861: "Although I have taken much trouble to do so, I have not been able to meet with a record of a single worker in mercury who has acquired primary or secondary syphilis while he was affected with mercurialism, and no malignant form of syphilis has ever been found in persons who have long been under the influence of mercury, such as miners or smelters of that metal." Marschalko (11), after exhaustive investigations carried on in Finger's dermatological clinic at Breslau, concludes that mercurial treatment exercises a preventive action even in the tertiary stage of syphilis.

Ehlers (12) states that the statistics of Fournier, Haslund, Vagda, and others are almost unanimous that tertiary symptoms are commonest in patients who have either not been treated with mercury at all, or who have been treated insufficiently.

We are confronted with a further question—whether we shall continue treating our patient with the mixed treatment, or whether it would be harmful for such a case to be so treated, in view of the tabetic symptoms growing progressively worse while he was under this method.

The observations of Erb (13) on this very point are both interesting and authoritative. Erb thinks that a vigorous course of treatment will remove the original cause of the disease, but the degenerative processes once set in motion will continue slowly to advance even if the original cause is removed. At best we can only hope to prevent the progress of the morbid action to the unaffected nerve tracts, and must leave those already damaged to their fate.

CONCLUSIONS.

1. Syphilis may attack the urinary bladder as well as other viscera.

2. Syphilis of the bladder occurs during the tertiary period of the disease.

3. A bladder affected with syphilis will frequently show no characteristic lesion, and the diagnosis must be made in conjunction with a positive Wassermann and the ready response to antiluetic treatment.

4. A gumma in the bladder is sometimes difficult to differentiate from papilloma.

5. Specific treatment is harmless and of decided benefit in many parasyphilitic affections of the bladder.

6. A certain number of cases remain in which no visible improvement occurs in spite of energetic treatment.

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EPIDEMIC GASTROENTERITIS, INFANTILE PARALYSIS, AND INFLUENZA.

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During the current year I have had under treatment in private practice, as well as at my stomach clinic in the outpatient department of the New York Hospital, numerous cases of gastrointestinal disorders, which although generally diagnosed and treated as cases of ordinary indigestion, I have found to be distinctly epidemic in character, and to a great extent contagious. I have observed similar cases, mostly during previous epidemics of influenza, for some years past, but find them especially prevalent since the grippe epidemic of last winter and early spring. Since then they have been increasing in numbers throughout the summer and fall; this epidemic of gastroenteritis running side by side with that of infantile paralysis. The gastrointestinal disturbances in some instances usher in the paralysis in children, while in others they attack various members of the family, where infantile paralysis occurs.

The attack may involve the stomach and intestines either separately or together. The onset, sometimes preceded by catarrhal symptoms, is usually marked by anorexia, nausea, and vomiting, which at times is persistent, and very hard to overcome.

The bowels, sometimes constipated at first, usually become loose, the movement large, watery, and accompanied by griping, and at times vomiting and a feeling of faintness. On the contrary, the stools may be small, very frequent, accompanied by tenesmus, and contain mucus, and even blood, thus resembling closely the stools of acute enterocolitis or even of dysentery. But instead of amebas they are often found to contain streptococci.

The subsequent course, although usually mild, with only a slight elevation of temperature and a tendency to recovery within a couple of weeks, especially in adults, is subject to wide fluctuations, and at times to severe unaccountable exacerbations, especially in children. During these exacerbations there is usually a marked elevation of temperature with aggravation of all the symptoms, followed sometimes in children by the onset of paralysis, and even in adults by abdominal distention, pain, and tenderness on pressure; at times accompanied by jaundice, and occasionally even leading to a fatal termination, as illustrated by the following cases.

Case I. Mrs. H——l, twenty-four years old, of Rockaway Beach, N. Y., previously in good health, was suddenly taken ill with nausea, persistent vomiting, and obstinate diarrhea. When I first saw her, about a week later, she was jaundiced, her abdomen was distended and tender on pressure, but neither the liver nor the spleen were palpable. Her temperature was 102° F., pulse 110, respirations 28; the urine was scanty, high colored, and contained some albumin, but no casts. I prescribed opium and belladonna rectal suppositories, large doses of bismuth with codeine by mouth, and a very light diet. This was followed by marked improvement during the next few days, until suddenly one night there was an exacerbation of her symptoms, and the relatives, becoming alarmed, had her removed to a hospital. There she had a pyemic temperature, her jaundice became deeper, the abdomen more distended; she then became delirious and later coma was followed by death in less than a week after her admission. The consultants were greatly puzzled by the case and, finding their tentative diagnosis unsatisfactory, were very anxious to have an autopsy, but this was refused.

Soon afterward the mother, who nursed the patient in her illness, had an attack of nausea, vomiting, and diarrhea with griping; after her the orphans left by the dead woman, and later also a brother who boarded there—all showed similar symptoms, although not so severe. Opium and belladonna suppositories and bismuth with codeine by the mouth were given, and they all recovered within a few weeks.

During the height of the epidemic of influenza of last winter and early spring a series of very severe cases of gastroenteritis, many of which terminated fatally, were reported from Chicago—if I remember rightly—or its vicinity. Some of the physicians thought them to be cases of ptomaine poisoning. Poisonous candy was suspected as a cause; but no satisfactory diagnosis was made, although one physician found streptococci in the stools. Yet from the descriptions of these cases I had no doubt at the time that they were cases of severe gastroenteritis of influenza.

Case II. Last August, in Belmar, N. J., a five year old child of a family from New York city, who spent the summer there, was taken sick with a "cold," which seemed to have improved greatly in a couple of days, when suddenly there was a rise of temperature, nausea, vomiting, and diarrhea, with a very heavily coated tongue and offensive breath. These symptoms continued, in spite of treatment by prominent New York specialists, for the next couple of days, when paralysis developed and rapidly ascended, causing death by respiratory failure.

In some cases there is a marked nervous irritability of the stomach, manifesting itself by anorexia, nausea, and very obstinate vomiting. This is probably due to the deleterious effect of the toxines of influenza on the nerves of the stomach as well as upon the general nervous system. The following cases may serve as illustrations:

Case III. In the fall of 1904 I was called to see Mrs. L. L., forty-five years old, the wife of a New York attorney. She was in good health until a few days previously, when an attack of influenza set in, accompanied by persistent vomiting. This vomiting at first followed only the ingestion of food or drink, but soon became almost continuous, and was accompanied by distressing retching, so that even gastric sedatives, like codeine and bismuth, were not retained. Having ruled out organic diseases of the stomach as the possible cause of the vomiting, I came to the conclusion that I had to deal here with a gastric neurosis caused by the influenza; finding lavage ineffective and medication per os impossible, I prescribed very small, but high rectal enemata of potassium bromide grains xl, tincture of valerian ʒi, mixture of asafetida up to half an ounce, in one third of a cup of warm milk, to be retained for many hours. The effect was almost magical, thus furnishing a therapeutic confirmation of my diagnosis, the vomiting was rapidly controlled, and the patient made a good recovery.

She continued in good health subsequently for over two years, and gained a good deal of weight, until in the spring of 1907 another attack of grippe set in, again accompanied by vomiting. I was away on a vacation, and another physician was called. Finding it impossible to stop the vomiting, he consulted one of our most prominent gastrologists and the latter, suspecting carcinoma ventriculi, had the patient transferred to the hospital he was visiting, where he kept her under his personal care and observation. There a thorough examination enabled him, as he admitted later, to exclude carcinoma or other organic troubles, but the patient continued vomiting and retching and finally died from exhaustion in about four weeks. No bromide, valerian, nor asafetid enemata were used during her second attack.

Case IV. Mrs. T., who stopped with my family at Bradley Beach, N. J., manifested, last July, an attack of grippe with catarrhal symptoms, bronchitis, anorexia, nausea, and diarrhea; a few days later, my wife complained of nausea, anorexia, and diarrhea with griping, which lasted for about three weeks. During the same time my three and a half year old little girl was suddenly attacked by nausea, retching, and vomiting, even on an empty stomach; all medication proving ineffective, I had recourse to high rectal enemata of potassium bromide in a very small amount of warm milk to facilitate their long retention and absorption, and succeeded in stopping all symptoms, the child recovering rapidly. Soon after, I also lost my appetite, felt nauseated, and had a diarrhea with griping, which symptoms with remissions and exacerbations lasted over four weeks, during which time other members of my family, who remained at our home in Elmhurst, L. I., where I frequently went, also suffered from similar symptoms, only two of the whole family escaping the contagion.

In distinct contrast to this epidemic of gastroenteritis, which has so far been overlooked completely, the epidemic of infantile paralysis, which ran side by side with it, received the almost undivided attention of some of our noted medical men, and so far has baffled their untiring efforts. Despite endless research work and close observation in hospitals of thousands of cases in the various stages of the disease, we are as yet completely in the dark as to the true character, etiology, early diagnosis, and treatment of infantile paralysis.

The reason why our most advanced and usually successful methods of study of infectious diseases have so signally failed us in the case of infantile paralysis lies, I think, in the fact that our reasoning started from false premises, and thus putting us on the wrong track, inevitably led to false conclusions.

To begin with, infantile paralysis has no clinical or etiological entity. Like the glomerular nephritis of scarlatina, it is only a complication of an infectious disease, which may or may not follow it, and may during some epidemics, become especially prevalent, attacking then by preference the much more vulnerable nervous system of children. This view of the character of infantile paralysis is borne out by the following facts:

1. The epidemic of infantile paralysis came in the wake of the grippe epidemic of last spring, and ran parallel with the gastrointestinal variety of that disease.

2. In some instances the contagion of infantile paralysis could be traced directly to influenza, especially of the gastrointestinal type, in another member of the same family.

3. The onset and early symptoms of infantile paralysis are identical with those of the corresponding type of influenza, from which it cannot be differentiated in the preparalytic stage. As a matter of fact, at the height of the epidemic cautious physicians classed many cases of influenza as suspected poliomyelitis, and, if no paralysis manifested itself, called them abortive cases.

4. The wide fluctuations, frequent relapses, and at times violent exacerbations, which present one of the most characteristic features of influenza are also common to epidemics of gastroenteritis, and to the preparalytic stage of acute anterior poliomyelitis.

I hope by this communication to draw the attention of my colleagues to the prevalence of these epidemic gastrointestinal disorders, especially in their milder forms, sometimes with anorexia, nausea, and lassitude as their only symptoms for weeks; to the close relation existing between them, as well as between infantile paralysis and influenza, and to the advisability, therefore, of applying to these cases the principles of prophylaxis and treatment employed in influenza generally.

In conclusion, I wish to point out also that, since inoculation with the Pfeiffer bacilli has failed to produce influenza in animals, while streptococci are as a rule found much more frequently than the former in severe forms of influenza, especially those complicated by angina, enteritis, pneumonia, and other respiratory disorders,[1] and of late also in infantile paralysis (by Rosenow and his coworkers)—it seems to me well worth the trouble to investigate more thoroughly the causative relation of streptococci, not only to the secondary infections of influenza, but to its primary onset as well.

1234 Madison Avenue.

Prognosis in Pellagra.—J. F. Siler, P. E. Garrison, and W. J. MacNeal (*Archives of Internal Medicine*, September, 1916) discuss the subsequent history of pellagrins who have survived the initial attack, as revealed in their observations in Spartanburg county, South Carolina. The number of cases of recurrent attacks of pellagra recorded was 1,053, of which 130, or 12.3 per cent., were fatal within a year after the recurrence. The number of cases of freedom from recurrence for a like period was 617. The ratio of nonrecurrence to recurrence was thus about as four is to seven. In the later years of the disease the prognosis grows more favorable for recovery from an existing attack, but less favorable as to escape from recurrence in the subsequent year. The disease thus becomes, with time, more firmly established as a chronic condition, but less acutely malignant. A year without recurrence is a favorable omen, subsequent recurrence being less likely and less fatal. It is not uncommon, however, to witness recurrence after several years of freedom from the disease. To say when a patient has definitely recovered is impossible. Where recurrence is escaped for one or more years the disease had best be considered merely arrested or inactive, much as in tuberculosis or syphilis.

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[1] George Matters: The Etiology of the Current Epidemic of Respiratory Infections in Chicago, *Journal A. M. A.*, January 1, 1916, p. 30.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXVI.—How do you treat Colles's fracture of the radius? (Closed.)

CLXXVII.—How do you treat delirium tremens? (Answers due not later than December 15th.)

CLXXVIII.—How do you treat acne vulgaris? (Answers due not later than January 15, 1917.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXV has been awarded to Dr. S. Bernard Rosenzweig, of New York city, whose paper appears below.

PRIZE QUESTION NO. CLXXV.

THE TREATMENT OF FURUNCULOSIS.

By S. BERNARD ROSENZWEIG, M. D.,
New York.

A clear conception of the underlying causes of furunculosis is a *sine qua non* of its proper treatment, without which a comparatively simple surgical condition may develop into a long siege of pain and discomfort, multiple incisions and dressings, and nasty scars. Briefly, the causes are local and general. Remove one or a combination of them, and the patient is happily restored to his daily functions.

A. LOCAL CAUSES:

- I. Skin:.....
  - 1. Hairs:
    - *a.* Ingrowing hairs.
    - *b.* Tortuous hair follicles.
  - 2. Sebaceous glands:
    - *a.* Oily skin.
    - *b.* Comedones.
    - *c.* Acne.
  - 3. Sweat glands. Profuse perspiration with maceration of skin—as in axillæ.
- II. Clothing: Irritation from collars and seams of clothing.
- III. Autoinoculation:
  - *a.* Improper dressing, as poultices, salves, homemade plasters, etc, make ideal conditions for growth and multiplication of microorganisms (heat and maceration of skin).
  - *b.* Fingernails, pus carried by scratching and squeezing.
  - *c.* Infected clothing; dressings not changed sufficiently often.
- IV. Microorganisms: Active staphylococcus, streptococcus; less commonly colon bacillus; and rarely pyocyaneus.

B. GENERAL CAUSES:

- I. Blood; conditions favorable to growth of bacteria (as glycosuria).
- II. Blood; lack of antibodies
  - *a.* "Run down" conditions.
  - *b.* Anemia.
  - *c.* Constitutional diatheses.
  - *d.* Intercurrent illness.

At a glance, this table will be helpful in solving the etiology of any given case. Generally, one particular factor will be prominent: most commonly, however, a contributing cause can be discovered.

TREATMENT.

Abortive. When seen early, tincture of iodine painted over the reddened areas, with epilation of infected follicles, and a wet fifty per cent. alcohol dressing, may suffice to abort the condition. If there is a small, superficial collection of pus, the old fashioned match stick with phenol is often useful.

Active treatment requires a free crucial incision through the entire indurated area to allow drainage and to relieve tension. In large boils, it may be necessary to undercut the flaps. A wick of gauze, impregnated with dilute mercurial ointment, will prevent premature superficial closure, and permit drainage. The dressing should be plain gauze and kept moistened with fifty per cent. alcohol. The evaporation of the alcohol is cooling; it is bactericidal and toughens the skin, assisting nature to close atria which would otherwise become infected. I know of no better local application than fifty per cent. alcohol, both for the immediate comfort of the patient, and his early relief from the furunculosis. Alcohol may be continued throughout the entire treatment, or later, balsam of Peru (without oil) may be substituted.

The general treatment should be begun at once. One phase is the treatment of constitutional disturbances and the institution of careful hygiene. A nutritious diet, with moderate restriction of carbohydrates is advisable, even without the presence of glucose in the urine. Constipation should be relieved without delay. The most important procedure is the manufacture of an autogenous vaccine. Many men concede that in long drawn out cases, this offers the only hope of cure. Rather than wait for chronicity, I always inoculate a culture tube for diagnosis on the appearance of the first boil. If a second one develops, the laboratory is prepared to turn out the vaccine in record time. Ten million dead microorganisms are injected at the initial dose, and subsequent doses are injected, at first at intervals of five days, later four days. The injection is made subcutaneously, the dose increasing by ten million until fifty million are given, after which the increase is twenty-five million each time. The treatment is painless and without untoward sequelæ. The actual bacterial count in each dose varies with different men. The opsonic index is rarely employed to determine the negative phase; a sufficient interval is maintained between the injections. Stock vaccines have given good results in the hands of many surgeons. A mixed culture of staphylococcus, streptococcus, and colon bacilli should be used. The fact that larger doses must be given, and that the patient is required to manufacture antibodies against unoffending germs should favor the use of the autogenous vaccine, the manufacture of which is simple and may be entrusted to any competent bacteriologist.

Dr. J. Otis Carrington, of Malden, Mass., writes:

In treating furunculosis, a rigid search must be conducted to ascertain the cause of lowered vitality, as it is this condition—impaired vitality—which predisposes to, and causes boils by lowering resistance and allowing the ingress of the various microorganisms responsible for the condition.

Examine the urine for sugar or albumin, and, if present, treat the diabetes or nephritis. Frequently boils are a concomitant in these diseases and occasionally in septicemia. Nor are they infrequent in persons run down from anemia, digestive disturbances, constipation, absorption of toxins from the alimentary tract, improper or insufficient food, alcoholism, convalescence from severe illness, e. g., typhoid fever or smallpox, and in those exposed to the noxious gases of bad drains. In short, any debilitating influence, when ascertained, must be treated by suitable measures, dietetic, medicinal, and hygienic.

TREATMENT.

For convenience, treatment may be divided into constitutional, local, and vaccine.

Constitutional treatment. Abundance of fresh air, free evacuation of the bowels—by medication if necessary—and frequent bathing should be insisted upon throughout treatment. The debilitated condition calls for tonic medication, such as combinations of iron, quinine, and strychnine, or iron and arsenic; also for generous diet of milk, eggs, cream, and fresh meats. Not infrequently a change of diet, climate, and habits is very serviceable in prolonged furunculosis. Fresh brewer's yeast, one to two drams in water, three times a day before meals, is good throughout the disease, as is nuclein solution in one dram doses in water, between meals and at bedtime. If boils are already present, give calcium sulphide in one tenth grain doses every four to five hours; it hastens the boils to mature and prevents the formation of new ones, but is useless in the furunculosis of diabetes. The action is probably due to the excretion of sulphur in the sweat which in passing through the skin acts as an antiseptic, and to its mild laxative effect.

Local treatment. The objects of local treatment are to reduce the inflammatory process, to allow for the free exit of pus, and to prevent the infection of neighboring hair follicles, sebaceous glands, or sweat glands. The surface of the boils and skin should be kept thoroughly clean by the frequent use of hot water and tincture of green soap, applied twice a day, or by a simple antiseptic solution, such as alcohol, or corrosive sublimate one in 5,000.

Boils may frequently be aborted when they first start by painting with collodion containing a five per cent. solution of iodoform every hour until a heavy contractile coating is formed, but leaving the centre uncovered. If pus forms under this, it may be absorbed; but if not, open aseptically and dress. Local application of extract of opium or belladonna relieves pain and tends to decrease inflammation. Injection of three drops of five per cent. phenol also helps.

In the early stages of induration, when no signs of softening are present, apply fomentations of hot boric acid compresses, or carbolized epsom salt compresses, changed frequently and continued persistently until softening takes place and signs of fluctuation appear. Then incise and allow pus to flow out; irrigate with one in thirty phenol. The boils should not be opened in the hard stage nor squeezed after they are opened. Infection of the neighboring integument from discharge should be prevented by painting with tincture of iodine for a distance of one inch around the boil.

Lesions at the nape of the neck are particularly troublesome owing to continuous friction from the collar band. Remove all friction by wearing soft silk collars. Treat locally with compresses of hot boric acid, or hot carbolized epsom salt and a generous application of the following:

℞ Resorcinolis, ...gr. xx;
Acidi borici, ...ʒiss;
Alcoholis, ...℥i;
Aquæ distillatæ, ...ad ℥v.
M. Sig. Locally, three or four times a day.

Follow this with a thick layer of boric acid and a light dressing for a day or so. When the lesions are larger and maturing, apply ichthyol, twenty-five per cent.; incise, when necessary, with aseptic precautions; and treat constitutionally.

Vaccine treatment. This is more successful in acute cases as an adjunct to local and constitutional treatment than in chronic cases. Start with a subcutaneous injection of 100 millions of staphylococci and increase by 100 millions each week until 500 millions are reached. Autogenous vaccines, too, are worthy of a careful trial and often give gratifying results.

Dr. Charles H. Nammack, of New York, observes:

Although we have it on good authority that the affliction of furunculosis has been known since ancient days, the fundamental features of its treatment have not changed greatly. The salient factors in the production of this disease are a subject with lowered vitality, a point of least resistance in the skin, the invasion of pyogenic organisms, and the formation of a localized abscess.

The treatment is prophylactic, local, and general. The prophylaxis is simple, but, unfortunately, not always effective for the reason that the invading organisms are ubiquitous, numerous, and hardy. Any person who discovers that he is prone to boils in any particular part of the body should concentrate his attention there. Absolute cleanliness is essential and clothes should be worn that do not bind or irritate, as high tight collars so often do the neck. Superfluous hair should be removed, frequently if necessary, and the region should be bathed daily with green soap and warm water followed by a sponging with ninety-five per cent. alcohol, which seems to be particularly effective against the skin inhabiting organisms.

The local treatment is entirely of a surgical nature. While waiting for the evidence of pus formation or "coming to a head," as the lay expression has it, it is frequently desirable to use applications to relieve the pain and heat, in which case wet dressings in the form of aluminum acetate saturated solution or alcohol are excellent. If it is deemed advisable to hasten the process, a poulticing dressing such as ten per cent. ichthyol may be used.

When the pus has formed, the sooner it is evacuated, the more quickly will the boil heal. With a sharp scalpel, an incision is made at right angles to the grain of the skin over the point of maximum fluctuation, and the contents of the abscess are allowed to escape and may even be gently expressed. The incision is made in the way described in order to keep the edges of the wound apart and insure free drainage. Following the incision, a cotton swab on a toothpick is dipped in pure carbolic acid and is plunged, not without considerable pain, into the depths of the abscess and then rotated. The dressing consists of sterile gauze and boric ointment. Boils so treated will usually be found to be entirely healed in from thirty-six to forty-eight hours. It is also possible to abort the formation of pus by employing this method of treatment before pus has formed.

As furunculosis usually occurs in patients whose vitality has been lowered by some other condition, such as certain of the acute febrile diseases, the general treatment is directed toward the primary condition. If it occurs in a patient who is otherwise considered to be well, it is the duty of his physician to look for some underlying factor. Uranalysis, examination of the blood for anemia and Wassermann reaction as well as careful inquiry into general hygiene, appetite, digestion, and elimination, may furnish the key to the situation. The general treatment, therefore, resolves itself into measures which are aimed at general upbuilding, and consists of baths, outdoor exercise, the correction of errors of diet and elimination, and tonics when they are indicated.

The commonest organism found on culture from furuncles is the staphylococcus, which is not always the slightly virulent pyogenic organism that we have come to regard it, being prone to the production of secondary bone lesions. On treating cases of furunculosis, especially in young children, we should, therefore, be on the alert for a complicating osteomyelitis, usually ushered in by a chill, sudden rise of temperature, and severe bone pain. The failure to recognize this condition has been referred to as the tragedy of medical diagnosis in children. The treatment is prompt surgical intervention.

In cases which show a tendency to become chronic or to have relapses or recurrences, we have a powerful weapon in the form of autogenous vaccines. There is no disease that is better adapted to vaccine therapy than this. The condition is so localized and walled off from the general circulation that it fails to stimulate the subject to the formation of antibodies capable of resisting the invading organisms. Make cultures from the lesions, determine the organisms present, and then make autogenous vaccines. The vaccine may be given once a week by deep subcutaneous injection. By this means passive immunity to this disease can be rapidly developed, which will result in its more rapid cure, when used in conjunction with the measures already described, and will protect the patient against further attacks. Using a vaccine whose strength was one billion organisms to the c. c., we could start with a dose of 250 million and increase each week, doubling the dose until two billion was reached. This makes the course of vaccine consist of only four doses.

Dr. Louis Neuwelt, of New York, remarks:

Furuncles are due to the infection of the hair follicles by staphylococci. While infection is usually local, it often becomes general, resulting in successive crops of boils; this condition is called furunculosis.

General treatment. The patient's general condition and the urine should always be examined with the purpose of finding a latent diabetes or nephritis. The patient's resistance and vitality of the skin may be lowered by specific fevers, anemia, uremia, septicemia, a general run down condition, or by skin diseases, such as eczema, prurigo, lichen, or scabies. Frequently no disorder of the general health can be discovered. If any of the previously mentioned diseases are found, appropriate treatment should be instituted.

It is important at the outset to induce free daily bowel movements, to regulate or change the diet so as to prevent gastrointestinal indigestion, to give general advice as to hygiene, and tonic treatment in the form of iron, quinine, and strychnine.

Good results often follow the taking of one third of an ordinary compressed Fleischmann yeast cake, dissolved in a glass of water, twice daily.

Local treatment. "Hands off" is the rule for young boils as well as older ones. By squeezing, nature's effort of walling off the infection by surrounding it with leucocytes is thwarted, and as a result, the infection spreads through the break in the wall of leucocytes. If left alone, boils sometimes resolve, which is another reason for not handling them.

Abortive treatment. The best way of aborting a furuncle is to dip a sterile toothpick into pure phenol, shake off the excess, then bore the point firmly and deeply into the centre of the furuncle and withdraw it; a white eschar forms. This procedure is practically painless, because of the anesthetic action of the phenol. Paint the boil and its surround area with tincture of iodine, and cover with dry sterile gauze, held in place with zinc oxide adhesive plaster strips.

Later stage treatment. When seen later, in the pointing stage, puncture with a red hot needle shortens the treatment. An ordinary darning needle is run through a cork for the purpose of handling it. The point is heated in an alcohol flame until red hot. The skin is gently pinched into a fold with the furuncle at its top until its centre shows a white, bloodless spot. Noting the direction in which the hair grows, the heated needle is plunged three or four mm. deep into the white spot in the direction of the hair growth. The tension and pain stop at once. Pressure is then exerted on the burned spot, and if tenderness persists, the process is repeated. Small, dry gauze (sterile) dressings are applied to prevent the spread of infection to the healthy skin.

In large sized furuncles, after puncture, apply gentle suction (which should be painless) with a Bier cup for three to five minutes, and repeat in four hours. Shave the hair for one inch around the infected area, and wash it with benzine, followed by alcohol. Gauze soaked in Wright's solution is an excellent wet dressing, made occlusive with waxed paper or rubber tissue to retain the moisture, and secured with a bandage. The dressing should be kept constantly wet with the solution. When the sloughy core becomes loose, it is removed with forceps and the cavity is swabbed with tincture if iodine. Dry sterile gauze dressing are used until a cure results.

If an abscess forms, apply a warm alcohol poultice, one part of alcohol and four parts of warm water, on sterile gauze and made occlusive. This should be changed twice daily. Care should be taken not to irritate, rub, or scratch the adjoining skin, or to use too hot applications.

Furuncle of the external auditory canal. The canal is cleaned of cerumen, products of desquamation, discharge, or foreign bodies. A wick of gauze is inserted into the canal, nearly to the drum membrane, and filling the lumen. The furuncle is now punctured as previously described exactly in the centre. The wick is then saturated with alcohol, or with boric acid (half and half), and the patient is instructed to keep the wick constantly wet by dropping alcohol on it at frequent intervals. The physician replaces the wick daily with a fresh one until the cure results.

Vaccine therapy. In obstinate cases, vaccines should be used. As it is known that furunculosis is a staphylococcus infection, stock vaccines of staphylococcus (combined) may be used if autogenous vaccines are not available.

Whenever possible, however, the autogenous vaccine should be prepared. The primary injection of thirty million bacteria to one mil is given; the next, sixty million. the third eighty million, and the fourth on the seventh day of 100 million, allowing an interval of two days between each two injections. The proper vaccine and dose should produce some general reaction and a definite temporary increase in local symptoms. If the reaction is too severe, lengthen the intervals, or decrease the dose. There is no general rule to follow in doses, as every case is a law unto itself. Usually eight to twelve injections are necessary.

Prophylaxis. Patients who suffer with frequent recurrences of furuncles should be instructed to scrub the affected part of the body daily with a brush, using tincture of green soap and warm water, and then wash it with alcohol. The physical condition should not be neglected.

Dr. C. B. Burry, of Woonsocket, R. I., advises:

In treating furunculosis assume complete charge of both patient and boils, on their first appearance in your office. Do not allow patient to tell you that he will drop around again in a few days if the boil you have treated does not feel any better. Insist on daily visits until the case is under control. Forbid any home tampering with your dressings, and taboo germ spreading cracker or soap poultices. The patient who boasts that he suffered with boils for six months, had tried all the doctors in town without success, and was finally cured by an old woman's recipe is the fellow who promised to drop around again in a few days and failed to return because there was a mutual inclination on the part of doctor and patient to treat the boil as a joke.

Examine the urine in every case and do not let the other fellow beat you to it with the diabetic or nephritic diagnosis.

It should not be forgotten that the majority of patients need instruction as to change of food and habits of living. Vacations and alterative remedies have their place.

If suppuration is not sufficient to call for the knife, try abortive methods, making use of carbolic acid or tincture of iodine. Employ the Bier hyperemic cup in conjunction with the local applications.

Incision being imperative, give the necessary surgical treatment, remembering that a sharp knife, a little ethyl chloride, and attention to technic make more friends than the haphazard maneuvres of the cobwebbed office. The Bier hyperemic cup will prove of great assistance, as it will withdraw the products of inflammation and bring better blood to the part. The suction seems to hasten healing. Ichthyol, twenty-five per cent., will prove soothing when applied to the inflamed area and will prevent spread of infection. But in these days of drug famine it is well to recall that the hot boric acid compress is credited with similar properties.

Opinion seems divided as to the merit of calcium sulphide. In case it is dispensed, it is well to supplement it with the familiar but efficacious iron, quinine, and strychnine tonic, or some similar tonic. Remember that in stubborn cases dilute nitrohydrochloric acid has a decided alterative effect.

During the past few years the vaccines have won a leading place in the list of remedies for furunculosis. The autogenous vaccines appear to give better results, but the stock vaccines are usually satisfactory.

The yeast preparations have helped, whenever tried. Internally and externally, they appear to diminish the extent of the boil crop. Some excellent preparations of this remedy are being made by the leading drug houses.

In closing, it is desired to say an extra word of praise for the Bier hyperemic suction cup. Its use shortens the duration of the boil.

Cancer of the Cecum in a Young Adult.—Bréchot (*Presse médicale,* October 9, 1916) reports the case of a young soldier twenty-two years of age who came under observation complaining of slight digestive disturbances, vague pains in the right iliac fossa, and intermittent diarrhea. There was no paroxysmal colic, melena, or fever. Soon a mass of the size of two fists, vertically elongated, movable internally to the midline, and very firm and irregular, was noted. Without being able definitely to exclude hypertrophic ileocecal tuberculosis, Bréchot excised the ileocecal angle and ascending colon and did a laterolateral ileotransversostomy. The patient recovered and left the hospital apparently cured. The paucity of preexisting functional symptoms was explained by the specimen, which showed a round tumor not involving the appendix, fundus of the cecum, nor the ileocecal valve. The growth was an atypical epithelioma, which had extended to the ileocecal lymph glands. Enlargement of more distant glands had not been found at the operation.

Editorial Notes and Comments

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WHY NOT THE DOCTOR?

When prices begin to go up, popular opinion avers that wages will be the last item to acquire the soaring tendency. Wages indeed are extremely conservative in such matters, but there is another class of payments that is even more laggard; our readers will quickly guess that the reference is to professional fees. Far from going up, the average physician finds some of his fees vanishing altogether, and almost alone in the community he has his income decreased both relatively and absolutely. This tendency was felt long before the beginning of the present European war, but undoubtedly that catastrophe has both hastened and heightened the crisis now upon us. A writer in *Commerce and Finance* for November 22d informs us that a prominent manufacturer of Boston has foretold that within three months shoes would be selling at twenty, possibly thirty dollars the pair; hides are now costing fifty-five per cent. more than on September 1st; New York cobblers have raised their prices twenty-five per cent. Potatoes are six dollars a barrel, the best eggs ninety cents a dozen, and brewers are casting about for the least objectionable way of getting a larger price for beer. Worst of all, those who feasted on turkey on Thanksgiving Day paid from forty to forty-five cents a pound for the bird, while many had to be satisfied with ducks or other unorthodox fowl.

Our ethical attitude toward fees is beautiful, and we should be the last to suggest that what is still an honorarium should become a fixed price. We think that very few of the laity comprehend this viewpoint of ours, and most of them believe that they pay us exactly what our services are worth. They lose sight of the lives we save, and the restoration to complete function of damaged members. Whether a patient entertains this view, or recognizes the peculiar nature of the fee, we feel sure that little, if any objection will be made on his part to its increase. The stagnation of fees is due simply to our own inertia and lack of team work. Even if resolutions are passed at society meetings to establish new standards, charitably inclined or weak members will stick to the old schedule. They will continue to live from hand to mouth, with too little regard for the day when a widow and family may have to provide for themselves. The automobile quickly became a necessity to the country doctor, but no rise in fees occurred, although motor car upkeep is a serious drag on a fairly good income.

We believe that this matter of fees should be taken up at once. Schedules should be proposed at society meetings, and the results should be made public in order that the laity may not be taken unawares. One dollar should become two dollars, two dollars should become three, and the wretched minimum charge of ten dollars for a confinement "without instruments" should be promptly raised to fifteen. These are mere suggestions. Why should the doctor alone try to live on an income that was none too large two score years ago, and has been virtually growing smaller every year since?

CEREBROSPINAL MENINGITIS AND POLIOMYELITIS.

Among maladies still more or less mysterious, poliomyelitis and cerebrospinal fever may be regarded as in the front rank, for of neither is anything very clearly known. Perhaps it might be more correct to say that there are many features of both diseases which require elucidation. Moreover, these affections present a number of points of similarity; their onset is somewhat similar, and their progress also is not unlike, that is, up to a certain stage, and the germs of both are found in the nose, throat, and intestinal tract.

A Medical Research Commission, in England, has been investigating cerebrospinal fever and has handed in a report of its findings. In the *Medical Press* for October 11, 1916, Sir William Collins reviews this report and finds in it many inconsistent statements which he criticizes caustically. He points out that what the uninstructed laity wants to know is: What is the cause of this mysterious disease? Can it be cured or prevented, as has been confidently alleged, by inoculation or vaccination, and how is the disease propagated, from those who have caught it by infection or by those who have not been attacked, though they harbor the germ—the so called carriers? As he states, the evidence with respect to the vera causa of the disease is far from reassuring. We are indeed told about the "causal organism" and pontifically assured that "the evidence to the effect that cerebrospinal meningitis is due to infection by Diplococcus intracellularis meningitidis of Weichselbaum, commonly known as the meningococcus, is accepted as adequate by practically all bacteriologists." Collins is by no means convinced, however, that the bacteriologists are absolutely right, and he draws attention to many apparent fallacies in their train of reasoning. For example, a considerable number of noncontacts have been shown to harbor the germ of cerebrospinal fever and are therefore carriers. Why then do those persons who harbor the germ, although not immune, fail to suffer from the disease, and why do some of those who suffer from the disease not harbor the germ? These are, in his opinion, problems in logic which the bacteriologist may be better able to grapple with than the mathematician.

All investigators of both cerebrospinal meningitis and poliomyelitis, whether bacteriologists or clinicians, are agreed on one point, that overcrowding and lack of ventilation are powerful predisponents of the disease, and that where air space is ample and ventilation efficient neither malady is likely to spread.

Thus prevention is, in this instance as in all instances, better than cure, and with an average mortality as high as fifty per cent., the specific treatment of the disease by serums or vaccines is admitted in the report to be "generally unfavorable."

Flexner's views with regard to specific treatment of poliomyelitis are practically identical with those given in the report with respect to cerebrospinal fever, for he states, "that there is no safe method of preventive inoculation or vaccination against poliomyelitis, nor any practicable method of specific treatment. The prevention of the disease must be accomplished by general sanitary means."

Much more will have to be learned regarding these diseases ere they can be prevented or treated with great hope of success. They are still mysterious and obscure. The significant fact has been learned that sanitary measures rigidly enforced are the only safeguards against the spread of either malady, and once again is brought into prominence the dictum of John Wesley that cleanliness is next to godliness. This word of wisdom should be heeded in New York and other large cities where the diseases are prone to lie latent, and when awakened to spread far and wide.

THE FILTERABLE VIRUS.

For a generation or more we have looked upon the ordinary bacterial forms as the ultimate causes of many diseases, and the science of bacteriology has become crystallized along definite lines. But in this, as in other sciences, certain new facts have come to light which are not in harmony with established ideas. The tendency has been general to ignore these conflicting facts, but a few workers have studied them with results that bid fair greatly to modify our bacteriological concepts.

In a recent article J. G. Adami (*British Medical Journal,* October 14, 1916) discusses some of these new problems and their interpretation. He points out the firmly established position of Bacillus typhosus as the cause of typhoid fever. Killed cultures of this bacillus will cause immunity to typhoid, but no one has ever succeeded in producing the disease in man or animals with a living stock culture of the organism. Bacillus suipestifer has occupied an analogous position in the animal world. Its cultures, likewise, will not cause hog cholera, although it is always associated with that disease. Recently the true cause of hog cholera has been shown to be an ultramicroscopical, filterable virus.

Quite similar findings have been recorded in the case of an epizootic of guineapigs, in canine distemper, and probably in scarlet fever in man. Recent studies also seem to place typhus fever in the same category. Finally, the prolonged researches of Hort and his associates (*ibidem, loco citato*) offer strong evidence for the inclusion of cerebrospinal meningitis in this paradoxical group. They have shown the meningococcus to be a nearly constant accompaniment of meningitis, but that its cultures are incapable of infecting animals. Along with this organism, however, there is an ultramicroscopical organism which passes through filters, which grows in culture media, and which is infectious to animals.

It would carry us too far to enter into the details of these and other studies, but their results seem to be definitely established. It has been suggested that in such cases as those cited, there is a symbiosis in which the filterable virus prepares the field for the bacterium. Hort offers, and cites evidence to support the suggestion that the bacterium and the filterable virus are two phases in the life cycle of a single organism. If this suggestion proves to be correct we must modify our long accepted belief that bacteria are the simplest of all forms of living matter, multiplying asexually and by fission only.

It may be recalled that we have long known that certain tuberculous lesions may be entirely free from tubercle bacilli demonstrable microscopically, and yet may prove infective to animals. Can the minute Gram positive granules found in such material be analogous to the filterable viruses just discussed? Such a notion is not to be thrown aside lightly, for there is now sufficient evidence to make its serious consideration necessary.

These observations, to which others might be added, seem to open up a new field for bacteriological research which promises to be highly fertile and profitable. It would be well worth while for others to cultivate it.

THE SUBJECTIVE SYMPTOMS OF CHRONIC GLAUCOMA.

It is not uncommon to meet with facial neuralgia in an elderly person. Many such patients are unaware that there is anything wrong with their eyes, although they have suffered from recurrent attacks of supraorbital neuralgia, and may have noticed that they could not see well at times. Frequently they ascribe such symptoms to old age, which also serves to explain why they have to change their reading glasses so often. Yet these recurrent attacks of neuralgia and frequent changes of presbyopic glasses are the ordinary subjective symptoms of chronic glaucoma. Most of these patients consult the specialist too late to save their eyes, because neither they nor their physicians suspect the nature of the disease in its early stages. The diagnosis at this time is not easy, but it is important.

The first step toward the diagnosis is to remember that an attack of supraorbital or facial neuralgia, which has come on during a period of mental stress or bodily fatigue, causes loss of sleep and of appetite, and passes away in a few hours, may readily be the most prominent symptom of an oncoming of chronic glaucoma, or a prodromal symptom of an acute glaucoma. We are apt to think of the pain of this disease as referred by the patient to his eye, but this is not always the case. Often the pain does not seem to radiate from the eye, but from some other part of the face, like the teeth. Occasionally an observant patient tells us that objects look misty, or that he sees colored rings about lights during an attack of neuralgia, but observant patients are not common. If we see the patient while he is suffering, we may notice that one pupil is slightly larger than the other and does not react as well to light, that the eye is a little reddened about the cornea, perhaps that one anterior chamber is rather shallow, and possibly we may observe a slight diffuse cloudiness of the cornea, but after the pain has ceased we are not likely to see any changes. Invariably after the first attack of a neuralgia that ushers in chronic glaucoma has passed off, which happens in a few hours, all the ocular symptoms disappear, and no one can find any indication of trouble. The typical cupping of the optic disc does not appear until after two, three, or more such attacks, and the prognosis is not as good after as before its appearance. If the patient consults a specialist following such a first attack, the vision will be found to be normal, the tension normal, the optic disc normal, the eyeball in its entirety apparently normal, and no indication will be found from which the consultant will be justified in deciding that the eye was the seat of the cause of the neuralgic pain. It is essential that he should either see the patient during the attack of pain, or receive a graphic account of the symptoms during the attack, if he is even to hope to make a correct diagnosis. For this reason it is urgent that a patient who suffers from an attack of facial neuralgia, particularly if he is elderly, should have his eyes looked at carefully for any slight symptoms which may suggest a possible trouble there.

The second attack comes on weeks or months later, the third after a shorter interval, a fourth after one still shorter, and eye symptoms begin to persist during the intervals—lowered vision, large pupil, increased tension, excavation of the optic papilla. The diagnosis grows more and more easy, while the prognosis becomes steadily worse. Is it not well to pay close attention to a first attack of facial neuralgia in an elderly patient, to be sure that it is not caused by the eye?

RESISTING POWER IN OLD MEN.

"A man aged eighty-five years, who was in the habit of taking frequent 'nips' of any drink in which his friends would join him, was taken ill with pneumonia. Doctor Russell, of Birmingham, saw him with me in consultation on the fifth day of the attack, and we agreed that he had no chance of surviving, but the crisis came on the twelfth day; he made an uninterrupted recovery, and lived for two years afterward. The patient had had a loud systolic bruit at the apex of the heart ever since I had known him, which was about eight years."

William F. Box, a practitioner of Stratford on Avon, who communicates the foregoing case to the *British Medical Journal* for November 11th, tells also of another patient. This was a man, over ninety-three years old, who was operated on at the age of seventy-nine years for strangulated inguinal hernia, but his condition at the time was too serious to admit of a radical cure being performed. Latterly he omitted to wear a truss, with the consequence that the hernia again became strangulated. "I was unable to reduce it after the application of an icebag, so I operated," writes Doctor Box; "I found about ten inches of small intestine in the sac, and one coil was adherent to the lower part of the sac by a band about the thickness of the little finger. The intestine was of a dusky red color, but not gangrenous; it was returned without resection. This patient also made an uninterrupted recovery. I do not know whether this constitutes a record, but I should think it did. He also has a loud systolic bruit at the apex of his heart."

The interesting point about both cases is the fact that both had a loud systolic bruit, and the writer thinks this had much to do with their recovery, as the arteries in both cases were elastic, and there were no signs of high tension.

Obituary

MARTIN I. WILBERT, Ph. M.,

of Washington, D. C.

Martin I. Wilbert, technical assistant in pharmacology in the United States Public Health Service, who died in Philadelphia on November 27th, had made for himself a unique place in the medical world. He was a pharmacist of unusual attainments, of the loftiest ideals, and of the most unremitting industry in his efforts to elevate pharmacy and medicine, and to bring them together on a higher plane of scientific accuracy. His work in the compilation of the *Digest of Comments on the United States Pharmacopœia and the National Formulary* is a monument to his industry, accuracy, and the wide range of his knowledge. He was the author of several valuable papers in the form of Bulletins, issued by the Public Health Service. He worked with the Council on Pharmacy and Chemistry of the American Medical Association, and was an influential member of the Council of the American Pharmaceutical Association.

News Items

A New Head to the Rockefeller Foundation.—Announcement is made that Mr. John D. Rockefeller, Jr., who has been president of the Rockefeller Foundation since it was chartered in 1913, has resigned, his resignation to take effect on May 15, 1917, when he will become chairman of the board of trustees. Mr. Rockefeller will be succeeded as head of the foundation by George Edgar Vincent, Ph. D., LL. D., president of the University of Minnesota and formerly dean of the faculties of arts, literature, and science of the University of Chicago. The reason given for Mr. Rockefeller's retirement is that the activities of the foundation have become so varied and important that it is necessary for some one to give his entire time to the work. It is announced further that there will be no change in the policy of the foundation.

American Hospital Association's Headquarters.—At a meeting held in New York on Saturday, November 25th, it was decided to establish in Philadelphia permanent headquarters for the association, with Dr. J. H. Walsh in charge. Doctor Walsh plans to conduct a bureau of information.

Foot and Mouth Disease in Kansas.—It is reported that an emergency quarantine has been placed on cattle shipments from neighboring States by State officials of Kansas and Missouri, because what was believed to be foot and mouth disease was observed in a carload of cattle received at Kansas City from Nebraska. Federal authorities are investigating the outbreak.

Brooklyn Medical Library Association.—The annual meeting of this association will be held on Monday, December 4th, in the Library Building, Medical Society of the County of Kings, Brooklyn, at 8:30 p. m., under the presidency of Dr. William Browning. The paper of the evening will be read by Dr. Edward E. Cornwall on Medical Notes of Early New England, 1620-1650. Dr. Robert L. Moorhead is secretary of the association.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, December 4th, Wills Hospital Ophthalmic Society, Academy of Surgery, Philadelphia Clinical Association, Blockley Medical Society; Tuesday, December 5th, Laryngological Society, Medical Examiners' Association; Wednesday, December 6th, Physicians' Motor Club (directors), Philadelphia College of Physicians; Thursday, December 7th, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, December 8th, Northern Medical Association.

Another Harvard Unit Goes to Europe.—A new contingent of the Harvard Surgical Unit left Boston last week for service in the British base hospitals in France. The party included six surgeons and twenty nurses who will take the place of members of the unit whose service ends on December 9th. The surgeons in the new contingent are: Dr. Francis W. Palfrey, of Boston; Dr. Paul Hector Provandie, of Melrose; Dr. Forrest Fay Pike, of Melrose; Dr. Kendall Emerson, of Worcester; Dr. Henry B. Potter, of Wakefield, R. I.; and Dr. Chauncey N. Lewis, of Boston.

New Officers of the County Medical Society.—At the annual meeting of the Medical Society of the County of New York, held at the New York Academy of Medicine, Monday evening, November 27th, Dr. J. Bentley Squiers was elected president, succeeding Dr. Frederic E. Sondern. Other officers were elected as follows: First vice-president, Dr. Charles H. Peck; second vice-president, Dr. Ludwig Kast; secretary, Dr. Daniel S. Dougherty; assistant secretary, Dr. J. Milton Mabbott; treasurer, Dr. Frederic E. Sondern; censors, Dr. William S. Gottheil, Dr. Ward B. Hoag, and Dr. Alexander Lyle.

Personal.—Dr. John McMullen, who is the surgeon in charge of the trachoma investigations of the United States Public Health Service, addressed the National Committee for the Prevention of Blindness, at the New York Academy of Medicine, on Friday afternoon, November 24th. His subject was Trachoma in Eastern Kentucky and the Work of the United States Public Health Service in Its Treatment and Control. The address was illustrated by lantern slides.

Dr. Charles A. Powers, of Denver, is home after six months' service as surgeon at the American Ambulance Hospital, in Paris. He will return to France and resume his work in the hospital on April 1st.

Dr. Daniel Crosby has been appointed consulting laryngologist to the Huntington Hospital, Boston.

Dr. Channing Chamberlain Simmons, of Boston, has been appointed assistant surgeon to the Huntington Hospital.

Dr. Chevalier Jackson, of Pittsburgh, Pa., has been elected by the trustees of Jefferson Medical College and Hospital, Philadelphia, to succeed the late Dr. D. Braden Kyle as laryngologist to the institution.

The Work of Sydenham Hospital.—The annual report of this institution shows that 2,057 patients were treated at the hospital during the year and 32,971 at the dispensary. The per capita cost of patients was about $2.40. During the year 14,186 free treatments were given. The report shows that the hospital is practically free of debt. The deficit of $6,680.64 is the lowest ever recorded, and it is expected it will be wiped out entirely by gifts made by Mrs. Isaac Guggenheim and Mrs. Frances Cohen and by a theatrical benefit which will be given by the Shuberts in the near future.

The Children's Home Bureau.—This bureau was organized on Thursday, November 23d, at a meeting held in the office of Dr. John A. Kingsbury, commissioner of charities. It will be conducted in connection with the department of charities, but will be maintained by private subscriptions. The object of the bureau is to find private homes for dependent children, and it is believed that one thousand children a year can be placed in carefully selected private homes. Up to the present time $150,000 has been subscribed, which it is believed will be sufficient to maintain the bureau for about three years. Doctor Kingsbury is president.

American Electrotherapeutic Association.—At the annual meeting of this association, held recently in New York, the following officers were elected: President, Dr. J. Willard Travell, of New York; vice-presidents, Dr. William Martin, of Atlantic City, N. J., Dr. Frank B. Gardner, of Boston, Dr. Frank E. Peckham, of Providence, R. I., Dr. William L. Clark, of Philadelphia, and Dr. A. B. Hirsh, of Philadelphia; treasurer, Dr. Emil Heuel, of New York; secretary, Dr. Byron S. Price, of New York; registrar, Dr. Frederick M. Law; board of trustees: One year, Dr. William Benham Snow and Dr. Frederick de Kraft, of New York; two years, Dr. Frederick Harris Morse, of Boston, Mass., and Dr. John W. Torbett, of Marlin, Texas; three years, Dr. Jefferson D. Gibson, of Denver, and Dr. Edward C. Titus, of New York.

Aftercare of Poliomyelitis Patients.—The New York Committee on the Aftercare of Infantile Paralysis Cases, which grew out of a series of conferences called by the commissioner of health to consider the work of caring for the children convalescing from poliomyelitis, has undertaken three main lines of work: First, to coordinate the work of the dispensaries and the nursing agencies; second, to organize dispensary transportation for children who required it, and third, to raise funds to aid in the treatment, home care, and training of these children. The committee consists of a general committee, representing the department of health, the department of public charities, the hospitals, dispensaries, nursing associations, and other welfare agencies; a committee on transportation, comprising more than a hundred names; a medical council of twenty-one orthopedists, neurologists, and pediatrists; and a finance committee of two hundred men and women. An account of what has been accomplished thus far by the committee appears in the December 2d issue of the *Weekly Bulletin* of the Department of Health.

An Unusual Breeding Place for Mosquitoes.—Acting Assistant Surgeon W. J. Stewart, United States Public Health Service, on duty at La Guayra, Venezuela, reported recently that there had been a much larger number of mosquitoes than usual in the offices of the American consulate and that a careful search of the usual breeding places, including rain gutters, failed to reveal where they were breeding. There was in use in the office a water cooler of the type in which water from a large inverted bottle passes through a porcelain compartment surrounded by an ice chamber. One day in drawing off from the ice chamber some of the water resulting from the melting ice, mosquito larvæ were found in the water and on complete drainage of the ice chamber a considerable number of larvæ were found. The water and larvæ were inadvertently thrown away before the type of mosquitoes which had been breeding in this ice cold water was determined. The cleaning of the ice chamber and careful daily attention to it were followed by the total disappearance of mosquitoes from the offices.

American Health Resorts.—The European war, it is said, has had a considerable influence in increasing the patronage of American health resorts. Many Americans who usually go to foreign spas, have visited home institutions instead. Furthermore, numerous residents of other neutral countries have come to the United States in search of health, who would in other conditions have gone to Carlsbad, Homburg, or the hundred other health headquarters of Europe. This is particularly true of wealthy residents of Central and South America. In the last year the Battle Creek Sanitarium, for example, has had about two hundred patients from abroad. In the last three months, the institution has had letters of inquiry from prospective visitors residing in the following lands: Cuba, Caiman Islands, Mexico, San Salvador, British Guiana, Venezuela, Colombia, the Argentine, Uruguay, Peru, Honduras, Italy, Switzerland, Russia, England, Germany, India, Japan, the Belgian Congo, and Australia.

Gifts and Bequests to Hospitals.—The Hartford, Conn., Hospital will receive $2,500 by the will of Alice E. Lothrop.

The will of Catherine E. Brown, who died in Brooklyn on October 21st, contains, among others, bequests of $500 each to St. Joseph's Hospital, St. Francis's Hospital, and St. Rose's Home for Incurable Cancer.

By the will of Mrs. Annie A. Peckham, who died in New York on October 30th, the following institutions will receive $10,000 each: St. Mary's Free Hospital for Children, the New York Association for Improving the Condition of the Poor, the Sea Breeze Experimental Hospital at Coney Island, the Morristown Memorial Hospital, and All Souls Hospital, of Morristown, N. J.

By the will of Marcus M. Darr, late of Buffalo, N. Y., the Hahnemann Medical College and Hospital of Philadelphia will receive $40,000.

By the will of the late Louis S. Fiske, of Bryn Mawr, Pa., the Children's Hospital of Philadelphia will receive $25,000.

Private Pavilion of the Montefiore Home and Hospital for Chronic Diseases.—Five years ago a movement was started by Dr. Sigfried Wachsmann, medical director of the Montefiore Home and Hospital, to make provision for persons who were not charity patients and yet no more eligible for the private pavilions of the general hospitals than the inmates of the Montefiore Home were for the general wards of other hospitals. The directors of the institution recognized the necessity and four of them, Mr. Jacob H. Schiff, Mr. Samuel Sachs, Mr. Sol. B. Guggenheim, and the late Mr. Ferdinand Sulzberger, donated a sum amounting to a quarter of a million dollars to build the pavilion as it stands today. The ground was broken on May 7, 1914, and the first patient moved in November 20, 1916. Fifty patients can be accommodated.

The construction of the building with its special equipment was based on many years' experience with the needs of the main institution, and the plans were drawn by the same architects who designed the main building, Messrs. A. W. Bonner and Buchman and Fox. The object of the private pavilion is to combine the advantages of a special hospital with the comforts of a hotel or club. Many physicians know families where the presence of a chronic invalid is upsetting the entire home life, and in spite of the best intentions of the other members of the family and ample means, no satisfactory adjustment can be made either for the patient or his relatives. The attending physician is severely handicapped because few of the treatments which have proved effective in chronic cases can be readily administered in private homes or hotels, and it is difficult and sometimes impossible for the patient to make daily visits of short duration to the hospitals equipped with the means of administering such special treatment.

The physical treatment consists of hydrotherapy, electrotherapy, mechanotherapy, thermotherapy, and manual massage, in addition to such medical or surgical treatment as the case may require. In addition, the patient will have the advantage of social intercourse when able to be about. Any reputable physician can receive the privileges of the private pavilion by applying to the board of trustees.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,

Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-sixth Communication.

HABITUAL CONSTIPATION.

In considering the treatment of constipation it is desirable to ascertain not only the predisposing causes, but also the particular portion of the alimentary tract which is not functioning properly. The predisposing factors, like sedentary habits, neglect of regularity at stools, too concentrated diet, insufficient intake of water, must all be regulated by receiving suitable attention, as must also those other factors having to do with some peculiarity or derangement of intestinal activity. An abnormal length of small intestine with high absorptive power, a lessening amount of the mucous secretions therein, slackened peristalsis—any or all of these may result in undue inspissation of the intestinal contents, thereby making defecation difficult. In such cases the trouble may usually be overcome by increasing the proportion of coarse vegetables in the diet, and also the amount of water ingested. The indigestible vegetable detritus stimulates both secretion and peristalsis, and delays absorption; so the material passing into the large intestine, being more fluid, is more readily moved along toward the outlet. If a drug seems temporarily desirable (and its use must be temporary), then those drugs should be selected which have localized action. By stimulating peristalsis, and probably by provoking exosmosis, the salines greatly increase the fluidity of the material passing through the ileocecal valve. Rhubarb and podophyllin act on the small bowel by stimulating secretory activity, and probably by some irritation cause increased peristalsis, but as podophyllin does not produce much effect if the bile is markedly deficient, some of the bile salts should be given with the mandrake if so called "torpid liver" accompanies the constipation.

When the loss of function is situated in the large bowel an increase of coarse vegetables in the diet is likewise usually beneficial; but, if a drug seems indicated, then aloes should be used as a cathartic having selective action on the large intestine. Not infrequently this drug gives excellent emergency results in a certain class of people suffering from alimentary plethora, in which group the large bowel has gradually become a distended depot for the storage of accumulated waste material. With this group aloes often proves a peculiarly effective purgative—in fact, a clever but not overethical practitioner near Boston has acquired extended reputation among the laity for successful treatment of many disorders largely because of a shrewd recognition of the value of the A. B. and S. pill in relieving distraught patients of overloaded colons, and the many harassing ills incident thereto. Aloes both stimulates secretory activity and peristalsis, the belladonna tends to make the peristalsis hypalgesic, while the strychnine heightens reflexes, thereby tending toward a restoration of the normal function.

Perhaps the great majority of cases of habitual constipation are due to depressed tonicity of the rectum, especially among women. How frequently the gynecologist is hampered in his diagnostic investigations, or debarred entirely, by the presence in the patient's rectum of scybalous masses, concerning which his patient is totally unaware. This experience of the gynecologist is indicative of a condition very prevalent among women, due in most instances to habitual postponement of Nature's call until finally the rectum becomes so depressed in sensitivity as to degenerate from a serviceable channel into a reservoir for the storage of rapidly solidifying material. In such a case, beside strict attention to hygienic and dietetic measures, assistance may be gained from cascara which stimulates secretory activity in the rectal region. To the cascara may well be added strychnine for its tonic effect. No other combination acts so favorably with such a minimum of aftereffects.

Mercurial Stomatitis.—Douglass W. Montgomery (*Medical Record,* Nov. 18, 1916) states that mercury seldom causes trouble in the mouth in infancy, but in the adult the susceptibility is marked. In giving mercurial treatment the patient is advised to brush the teeth three times daily after each meal with a tooth powder or paste containing potassium chlorate. In the actual presence of mercurial stomatitis hydrogen peroxide is almost a specific, used in dilute solution. Severe cases of inflammation of the gum margin may require undiluted peroxide, or equal parts of peroxide and twenty per cent. silver nitrate. Liquor alumini acetatis one dram in a glass of water is an excellent mouth wash or gargle. A solution of one heaping tablespoonful of boric acid in a quart of infusion of slippery elm bark as recommended by Brocq makes a smooth and acceptable mouth wash. For erosions ten per cent. chromic acid solution is best, and gives better results if used every two or three days rather than daily. If the gums are soft and swollen, they may be brushed with silver nitrate solution ten to twenty per cent. followed immediately by ten per cent. chromic acid. The elimination of the mercury is of great importance, and if inunctions have been used they must be stopped, and a hot bath with plenty of soap given to free the skin of the mercurial ointment. Baths of water containing Vlemincki solution should be given. This solution is made by boiling five ounces of sublimed sulphur with twenty drams of quicklime in fifty ounces of water until thirty ounces remain. A dose of castor oil should be given to cleanse the intestinal tract, and a diuretic mixture given togeth er with plenty of warm drinks, and a hot bath followed by two hours' relaxation. Atropine is administered by some to relieve the salivation which is really tormenting.

Chloroform in Status epilepticus.—Leigh F. Robinson (*Journal A. M. A.*, November 18, 1916) reports a large series of patients presenting this severe epileptic manifestation submitted to treatment by three different methods to determine the value of each. For three months all patients were treated almost exclusively with high colonic irrigations and saline purges; during the second three months all were treated in the same manner with the addition of chloroform anesthesia when the other treatment failed; and the last three months were devoted to the restricted use of chloroform anesthesia alone. All patients, irrespective of the treatment otherwise followed, received fluidextract of cascara nightly, and a dose of castor oil or saline about once every ten days. The results showed that the treatment in no case decreased the frequency of the attacks, but that these occurred at fairly uniform intervals in spite of treatment. The time required for recovery from a condition of status and its effects depended upon the promptness with which an attack was checked. The study indicated that chloroform should be used early in every case of status epilepticus and that, although high enemas and laxatives did not produce material benefit, it would be advisable to employ suitable means to overcome a tendency toward constipation.

A New Method of Blood Transfusion.—G. Blechmann (*Bulletin de l'Académie de médecine*, October 10, 1916) finds artery to vein transfusion, whether by direct anastomosis or through a cannula, ill suited as an emergency measure, and disadvantageous in that a radial artery of the donor is sacrificed. The Kimpton and other reservoir methods, on the other hand, require fragile and specially prepared apparatus, inconvenient in military surgery. In the author's method vein to vein transfusion is effected by application of the siphon principle; the blood may be diluted with saline solution through a lateral inlet tube, and the apparatus consists chiefly of rubber tubing, which is well known to retard coagulation. The trocar needles of the donor and recipient are connected with pieces of tubing respectively ten and fifty cm. long, these in turn being united by a glass T tube, the side outlet of which is connected with a tank containing sterile saline solution. By suitable manipulation of clips on the three tubes, the flow in the apparatus can be started, the blood diluted, and saline solution introduced at will in the donor after the transfusion. The difference of levels is fifty-five cm., and with a trocar needle having an internal diameter of 1.3 mm., seventy c. c. of blood pass through a minute. In beginning the transfusion the recipient's needle is first introduced, saline solution run in to insure its proper situation in the vein, and the donor's needle then inserted. The latter being at a higher level, blood at once descends to the recipient when the clip on the tubing is loosened. The venous blood transfused has the advantage of being less coagulable than arterial blood. Coagulability is also reduced by running into the blood 0.5 per cent. saline or 4.7 per cent. glucose solution from the tank above. The apparatus is also useful for venesection, alone or followed by saline infusion, as in intoxication by asphyxiating gases, carbon monoxide, etc.

The Oral Administration of Antitoxins.—McClintock and King (*Journal of Infectious Diseases*, October, 1916) report a series of experiments with antitoxins for prevention of diphtheria, tetanus, and possibly sepsis, with some observations on the influence of certain drugs in preventing digestion and promoting absorption from the alimentary canal, and give some very interesting conclusions. In general terms they find that the antitoxins for diphtheria and tetanus may be given by mouth and absorbed in sufficient quantity to show markedly antitoxic properties in the blood of the treated animal. These results have been obtained by using certain drugs with the serum; on the one hand, drugs that inhibit digestion; on the other, those that promote absorption. If such drugs as tricresol, salol, chloroform, and opium have been added there seems to be a regular rate of absorption. They show, also, that the toxins of diphtheria and tetanus are absorbed from the alimentary canal, provided that digestion is inhibited. This suggests a method for slow, gradual immunization of animals or men that is at the same time much easier and safer than the hypodermic administration of toxins.

Definite Treatment of Pneumonia.—Solomon Solis Cohen (*Dominion Medical Monthly*, October, 1916) outlines the treatment of pneumonia as follows: A—General: 1. An abundance of fresh air, preferably in the open, carefully preserving the warmth of the body. If necessary, external heat should be used. 2. Good nursing, rest, proper diet, and the free use of water. Copious diuresis should be especially sought. 3. The thorax should be kept warm by poultices during the day and a lamb's wool jacket at night. It may be preceded by a mustard or flour poultice. 4. Chlorides should be administered by a saline infusion, by alkaline saline beverages, or by the administration of a mixture of the chlorides in capsule. 5. Cleansing and disinfection of the upper air passages by local applications to the throat or by inhalations. B—Special: 1. Quinine should be given promptly in doses of from fifteen to twenty-five grains repeated every three hours. The dose should be gradually lessened and the interval increased. When the temperature falls below 102.5° F. the quinine should be omitted, to be resumed when the temperature reaches 105° F. Quinine is best given in the form of quinine and urea hydrochloride, twenty-five to fifty per cent. solution, injected intramuscularly. Ethylhydrocuprein, because of the narrow interval between the therapeutic and toxic dose, should not be generally used. 2. Cocaine, caffeine sodium salicylate, adrenaline, and posterior pituitary principle are used when necessary to maintain the systolic blood pressure at or above the level of the pulse frequency. 3. Cardiants—when the difference between the diastolic blood pressure and the rate of respiration becomes less than ten it is considered a danger signal and camphor or digitalis should be administered. 4. Auxiliary and symptomatic measures: wet and dry cupping, venesection, and the use of drugs, such as strychnine, atropine, opium, and musk, when a special indication exists. 5. Tincture of ferric chloride is given when the quinine is withdrawn and is continued during convalescence. 6. In prolonged cases an autogenous vaccine may be used.

Treatment of Eclampsia.—S. S. Coe (*Charlotte Medical Journal,* November, 1916) emphasizes two points in the treatment: The unquestionable value of prophylaxis and elimination, and the importance of early, unremitting, and systematic medical supervision of every pregnancy. Urinary examinations should be made every month up to the seventh month and every two weeks thereafter. All vomiting should be regarded with suspicion, especially if it occurs in the later weeks. Of the methods of elimination, repeated colonic irrigations with salt solution are of very great value. In certain cases intravenous infusions or hypodermoclyses may take the place of colonic irrigations. In the active treatment of eclampsia a combination of elimination, controlling the convulsions, and effecting delivery under complete anesthesia by some method which injures the patient only slightly, should be carried out. Chloroform, or veratrum viride, ten to twenty minims of the fluid extract hypodermically, followed by five to ten minims every half hour until the pulse is reduced to sixty, is a trustworthy procedure. Pilocarpine should never be used. Early and active catharsis should be obtained by croton oil or compound jalap powder. Oxygen is an invaluable stimulant. The best method of emptying the uterus is by bimanual dilatation.

Anthelmintics. — C. Bachem (*Medizinische Klinik,* October 1, 1916) states that for the removal of tapeworms and other intestinal parasites the desiderata include an effective anthelmintic which shall be prompt in action and relatively nonabsorbable from the intestine; that the parasites shall be swept out of the intestine promptly by means of a purge, given along with, or very shortly after the anthelmintic; that the anthelmintic shall be given after a night's fast; and, lastly, that the preparatory treatment shall not weaken the patient. For tapeworms the most effective agents are aspidium, granatum, cusso, and kamala. Of aspidium the single total dose of ten grams of the oleoresin should not be exceeded, and the treatment should never be repeated on the following day. Contrary to general opinion the best purgative to use following the dose is castor oil. The aspidium may be given very satisfactorily, either in one gram gelatin capsules, the total dose to be taken within half an hour, or it may be given in the form of the following palatable prescription:

℞	Oleoresinæ aspidii,	8.0;
	Confectionis sennæ,	30.0;
	Glycerini,	5.0;
	Syrupi,	25.0.

M. et Sig. To be taken in two portions within one hour.

Granatum can be given in the form of a draught of the following composition:

℞	Granati,	30.0-50.0;
	Aquæ destillatæ,	300.0;
	Macera per hor. xii; cole cum aqua,	200.0;
	Nunc adde syrupi zingiberis,	30.0.

Sig. Take on empty stomach in two portions; follow in half hour with tablespoonful of castor oil.

Cusso can be given in doses of twenty grams or more in a suspension, in the form of an electuary, or as tablets. Kamala is the mildest and least likely to be harmful of the anthelmintics of this class, and can be given in cachets or as an electuary in doses of eight to ten grams to adults, or two to six grams to children. To remove the ascaris, santonin and chenopodium are the most effective. Santonin should never be given in a single dose greater than 0.1 gram and never in an amount greater than 0.3 gram a day. It should be preceded by a laxative. It may be given in tablets, as a powder, in troches, or in solution in castor oil. Eight to fifteen drops is the proper dose of oil of chenopodium, given on sugar, in capsules, or in an emulsion. For the oxyuris, naphthalene in doses of 0.1 to 0.5 gram may be given internally, and various forms of enemas may be used to destroy the worms in the rectum. Among these may be mentioned salt solution. vinegar, soap and garlic, salicylic acid (one in 1,000), or chinosol (one to 8,000). The medicated enema should be preceded by a cleansing one. The napththalene may be given in the form of the following powder:

℞	Naphthaleni,	3.0;
	Sacchari,	6.0;
	Olei citri bergamiæ,	0.06.

M. et divide in chartulas No. X. S. One, three times a day, between meals.

Treatment of Malignant Disease About the Mouth.—George E. Pfahler (*Journal A. M. A.,* November 18, 1916) states that prophylactic measures are of the greatest importance in the case of lesions about the mouth. They should include the treatment or removal of jagged teeth; the treatment of pyorrheal ulcers; the prohibition of smoking in smokers' stomatitis, and in leucoplakia, in which also the patient should be treated for syphilis and the areas destroyed by electrothermical coagulation if fissures persist in them. Ulcers, fissures, crusts, and warts on the lower lip or at the angles of the mouth should be destroyed at once by electrothermical coagulation, and the glands of drainage should be given deep x ray treatment. When a malignant growth has developed in this locality it should be treated as soon as possible, and among the several methods of treatment the author prefers the combined practice of destruction of all of the affected tissues by electrothermical coagulation, to be followed by prolonged, thorough treatment with full doses of penetrating x rays applied both to the site of the lesion and to the glands of drainage. The advantages of the coagulation method are: Devitalization of the neoplasm without actual destruction of healthy tissues; it obviates the danger of implantation and dissemination of malignant cells as there are no raw surfaces produced, and no blood or lymphatic vessels are opened; there is no hemorrhage, except possibly some secondary bleeding in tongue cases; and, finally, there is no danger of infection locally. The method also gives the best cosmetic results, as there is a minimum of damage to healthy tissues. The only place for the use of radium, in the author's opinion, is in the treatment of lesions within the mouth, such as those of the tongue, cheek, and inner aspect of the lip. For regions in which the x ray can be used radium has no advantages over the former, and its dose cannot be so accurately controlled. In some cases surgical removal of the neoplastic tissues may be tried, but the proper use of the electrothermical coagulation method of treatment meets every requirement of surgery and is preferable.

Radium in Cancer and Other Skin Lesions.—Frank E. Simpson (*Journal A. M. A.*, November 18, 1916) asserts that although radium and the x rays have much in common, the former has advantages over the latter, chiefly in being both selective in action, and of high destructive power. Radium seems specially indicated, because specially efficient, in the treatment of cancer of the skin, certain forms of vascular nævi. keloid, certain cases of lupus vulgaris or erythematosus, in sycosis, lichenification, localized pruritus, and particularly in pruritus ani. In over 200 cases of cancer of the skin treated with radium by the author recovery has been almost invariable. In cancer of the mucous surfaces the results have been less gratifying, and at times very disappointing.

Radium in Malignant and Nonmalignant Conditions.—Gaston Torrance, W. C. Gerwin, and Walter A. Weed (*Charlotte Medical Journal*, November, 1916) report the treatment of sixteen cases of epitheliomata with gratifying results. If of the cutaneous surface—flat and superficial, and not accompanied by ulceration—they give twenty to 100 mg. hours, using a flat half strength applicator with no screening except one thickness of pure rubber dam. If the cosmetic effect is to be considered, screening up to one mm. of silver may be used, with a corresponding increase in the length of exposure. Epitheliomata of the mucous surfaces are much more resistant. In carcinomata of the breast radium has been used immediately after operation to prevent recurrence. The treatment of carcinomata of the uterus has been very satisfactory, and good results have also been obtained in carcinoma of the rectum and bladder, Paget's disease of the breast, sarcoma of the breast, sarcoma of the parotid, sarcoma of the intestine, goitre, Hodgkin's disease, and fibroids of the uterus.

Treatment of Rickets.—Eric Pritchard (*British Journal of Children's Diseases*, October, 1916) gives his opinion that rickets is due to an excess of food and not a deficiency. He reports a child two years old, who had been breast fed for four to five months, had solid food at nine to ten months, and who was taking a fairly liberal diet at the time of admission. Curvature of the back was noticed from the sixth month on. The legs have always appeared abnormal. On admission the child was anemic and flabby and lay absolutely motionless with legs fully extended. The bones showed changes of rickets. The child was pot bellied. The x ray showed the bones of the spine to be poorly mineralized. After being in the hospital for three months there was a marked improvement and a considerable loss of weight. The theory upon which the child was treated was that the rhachitic symptoms were caused by a relative excess of food calling into play certain protective mechanisms producing an acidosis. This led to an anemia which the organism had attempted to counteract by compensatory overactivity of the hemogenetic centres in the long bones. The acid toxemia led to the paresis of the muscles and the general debility. The treatment consisted in creating a demand for food by massage, resistance exercises, cold douches, and open air treatment. Alkalies were given in large doses and iron and phosphorated codliver oil were also administered.

Rest of Lung by Posture.—Gerald B. Webb, Alexius M. Forster, and F. M. Houck (*Journal A. M. A.*, November 11, 1916) state that there is a tendency for the consumptive patient to lie on the side of the normal or less affected lung, thus giving the greater work to the poorer lung. Most normal persons tend to sleep on their right side and it is interesting to note that the majority of advanced tuberculous lesions are in the left lung. The value of rest of the lung has been demonstrated by artificial pneumothorax. The expansion of the lower lung is materially decreased by lying on the side. These observations led the authors to try the influence of postural rest in pulmonary tuberculosis, aided by placing a small firm pillow under the dependent side. The results were promising, showing in some cases cessation of fever, diminished expectoration, and a decreased tendency to relapses. Patients have been able to carry out this plan of postural rest for twenty hours a day for months at a time. It is probable that there is an increased congestion in the dependent lung, and patients have been observed who had hemorrhages after lying on the side of greater involvement. This fact should be taken into consideration in the application of this form of treatment.

Results from Pituitary Extract in Obstetrics.—Lyle G. McNeile (*American Journal of Obstetrics*, September, 1916) points out that many cases are being recorded in which the following complications have followed the use of this drug: Post partum uterine atony, fetal asphyxia, maternal collapse, eclamptic convulsions, tetanus of the uterus, premature placental separation, and rupture of the uterus. In his own experience uterine tetanus has followed as little as five minims of the extract in two instances. A greater tendency to such tetanus in primiparæ than in multiparæ was noticed, and in many instances restoration of normal contractions did not follow, a low forceps operation becoming necessary. Fetal asphyxia was likewise noted in many primiparæ, though it was never fatal. Post partum atony, with alarming hemorrhage in several cases, was noted particularly in instances of prolonged labor, and of multiparæ in which several pregnancies had occurred in rapid succession. Such considerations led McNeile to the assertion that this drug has absolutely no place in normal obstetrics. He formulates, moreover, the following conditions that should govern its use: 1. Complete dilatation and effacement; 2, ruptured membranes; 3, longitudinal presentation; 4, in cephalic presentations there should be no deflection of the head, and the drug should be used only in vertex and breech presentations; 5, there should be no disproportion between presenting part and pelvis, previous accurate knowledge of the internal pelvic measurements, pelvic contour, and outlet measurements being essential; and, 6, the presenting part should be completely engaged, i. e., the greatest diameters of the presenting part must have passed below the pelvic inlet. In a case of rupture of the uterus following pituitary extract, which the writer reports, the head was well engaged, dilatation complete, the membranes ruptured, and the uterine contractile strength decreased, but the existence of an obliquely contracted pelvis had not been recognized.

Bismuth Subnitrate in the Treatment of Acute Urethritis.—H. W. Howard (*Urologic and Cutaneous Review*, November, 1916) compares the urethra to a sinus, and the bismuth is applied to it in the same way. The urethra is put at rest by restricting the fluids so that the patient urinates only three times daily, before retiring, on arising in the morning, and at the visit to the doctor. The injection is made as follows: A dram of bismuth is added to an ounce of sterile water. After being well shaken a syringeful is drawn off. The contents of the syringe are injected into the urethra, which is held upright and maintained in this position for about two minutes. At the end of this time the supernatant water escapes and the bismuth is settled in the deeper parts. This is done morning and evening by the patient, and is supplemented by the use of a five per cent. collargol solution which is injected by the physician about noon.

Treatment of Meningitis.—Walter Broadbent (*Brit. Med. Jour.*, October 28, 1916) states that pneumococcal meningitis is still thought to be almost invariably fatal, but he reports several cases from his own experience in which recovery took place following the use of Pane's serum. The first was that of a child between three and four years of age who recovered under treatment with 0.2 gram of hexamethylenamine every four hours and Pane's pneumococcus serum by mouth, on an empty stomach. The serum was given in doses of five mils daily for the first three days, then on alternate days, and finally twice weekly. After the third day slow, but steady improvement began, and recovery was complete within three months. Two other similar recoveries in children were secured from the oral administration of this serum, always on a fasting stomach. One case in an adult also recovered under 1.3 gram of hexamethylenamine every four hours and ten mils of Pane's serum subcutaneously every other day for four doses and every third day for three more doses.

Radioactivity of Antirrheumatic Remedies.—E. Zueblin (*Lancet-Clinic*, November 4, 1916) describes an investigation of such drugs as the salicylates and sodium bicarbonate with the fontactoscope, an instrument which, used in the manner described by him, permits the finding of radioactive energy when present in quantities too small to be ascertained by the most delicate balance, or microscope, or even to be identified with the spectroscope. Either fluids or solid substances can be tested directly for their ionization or radiation. From Zueblin's previous investigations it was apparent that magnesium sulphate and other salts are capable of emitting electrical radiant energy similar to, though much weaker than that of radium, thorium, etc. From the present research it is concluded that salicylic acid and sodium salicylate likewise emit chemical rays, the alpha radiation prevailing over the beta, especially in the case of the salt. In the case of sodium bicarbonate the alpha radiations exceeded the beta variety at the start of the experiment, but later the beta radiations became the more abundant. The radiations from the salicylates may play a role in their therapeutic action. Exposed to the air, however, or simply preserved in a bottle, these substances lose their radiating strength. Attention is called to the fact that the alpha rays of radium have power to check the development of certain microorganisms. Zueblin finds it possible to convert weak radioactive substances artificially into strong emanators. This was accomplished, for example, by exposing magnesium sulphate to a 100,000 volt high frequency current for ten minutes. It is also possible to make a selection in the rays imparted to the substance, alpha or chiefly beta and gamma being charged at will. According to tests, such substances will remain radioactive for over a year—possibly several years.

Local Reactions to the Pasteur Treatment.—J. C. Geiger (*Journal A. M. A.*, November 18, 1916) states that these reactions are well recognized, but their frequency and times of occurrence have not been carefully studied. In a series of 641 cases these reactions were present in essentially 100 per cent., occurring between the sixth and ninth days and again between the fourteenth and eighteenth days. In only one case did they occur daily. In one case, only, were the reactions absent. In a case with paralysis complicating the treatment all of the reactions were greatly increased at the time of the onset of the nervous symptoms. The reactions were regarded as manifestations of a hypersensitiveness of the patient to the injection of nerve tissue. They had no relation to immunity.

Hypnotic Suggestion in Military Cases.—J. Bennett Tombleson (*Lancet*, October 21, 1916) states that as the result of an experience of eighty cases of various forms of nervous and mental disturbance due to war conditions he has found hypnotic suggestion a most valuable therapeutic measure, especially if employed within a reasonable time of the development of the affection. The greatest degree of success was secured in shock psychasthenia and neurasthenia, and very good results in hyperthyroidism. Practically all patients of the first two types of disorder were cured and returned to duty or to work, and the cures were permanent. In most instances it was necessary to induce the state of somnambulism for the best results.

Preparation of Stable Colloidal Antimony.—Upendra Nath Brahmachari (*Lancet*, October 21, 1916) reports the remarkable therapeutic properties of antimony in several protozoal diseases. The increasing appreciation of the value of metals in colloidal form has led to attempts to prepare a stable colloidal antimony, but so far with poor success. The author states that it may be prepared in stable form by the following method: A current is passed in sparks from an induction coil, and an eight volt accumulator between two aluminum foil electrodes immersed in chloroform containing coarse particles of metallic antimony. The antimony passes into a powdery state and some goes into solution. When the chloroform is distilled off a tardy residue of colloidal antimony is left. This can be dried in a desiccator, in air, or even over a Bunsen burner without materially affecting it, and may be employed in the preparation of solutions of the drug in colloidal form.

Miscellany from Home and Foreign Journals

Epidemics of Pemphigus neonatorum.—Frederick Howard Falls (*Journal A. M. A.*, Nov. 18, 1916) states that this condition, occurring chiefly in newborn babies and in epidemic form has been found to be due to a peculiar strain of staphylococci, indistinguishable from the ordinary forms except by its pathogenic characteristics. This strain has proved pathogenic for the lower animals, but in them did not produce the typical pemphigoid lesions. When inoculated into the author's arm it produced the typical lesions from which the organism was recovered in pure culture. The disease was found to be highly contagious, transmissible through a third person, and one which demanded the closest individual precautions and complete isolation for its control. It yielded readily to treatment by applications of two per cent. ammoniated mercury ointment after rupture of the vesicles.

Diagnosis of Malignant Tumors of the Liver.—Andrea Ferrannini (*Riforma medica,* Oct. 30, 1916) avers that in cases of doubtful diagnosis between hydatid cyst and malignant tumor of the liver the following factors favor malignancy, namely, age over fifty years or even slightly below, marked hepatic enlargement, multiplicity, and induration of the liver, tumors, absence of eosinophilia and of leucocytosis in general, continuous presence of grave disturbance of hepatic function especially deficiency of urea, nitrogen, and a high grade of urobilinuria, and the coexistence of a gastric syndrome similar to that of gastric carcinoma in the absence of this latter disease. Furthermore malignant tumors of the liver should be considered as more probably sarcomatous than carcinomatous when the liver enlargement is very marked, and if at the same time there are not extraabdominal metastases, ascites, or especially jaundice.

Absence of Rise of Temperature after Tuberculin.—Duncan Forbes and C. W. Hutt (*Lancet,* October 28, 1916) report two cases to show that persons with pulmonary or other forms of tuberculosis, either early or late, may fail to react to a diagnostic injection of tuberculin with a rise of temperature above normal. The first case was that of a man who was tested with subcutaneous doses of tuberculin up to 0.01 mgm. while in the early stage of pulmonary tuberculosis and failed to show any rise of temperature. This same patient again failed to react with fever when tested over a year later, although then his pulmonary condition was active and his sputum contained tubercle bacilli, demonstrated microscopically and by guineapig inoculation. The second case was that of a child two years old suffering from tuberculous abscesses. This patient failed to show fever after a dose of 0.001 mgm. of tuberculin. Similar observations have been made upon animals known to be actively tuberculous. Although such cases as these are rare they indicate that the absence of a febrile response to tuberculin is not absolutely certain evidence that the subject is not tuberculous.

Meralgia paræsthetica. — W. J. Rutherfurd (*Brit. Med. Jour.*, October 28, 1916) states that this affection—a neuritis of the external cutaneous nerve of the thigh—is of less infrequent occurrence than generally supposed, and that he has seen a dozen cases in the last ten years, five in soldiers in the past nine months. It may be bilateral, but is more commonly unilateral and its characteristic feature is the restoration of the neuritis to a single sensory nerve. Sensation over the area of distribution of this nerve is lost so far as the finer grades are concerned, for touch, heat and cold, perception of points, and for slight pain. The motor fibres are unaffected. The skin over the affected region is usually slightly thickened, and may show signs of baldness from atrophy of the hair follicles. There is local loss of the phenomenon of goose flesh. Perverted sensations are present in the analgesic area, such as shooting pains, scalding, tearing, or twisting of the flesh. Such sensations are usually transitory, but are prone to recur frequently, especially during use of the extremity, and may cause great disability. The cause of the condition is unknown, but there is some reason to believe that there may be a pinching of the nerve fibres in their passage through the fascia. Treatment is unavailing except operative incision of the fascia at the point of emergence of the nerve.

Meningeal Symptoms in Relapsing Fever.—Petzetakis (*Bulletin de l'Académie de médecine,* October 10, 1916) writes concerning a number of cases of relapsing fever recently observed in a military hospital in Athens, Greece, and in private practice in that city. A single blood examination at times proved misleading in the diagnosis. Several examinations should be made, for the blood from the finger may show no spirilla for one to three days, though later many may be found. Numerous cases were at first mistaken for typhoid fever or meningitis. Meningeal symptoms may appear on the first day, and usually with the first rise of temperature. Four out of fifteen cases showed a complete meningeal syndrome, including neck rigidity, marked Kernig's sign, and intense headache; in three other cases neck rigidity alone was noted. The headache is ascribed to a marked increase in cerebrospinal pressure, lumbar puncture alone relieving it, and yielding a strong jet of cerebrospinal fluid, fifty to eighty c. c. of which spurted out in a few seconds. This fluid was clear, free of spirilla, of other organisms, and of cells, and with normal albumin content. In one case, however, an aseptic puriform fluid was obtained. In the treatment, 0.6 gram of neosalvarsan intravenously induced a crisis, with arrest of the initial paroxysm, and prevention of the second. The drug being scarce, electrargol was given to one case in the dose of thirty c. c. intravenously on two successive days, and in another two intravenous injections of 0.02 gram of mercury oxycyanide and one of 0.01 gram on successive days were administered, with results similar to those procured by the arsenical remedy.

Extensive Fibrosis of the Left Ventricle in a Child.—E. Parker Weber (*British Journal of Children's Diseases,* October, 1916) reports a child, ten years of age, in whom the principal symptom was hemorrhage from the bowel. The patient remained in the hospital for about three months and left in an apparently satisfactory condition, with the exception that there was an enlargement of the heart. Two and a half weeks later the patient was readmitted, complaining of a feeling of painful stiffness in the legs and abdomen. Five days later the pain became violent and the right foot was paler and colder than the left. This paleness gradually extended up to the groin and, at the end of about seven hours, the patient died. The autopsy showed a dilated and hypertrophied heart. The cavity of the left ventricle showed a soft, organized ante mortem thrombus firmly planted on the endocardium near the apex.

Diagnosis of Pneumonia.—J. Staige Davis (*Virginia Medical Semi-Monthly,* October 13, 1916) states that of forty-eight cases of lobar pneumonia recently under observation, nineteen were recorded as showing on admission no physical signs of the disease. In some cases no positive signs could be detected for several days, and in one or two Davis was never sure that any existed at any time. Thus it is often necessary in pneumonia to look for indications other than the conventional consolidation and rales. Chills were the initial symptom in twenty cases, and pain in eighteen, but several patients had repeated rigors and the pain was often in the epigastric, hypondriac, or iliac region, or even in the extremities. The typical single chill was at times replaced by a convulsion or by nausea, vomiting, or coughing. Blood spitting several times preceded consolidation. Weil's sign of defective subclavicular expansion on the affected side was sometimes of value. Dyspnea was once the first complaint. The temperature was often fluctuating rather than steady, despite textbook descriptions to the contrary. The best diagnostic sign, in Davis's opinion, is leucocytosis, which is higher, especially as regards polymorphonuclears, than in any other inflammatory disease. Over 30,000 of leucocytes, with eighty-one to ninety-two per cent. of polymorphonuclears, virtually excludes most other disorders. This rise could usually be detected by the second day in the writer's cases, and saved several patients sent in for supposed acute abdominal troubles from surgical intervention. Leucocytosis is also prognostic, its absence being of grave import. Its persistence after the crisis indicates a complication. Absence of eosinophiles is another ominous finding. Davis demurs to Gibson's statement that a fall in blood pressure, or a pulse rate over 140, is necessarily fatal. Assertions as to a diminution of the urinary chlorides also frequently proved erroneous. The x ray several times revealed an affected spot scarcely more than suspected by other means, and once not even considered. As Mason has stated, the shadow always touched the pleura and was triangular, with its apex toward the hilum. Consolidation is silent as long as relatively normal lung tissue intervenes between the affected area and the bronchi and trachea. Often the first sign is in the axilla. Blood cultures are troublesome and frequently negative. In cases of doubt between pneumonia and appendicitis in children the marked polymorphonuclear leucocytosis of the former proved of chief diagnostic value, and once or twice the x rays settled the decision. The same modes of investigation proved of paramount importance in the differentiation from subdiaphragmatic abscess, and are to be chiefly relied upon in excluding acute miliary tuberculosis, and peptic ulcer. In pleurisy with effusion in children, the usual history of the condition being secondary, the dislocation of the heart and the exploring needle, settle the question even in the encysted cases where mobile fluid cannot be detected.

Duodenal Cultures in Typhoid.—A. L. Garbat (*Journal A. M. A.,* November 18, 1916) states that the relative frequency of occurrence of typhoid carriers among apparently healthy persons, the high proportion of persons who have had typhoid, and who become carriers, and the very great frequency with which typhoid fever is traceable to contact with carriers, make it desirable to have some easy and efficient means of detecting carriers. The examination of the stools fulfills none of these conditions, even by the most elaborate precautions and the use of various special media. It has long been known that the gallbladder harbored the organism, and was the source from which it entered the intestine in carriers. Garbat has therefore attempted to make use of this fact by cultivating the bile, obtained from the duodenum through a duodenal tube. His technic is simple and is described in full. The cultures were made on ordinary media and little difficulty was encountered from overgrowth by other organisms, specially the colon bacillus. The method was tried in several cases convalescent from typhoid, and two of twelve showed the organisms in their bile for some time after recovery from the disease. In both of these cases the urine and stools were negative.

Complement Deviation in the Diagnosis of Hepatic Abscess.—L. Tribondeau and M. Fichet (*Bulletin de l'Académie de médecine,* October 10, 1916) report the preparation of an hepatic pus antigen by macerating the pus in distilled water in the ice box, decanting the supernatant fluid, and adding nine in 1,000 of sodium chloride. The corresponding antibodies are then sought in the serum of patients with hepatic abscess by the general Bordet-Gengou method of complement deviation, the natural hemolysins of the serum being used, as in Hecht's procedure. The sought for "pyodeviation of the complement" was manifested in six cases of liver abscess; negative results, in the other hand, were noted in healthy subjects, and in secondary syphilis. In amebic infection results were positive only where actual suppurative destruction of the liver was taking place. In catarrhal jaundice, and in Hanot's hypertrophic cirrhosis they were negative. In various chronic suppurations of structures other than the liver positive results were obtained, at times even after recovery; on the other hand, pus from localities other than the liver did not yield an active antigen. The hepatic pus perhaps owes its special properties to a more complete disintegration of the cells.

Treatment of Gonorrheal Ophthalmia.—A. N. Strouse (*Bulletin of the Department of Public Charities,* October, 1916) describes the use of protargol in the strength of from thirty to fifty per cent. The solution should be freshly prepared and distilled water should be used. The solution is best prepared by sprinkling the powder on the surface of the water and allowing it to dissolve. The applications are less painful than the weaker solutions of silver nitrate and the pain subsides rapidly under the usual treatment of ice pads and irrigations. There is some staining of the tissues, which disappears in a day or two.

Clinical Value of Complement Fixation in Tuberculosis.—H. R. Miller (*Journal A. M. A.,* Nov. 18, 1916) states that the specific diagnostic measures so far advocated for the determination of the presence of activity in tuberculous patients and suspects have all failed to differentiate between an infection at some previous time with the tubercle bacillus and an active lesion occurring at the time of the test. Many attempts have been made to employ some form of complement fixation test for this purpose, but these, too, have failed in the matter of differentiation between activity and latency. Recently the author, together with Zinsser, observed the apparently satisfactory results obtained from an antigen made by grinding dead or living tubercle bacilli with table salt and bringing the suspension up to isotonicity with distilled water. Miller has applied this test to over 1,000 persons, both tuberculous and nontuberculous. The results showed that the reaction was almost invariably positive in cases of active tuberculosis, and invariably negative in certainly nontuberculous persons, including syphilitics. The test was also usually negative in arrested cases of tuberculosis. By the test, in association with other diagnostic measures, the existence of a group of persons was discovered, who were apparently tubercle bacilli carriers with no evidence of active lesions and not reacting positively to the complement fixation test, but who excreted tubercle bacilli in their sputa. The von Pirquet and endermic tuberculin tests were found to be totally different procedures, since they failed to indicate activity, while the complement fixation test gave results in close dependence upon the presence and degree of activity.

Progressive Torsion Spasm of Childhood.—J. Ramsay Hunt (*Journal A. M. A.,* November 11, 1916) states that this affection, characterized by peculiar spasms, hypertonus, and hypotonus of the muscles of the trunk and extremities, and a series of twisting and torsion movements, has been recognized for only six years. The spasms are increased by activity and decreased by rest. Gait and station are mainly affected and the tendon reflexes are present, but difficult to elicit. Hunt reviews the reported cases and presents six personal observations. From all of these the facts brought out are that the affection is limited to childhood in its onset, occurs almost exclusively among Russian or Polish Jews, is progressive, and involves the sexes equally The lower extremities and lower part of the trunk are most frequently and extensively involved and the muscles supplied by the cranial nerves are never affected. Remissions and exacerbations are rare. There is characteristically a disturbance of harmony of muscular action with hypertonus of some and hypotonus of other muscles. Lordosis and crescent feet are usually present. There is a reversal of voluntary movement; thus an attempt to extend a flexed foot results in increased flexion and vice versa. Hunt regards the condition as due to some organic central nervous lesion situated below the corpus striatum, although the few cases which have come to autopsy have not revealed any organic lesion.

The Etiology of Scarlet Fever.—Mallory and Medlar (*Journal of Medical Research,* November, 1916) report their investigations, which although not conclusive are very suggestive. They found in the tonsillar tissue and throughout the respiratory tract a small Gram positive bacillus which occurs in dense masses, chiefly in the upper portion of the fibrinopurulent exudation covering the walls of the crypts. In the lung tissue some of the bronchioles and alveoli were completely filled with the organisms. Morphologically the bacillus is a little more slender than that of diphtheria. Its length varies considerably; it may be shorter or it may be longer than that organism. Filaments and branching forms are often seen, especially in lesions of the lung and bronchi. As a rule it stains solidly, but irregularity in staining is often observable. No polar bodies were seen at any time. It is also much more strongly Gram positive than the diphtheria bacillus The question comes up whether or not this organism is a secondary invader in scarlet fever as is the streptococcus. It was, however, found abundantly and extensively distributed in two early cases of scarlet fever, and was found in three other acute cases. A very important point is that it was found only in cases which had been scarlet fever. Control examination of tissues from over five hundred cases, mostly children, which came to autopsy in the contagious department following death from diphtheria, measles, pertussis, and varicella, failed to show it. Inasmuch as characteristic lesions were present in the tonsils after twenty-nine days the probabilities are that the discharge from the nose and ears are the sources of infection. For many years it was thought that the desquamating skin was the source of danger, but within recent years ~~this~~ view has been practically given up by experts in contagious diseases.

Studies on Treponema pallidum and Syphilis.—Zinsser, Hopkins, and McBurney (*Journal of Experimental Medicine,* November, 1916), in experimenting with cultures of treponema pallidum report that agglutination tests were not specific enough to be used for diagnostic purposes. They found that while the serums of syphilitic patients, especially those in the tertiary stage, agglutinate culture of treponema pallidum to slightly greater extent than do those of normal subjects, the serums of many subjects with diseases other than syphilis agglutinate it to an almost equal degree. They noted also that immunization with a culture of treponema pallidum, either local or general, does not seem to confer upon rabbits any considerable degree of resistance to inoculation with virulent treponemata.

Proceedings of National and Local Societies

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1916.

The President, Dr. Henry Sewell, in the Chair.

The Biochemistry of Acidosis.—Dr. Lawrence J. Henderson, of Boston, said that like heat equilibrium, the equilibrium between acids and bases was essential to life. Fluctuations in equilibrium occurred, but normally the limits of fluctuation were narrow. Wider fluctuations occurred pathologically, but the acid base fluctuations did not as a rule involve changes in the H ion concentration. Acidosis was defined as any disturbance of the acid-basic equilibrium whereby the power to resist acids in the body was lost. It was now possible to say that the main change in acidosis was the loss of blood bicarbonates. The bicarbonates were to be regarded as the *third* constituent of the blood; reckoning water first, salt second, and bicarbonate third. This third constituent was specially subject to fluctuations, owing to the constant physiochemical interchanges between blood and respired air; and since H ion concentration was proportional to the reactions between bicarbonates and free carbon dioxide, the ratio of free dioxide and bicarbonates was kept fairly constant by the mechanism of ventilation: hence H ion concentration was now regarded as the hormone of respiration. The maintenance of the acidbasic equilibrium became more complicated in pathological states, and always was related to, and dependent on the general metabolism of the body. Beneath all metabolism was a constant diminution of blood bicarbonates; unless repaired this led to acidosis.

The carbon dioxide tension of alveolar air and of the blood, together with the measure of alkali ingestion, were the measures of acidosis. Neither ammonia concentration nor urinary findings were safe guides.

Attempts to explain general pathological states on the basis of H ion concentration or acidosis were not justified. Any attempt to treat a disease like nephritis by the indiscriminate administration of large amounts of alkali was malpractice. Small amounts of alkali, given over a long time, were allowable, and when so given acidosis was impossible.

Acidosis in Infants and Children.—Dr. John Howland, of Baltimore, remarked that acidosis in children was a dangerous, but often an acute, self limited disease. It was not merely an acetonuria, but depended on a loss of the acidbasic equilibrium of the blood. Hyperpnea was the clinical sign: laboratory tests were the indices, these being carbon dioxide tension of alveolar air, H ion concentration of blood, and alkali reserve of blood. The natural low level of carbon dioxide tension and low H ion concentration in the young explained susceptibility to acidosis. Onset of acidosis was marked by hyperpnea; coma soon ensued; the alkali reserve might be restored, but unless this was done quickly, death followed. When acid phosphates were found in excess (five to fifteen times the normal) in the blood, and this condition was continued long enough, it would rob the body of bases. Restoration of bases did not always stop the accumulation of acid phosphates. Acidosis was seen in many diseases of infancy and childhood and should always be kept in mind; its early, rational treatment might be the means of saving life.

Acidosis in Diabetes.—Dr. R. T. Woodyatt, of Chicago, explained that the occurrence of acidosis in diabetics depended on the definition of the difference between the diabetic and the normal individual. The proportionality between glucose utilization and wastage depended on rate of intake. It might be said that with a rate of glucose intake high enough, the normal subject became diabetic; with the intake low enough, the diabetic acted like the normal subject. The difference was in the wastage. The occurrence of acidosis in diabetics depended on this; for it had been found that one molecule of carbohydrate must be burnt to care for three molecules of higher fatty acids; if this ratio could be maintained, the body "smoked" with unburnt fats, and acetone, betahydroxybutyric acid, and diacetic acid appeared in the urine.

In diabetics the absolute rate of carbohydrate utilization was low, and it was necessary to bend down the rates of protein and fat metabolism to meet that of the carbohydrates. Thus the application of rest, warmth, and fasting in the treatment of diabetes was rational. Acidosis in diabetes might always be accounted for in the way described, except in certain cases, e. g., its occurrence in the course of septic processes; such cases might be called accidental rather than diabetic acidosis.

Acidosis in Acute and Chronic Diseases.—Dr. Channing Frothingham, Jr., of Boston, said that the finding of acidosis in diseased states other than diabetes led to a study of carbon dioxide tension of alveolar air, H ion concentration of blood, acetone and ammonia nitrogen output in urine, and soda utilization in a large and diversified series of cases. The results of the study might be summarized thus: In adults, acidosis of the diabetic type did not exist in a large number of miscellaneous diseases, but a certain form of acidosis did exist (as shown by Howland) which might be recognized by available tests.

Investigations in Diagnosis and Treatment.—Dr. Leonard G. Rowntree, of Minneapolis, remarked that the H ion concentration of the blood must be kept at a normal level to maintain life. A method of measuring this factor was presented last year. Since then studies with the electrometric method had established the fact that the dialysis indicator method might be depended upon; the method was simple and absolute. Studies of the "buffer" values of the blood (ability to care for acidbasic fluctuations without disturbance of the H ion concentration) indicated the normal to be 0.36. In acidosis, the "buffer" value for both acids and bases was reduced or lost. The mechanism of changes in "buffer" value was not known. It might be said that true acidosis occurred when there was a change in

H ion concentration of the blood; compensated acidosis occurred when there was a change in the buffer value without change in H ion concentration. In disease states, acidosis and disturbances of H ion concentration might be corrected without benefit to the patient. The administration of alkalies beyond the point of correction of acidosis was harmful: alkali therapy, therefore, should be controlled by available tests.

Dr. Yandell Henderson, of New Haven, said it seemed to be the first duty of one attempting to summarize the papers here grouped under the general title, acidosis, to inquire if all the writers were talking about the same thing. It seemed to him they were not; the first paper, Doctor Henderson's, was a clear cut, scientific picture of a biological process; in the other papers, the writers were dealing with other things in addition. This was often the difficulty in the study of medical problems; they were in need of clear cut nomenclature. The acidosis they used to talk about was certainly not the acidosis of today. The acidosis of diabetes was not the acidosis of asphyxia, nor of nephritis. They might better in one case speak of ketonuria, and in another of low carbon dioxide states, and so on. In 1911 he had been a member of Haldane's Pike's Peak expedition, and all of the party had acidosis when a sufficient altitude was reached, if the carbon dioxide tension was taken as the index. He was rather skeptical of the hurtful effects of acidosis; for he had seen no figures which indicated a more severe acidosis than he persistently had himself on Pike's Peak when he was feeling particularly well.

The description given by Dr. Lawrence Henderson was on the basis of sea level data. But on going above sea level acidosis increased with the altitude; in a caisson acidosis diminished. Miss Fitzgerald, of the Haldane expedition, had shown this as a result of hundreds of observations made by her at various altitudes. The net result of her work was that one could determine the altitude of any community by the measure of the carbon dioxide tension of the alveolar air of the inhabitants, or, in other words, by their acidosis.

It seemed to him safer to keep in mind the facts: From the urinary standpoint, acetonuria might be found; from the respiratory standpoint, variations in carbon dioxide tension, or volume of ventilation might be measured; from the point of view of the blood, disturbances of H ion concentration might be noted; and other measures of the body's alkali acid balance might be made. But if all of these measures were to be accepted as measures of acidosis, they would meet with cases of acidosis, in which the acidosis was not a condition of acid blood at all, because the H ion concentration of the blood might still be normal. It was necessary, therefore, to formulate and keep clearly in mind just what in the future was to be known as acidosis.

Doctor Van Slyke, of New York, said that much of the discussion had dealt with the relations between the kidney, lung, and blood functions in acidosis. He and his coworkers had been much interested in these relations; and their observations had led them to conclude that the phenomena arising in these various systems were corollaries one to another. Indeed, he had been struck by the beautiful concord between the clinical and chemical facts, and the theoretical considerations advanced originally by Dr. Lawrence Henderson. He agreed with Henderson that acidosis was in fact a loss of the normal relationship between acids and the bicarbonates of the blood. He agreed also with Rowntree's classification of compensated acidosis and true acidosis on the basis of undisturbed and disturbed H ion concentration respectively.

With regard to reduction of carbon dioxide tension of alveolar air, this was only an indirect measure of the H ion concentration of the blood, and could not be regarded as synonymous with acidosis. It was an exact measure of the H ion state of the blood only when the lungs were functioning normally and under fixed conditions of temperature and atmosphere. The same might be said of the urinary findings: certain urinary changes were recognizable and acceptable as indirect evidences of acidosis; but they were not synonymous with acidosis, and depended upon renal integrity and other factors for constancy.

Dr. S. J. Meltzer, of New York, felt a great obligation to the president for the symposium and especially for inviting the Hendersons. There should be general appreciation of the lucidity and completeness of Lawrence Henderson's statement. This association should especially appreciate it, because another president had invited another man who came with the statement that all ills were due to acid, but all ills might be cured by alkalies. Doctor Henderson's clear cut statement atoned for this; under his simple exposition the mode of origin of the two blood factors, acidosis and alkalosis, became intelligible, and that they could not be causes of any specific disease state, becomes obvious.

Dr. Theodore C. Janeway, of Baltimore, wished to discuss the subject on a sea level basis; he would not seek to attain the altitude of Dr. Yandell Henderson's remarks. The discussion had been valuable for clearing the views of clinicians and pathologists alike. Thus far they had talked of acidosis in terms of ketonuria; but it had now been shown that the modern conception of acidosis, acidosis in its strict sense, was the true cause of diabetic coma. Most of the criticisms had been based on the fact that acidosis was merely a biochemical event and not a just measure of disease; but it was the acidosis that caused the hyperpnea, etc., and it was possible to conceive of acidosis as the cause of functional disturbances without sacrificing the truth of Lawrence Henderson's remark about the nonspecificity of the blood changes in this condition. The newer types of acidosis had to be recognized: it was only necessary to remember that there were fundamental metabolic differences in the origins of the various types.

Dr. E. P. Joslin, of Boston, acknowledged his debt to Doctor Henderson for the simplicity of his exposition. He referred also to the clarity of Doctor Woodyatt's exposition of the dependence of the acidosis of diabetes on defective utilization of carbohydrates. Two thirds of all diabetics died in coma; and all diabetic children. All diabetics dying in the first year of the disease, died of coma. If it could be shown that the number of diabetic fatalities in the first year of the disease had been lessened, this must be because the treatment of acidosis had improved with the improved treatment of diabetes. Such statistics were now available and showed that the mortality of diabetes in the first year had been greatly reduced. Clinicians could congratulate themselves on this distinct advance in the treatment of a difficult disease.

(*To be continued.*)

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-eighth Annual Congress Held at Washington, D. C., May 9, 10, and 11, 1916.

The President, Dr. G. Hudson-Makuen, in the Chair.

(*Concluded from page 1025.*)

Epithelioma of Posterior Pharyngeal Wall Cured with the Electrocautery.—Dr. Dunbar Roy, of Atlanta, had a case of a female, aged twenty-seven years, first seen July 29, 1913. Previous and family history negative. Present history: For last three months had suffered with a soreness and throbbing in her throat. Had been treated continuously without result. Examination showed a rounded ulcer on the posterior pharyngeal wall at centre, one half of which was hidden by the soft palate; dirty gray in appearance, with edges sharply defined; about one half inch in diameter, and extending as deep as the superficial aponeurosis. A piece excised showed it be an epithelioma. Removed by means of the electrocautery point, well outside of its edges. No reaction and no discomfort followed. Healing perfect under one application. After three years there were no signs of a return. Unfortunately, clinical observers were too prone to classify malignant growths of the throat under the general term cancer, without distinguishing between the different forms of carcinoma and sarcoma. This statement was made because the writer had found it almost impossible to correlate all cases recorded, in that many of them were reported in the most unexpected places, and not under the headings where one would expect to find them. As Morell McKenzie and others had pointed out, the disease was often so extensive when first examined that it was impossible to tell its point of origin. Textbooks were vague in the discussion of this subject. It had now been three years since the case here reported had been healed, and there had been absolutely no signs of a recurrence. The results obtained in one case, especially of the cancerous type, certainly did not justify any positive deduction, but the speaker believed that the thorough and judicious use of the electrocautery offered the best chance for a good result.

Dr. J. Solis Cohen, of Philadelphia, had been glad to hear the paper by Doctor Roy, because it exemplified the opinion that epithelioma, taken early, before there was any glandular involvement, could be cured. The method which he adopted was an excellent one. In the first place, he eliminated the growth, and a certain portion of healthy tissue around it, with the cautery. The heat of the cautery extended and cooked some of the area around that growth, and entirely getting rid of the growth, he of course had a normal return of tissue. He got rid of the entire growth except as far as the scar tissue was concerned.

Dr. Cornelius G. Coakley, of New York, thought the case of Doctor Roy exceedingly interesting. It presented one phase, however, to his mind, which was little doubtful, and that was, that he understood the specimen was examined only in frozen section. He thought most pathologists would feel a little bit in doubt as to their examination of a frozen section. The next point was the unusual absence of glandular involvement in this area. He had never seen a malignant process, even fairly early, on the posterior pharyngeal wall, that did not have the glands involved. It might have been some particular type of cancer—some peculiar form, different from the average type which they ordinarily saw. The next point was one which they ought to take up seriously, and that was the absence in the literature of records of cases of involvement of the nose, throat, accessory sinuses, pharynx, and larynx. Within the last year he personally ran across at least one dozen cases of malignant disease of rather unusual type—ethmoidal, maxillary, etc. He had one case recently involving the sphenoid and nasopharynx—whether primary or secondary, he could not tell. Those cases were unrecorded in the literature, and he had no doubt that those who were working in large clinics had numbers of these cases. He thought they should report all cases of malignancy seen during the year and have them tabulated in some form for reference. It was really surprising to note the relative frequency of these cases compared with the actual records.

Dr. D. Bryson Delavan, of New York, said there was nothing so uncertain about the prognosis in a case of so called epithelioma. When the microscopic examination was made and the findings were reported, there their information ended. There were in the recollection of most of them isolated cases which differed entirely in their result from the average. For example, the solitary case in which Doctor Elsberg operated at different times for a dozen years, and in which Doctor Cohen operated twenty years after its inception, and the patient lived fifty years after the first operation. That was a long while for a patient to survive epithelioma. In contrast he had an epithelioma of the epiglottis which was discovered so early that the growth was only about half the size of a split pea, one quarter of an inch in diameter, on the extreme margin of the epiglottis. One third of the epiglottis was thoroughly removed, as far down as possible, and the disease completely extirpated. After four or five years there was a healthy mass there, and then the patient relapsed and died.

Extensive Cholesteatoma Following the Luc-Caldwell and Killian Operations, Simulating Sarcoma.—Dr. Virginius Dabney, of Washington, D. C., had a case of a man, forty-two years of age, who gave no subjective symptoms of his grave condition other than nasal stoppage. He had exophthalmos, complete deviation of septum, polyps in middle strait with acute exacerbation three days later. Luc-Caldwell operation performed and extensive exenteration of ethmoid bone, with subsidence of symptoms. Five days after this, symptoms returned, and Killian operation was done, with perfect functional and cosmetic results. Eleven days later, abscess in cheek formed and was evacuated by incision below and parallel to the lower eyelid. Great distention of cheek, frequent spontaneous hemorrhages, convincing radiographs and wooden hardness of mass in cheek suggested sarcoma. Two months later, operation revealed immense collection of true cholesteatoma; odor overpowering; all bone above, below and on each side of mass eroded and totally destroyed, including floor and inner wall of orbit, two thirds of malar bone and all of outer wall of antrum. Present condition of patient, marked asthenia; death only matter of short time. Syphilis, tuberculosis, malignancy all excluded by proper methods.

Letters to the Editors

AS TO THE ORIGIN OF LIFE.

New York, *November 24, 1916.*

To the Editors:

Your editorial article on the Origin of Life has interested me considerably. While there is little doubt that new combinations of energy are being constantly constructed, witness the incessant polymerization of the starch molecule through the enzyme action within the chlorophyll grain, whereby the sun's energy is being condensed and transformed into carbohydrates, still some of your illustrations are not happily chosen.

I refer to your statement with reference to the origin of the organism causing poliomyelitis where the editorial article states that "poliomyelitis seems hardly to have been known before 1840." Why, in 1840, Heine had written his important monograph on the disease with a fully elaborated orthopedic therapy. Underwood, in 1784, gave excellent descriptions, and called it a new disease. In the writings of the authors of the sixteenth, fifteenth, and fourteenth centuries it is apparent. Hieronymus Bosch has given us, in the fifteenth century masterly pictures of all of the chief types of deformities due to the disease. Statuettes of the club feet and other dwarfing processes are known from the Roman, Greek, and even Egyptian times, and the typical bony deformities are known from Egyptian mummies of the middle dynasties, circa 2000 B. C. Certainly this evidence which is but a tithe of what is known would nullify the value of the statement quoted.

There is plenty of evidence to show the active formation of new energy combinations, but even Bastian's most cherished experiments on the spontaneous formation of microorganisms still remain not proven.

Smith Ely Jelliffe, M. D.

THE END OF THE POLIOMYELITIS EPIDEMIC.

New York, *November 21, 1916.*

To the Editors:

I wish to call attention to the fact that with the advent of frost all over the country, from Maine to California, and the death of the mosquito consequent thereto, the cases of infantile paralysis stopped at once, just as yellow fever stopped on the same occasion. The reason is the death of the active carrier, the mosquito; certainly the frost does not kill the paralysis germ carried in the mouth, adenoids, and tonsils of human beings as stated by the experts. I have also failed to hear of any expert trying to transmit the disease from human babies to baby monkeys, not adult ones, for the adult monkeys are as immune from the disease as are adults of the human race. I have just seen the prospectus of a book on infantile paralysis written by eminent medical men, and every fly and biting insect is discussed therein, with the exception of the mosquito.

Charles S. Braddock, Jr., M. D.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Clinical Disorders of the Heart Beat. A Handbook for Practitioners and Students. By Thomas Lewis, M. D., D. Sc., F. R. C. P., Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital, Physicians to Out Patients, City of London Hospital for Diseases of the Chest. Third Edition. New York: Paul P. Hoeber, 1916. Pp. xii-116. (Price, $2.)

The first edition of this valuable book was issued in 1912. The rapid exhaustion of the first and second editions has resulted in preservation of it for the most part in its original form in this new, third edition. The chief change is an additional chapter on the most recently discovered form of cardiac arrhythmia, viz., auricular flutter, which is to be carefully distinguished from auricular fibrillation, with its confusingly similar name. Whereas in the latter coordinate contraction of the auricle is lost, auricular flutter is defined by Lewis as a condition in which the auricular beats are submerged by contractions in response to a series of new, pathological, yet rhythmical impulses varying in rate from 200 to 350 a minute. The flutter is as yet so new a condition that the author is unable to speak very definitely of its prognosis. The strength of the heart muscle and the burden it has to carry in the individual case, however, supply a partial basis for a prognosis, and fortunately the condition is readily amenable to digitalis or strophanthus treatment. Heart block, it is now pointed out, among infectious diseases is limited to the more severe cases. In the chapter on auricular fibrillation, a paragraph has been added calling attention to the favoring influence of this condition on ante mortem clotting in the auricles; this is evidently due to the virtual paralysis of the auricles occasioned by the disorder and the consequent stagnation of blood in them during life. Embolism of the lung and brain has been observed by Lewis where previously fibrillating auricles have resumed normal contractions. The book in its new form is again to be warmly recommended to the practitioner as affording a simple, concise presentation of the clinical aspects of the arrhythmias, in the discovery and development of which the author has himself played so important a part.

The American Year-Book of Anesthesia and Analgesia. F. H. McMechan, A. M., M. D., Editor. 1915. New York: Surgery Publishing Company, 1916. Pp. ix-416. (Price, $4.)

The publication of this, the first edition of the year book, indicates that anesthesia and analgesia are taking a place with the other specialties. Previous to the publication of this volume the advances in these branches were recorded in the quarterly supplement to the *American Journal of Surgery.* The book contains 420 pages of reading matter which cover, not only the science and theory of anesthesia and analgesia, but the practical sides of these subjects as well. The foremost dentists, physicians, surgeons, and laboratory workers have collaborated in making this volume a veritable masterpiece. Some of the articles are from the most prominent laboratories in the country. It had been intended to include within its pages the work of authorities other than American, but owing to the struggle raging in Europe, this, unfortunately, could not be done. Several of the subjects have been gone into at length, and these will be kept up to date in subsequent issues.

The book is beautifully finished in art buckram, is printed on India tint paper, and contains 250 illustrations. The amount of subject matter is so voluminous that the benefit derived from reading it can be fairly compared with that obtained by taking a postgraduate course in anesthesia and analgesia.

The editor has thoughtfully introduced a frontispiece to the book, which with the following inscription, may become historical: "James Tayloe Gwathmey, M. D., and Charles Baskerville, Ph. D., F. C. S., in the latter's laboratory of the College of the City of New York, discussing the experimental details which resulted in standardizing the rate of the evaporation of ether oil solutions in the technic of colonic anesthesia."

Le Système Taylor et la physiologie du travail professionnel. Par J. M. Lahy, Chef des travaux au laboratoire de psychologie expérimentale de l'Ecole pratique des Hautes Etudes. Paris: Masson & Cie., 1916. Pp. x-198.

This book is essentially a painstaking analysis, by an experimental psychologist of the F. W. Taylor method of scientific factory organization—a method having for its purpose so to adjust mutually the workman and his work that the greatest possible efficiency and rapidity of production shall result. The author's criticisms of Taylor's system are by no means uniformly favorable. Its sponsor is reproached with having reduced the workman too much to a mere machine, with interfering indirectly with his general social activities, and with overlooking the fact that, machinery gradually being substituted more and more for human action, the capacity for attentive supervision and prompt, certain adaptation to new problems must be preserved. A number of technical criticisms of Taylor's methods are also advanced. His system is deemed insufficient from the standpoint of physical fatigue in workers who are not called upon to put forth any pronounced muscular effort. In a general way, however, the method is commended as tending to draw attention to the value of order where before many things were in confusion. In the final chapter the author describes how, in his belief, the best of Taylor's principles may be applied, and how they may be supplemented by others to the greatest advantage.

Interclinical Notes

In an editorial discussion of the narcotic habit among boys, the *Sun* for November 22d eliminates the final e from heroine, while retaining it in morphine and cocaine, thus bedeviling still further a problem in medical spelling. We confess to inability to follow the *Sun's* rule, if it has one, as all three drugs are alkaloids.

* * *

A novel view of the aeroplane appears in *Leslie's* for November 9th, wherein Mr. Glen L. Martin, one of the pioneer aviators, is quoted as saying that "there is no means of transportation yet devised that will make sixty miles an hour as safely as an aeroplane."

* * *

Edward T. Devine, in the *Survey* for November 18th, states that although we are impartial between the belligerents in the present war, we shall not be impartial between any future disturber of the peace and the peacemakers; in the establishment of a secure and lasting peace we have a decided interest backed by a reasonable measure of moral force, capable of expression in terms of physical force if that should prove to be necessary and appropriate.

* * *

Apparently few residents of the greater city of New York know much about the Brooklyn Institute of Arts and Sciences, an admirable organization for postgraduate study—in many instances, indeed, undergraduate instruction—of which Brooklynites are very proud. The students or members have the opportunity to hear at lowered prices the greatest musicians, soloists, or chorus or orchestra members, speakers and readers such as Sir Rabindranath Tagore, Colonel Roosevelt, and Mr. Taft, and to enjoy without other expense than a small membership fee, the study of domestic science, zoology, philology, fine arts, astronomy, geography, dramatic art, music, photography, political science, chess, or chemistry.

* * *

The far reaching influence of the Brooklyn institute is shown by the lecture on the Public Health Service given by one of its surgeons, Dr. C. H. Lavinder, on November 25th. On the 22d, Dr. Simon Flexner lectured on infantile paralysis. On November 29th, there was a meeting of the Red Cross at the Academy of Music, the attendance being made up largely of persons who belong both to the Red Cross and the institute. The chief executive of the former spoke on the great war On December 5th, Mr. Thomas Mott Osborne speaks on the Psychology of the Criminal. Dr. Eliza Mosher, author of a recent paper in the Journal, lectured on November 27th on the relation of posture to health.

In his paper on the Psychology of Wish Fulfilment in the *Scientific Monthly* for November, 1916, Professor John B. Watson, of Johns Hopkins University, emits an epigram that may sting severely such opponents of Freud as find the latter's theories immoral or "nasty." Speaking of the slips of tongue and pen which betray our secret and usually well guarded wishes, as well as of the dreams in which these wishes find fulfilment, Professor Watson remarks: "When the doctrine was first advanced, it raised a storm of opposition, not only from the staid, home loving, everyday men and women, but from scientific men as well." Now for it: "Objection to the view seems to stand in almost direct ratio to the amount of repression the individual possesses." Can it be that the noisiest anti-Freudians are in the same class as reformed drunkards and drug victims, who are always the most anxious that alcohol and narcotics should be universally prohibited?

* * *

According to the *Outlook* for November 29, 1916, Victor Kennard, formerly a great Harvard football star, when asked what football had done for him, made the following reply: "I learned to control my temper, to exercise judgment, to think quickly, and act decisively. I learned the meaning of discipline, to take orders and carry them out to the best of my ability without asking why. I had, through the training, regular habits knocked into me. I learned to meet, know, and size up men. I learned to smile when I was the most discouraged fellow in this great wide world, the importance of being on time, a better control of my nerves, and to demand the respect of fellow players. I learned to work out problems for myself, and to apply my energy more intelligently—to stick by the ship. I secured a wide friendship which money can't buy." This would not be a bad record for the influence on character of the whole university curriculum. If football can do all that Mr. Kennard believes it can, why waste time on the humanities, the fine arts, mathematics, and other *impedimenta* of the academic course?

Meetings of Local Medical Societies

Monday, *December 4th.*—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York (annual); Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

Tuesday, *December 5th.*—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York (annual); Syracuse Academy of Medicine (annual); Buffalo Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Medical Society of the County of Yates; Medical Society of the County of Ulster (annual); Medical Society of the County of Tioga (annual); Medical Society of the County of Orange (annual).

Wednesday, *December 6th.*—New York Urological Society; Brooklyn Society for Neurology (annual); Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association (annual); Elmira Academy of Medicine (annual); Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; County of Rockland Medical Society (annual); Long Island Society of Anesthetists.

Thursday, *December 7th.*—New York Academy of Medicine; Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society.

Friday, *December 8th.*—New York Academy of Medicine (Section in Otology); Society of Ex-Interns of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York (annual); Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the Unted States Public Health Serivce for the seven days ending November 22, 1916.

Armstrong, Charles, Assistant Surgeon. Relieved from duty on the Coast Guard cutter *Itasca* and ordered to report for duty on Coast Guard cutter *Seneca*.

Baughman, D. S., Assistant Surgeon. Bureau orders dated October 14, 1916, revoked.

Billings, W. C., Surgeon. Granted seven days' leave of absence on account of sickness from November 23, 1916.

Brooks, S. D., Senior Surgeon. Bureau letter dated November 7, 1916, amended to grant five days' leave of absence from November 1, 1916.

Grubbs, S. B., Surgeon. Granted sixteen days' additional leave of absence from November 20, 1916.

Howard, A. R., Scientific Assistant. Directed to proceed to the establishments of the General Chemical Co. and make studies of occupational diseases.

Hurley, J. R., Passed Assistant Surgeon. Detailed to instruct first aid classes in the School for Preparedness during November and December, 1916.

King, W. W., Surgeon. Granted one month's leave of absence from December 21, 1916.

Mullan, E. H., Passed Assistant Surgeon. Granted twenty-one days' leave of absence from December 1, 1916.

Pierce, C. C., Senior Surgeon. Granted six days' leave of absence from November 7, 1916, on account of sickness.

Treadway, W. L., Assistant Surgeon. Directed to proceed to Nassau County, L. I., for duty in connection with a sanitary survey of schools.

Turnipseed, D. C., Passed Assistant Surgeon. Granted two months' leave of absence from December 14, 1916.

Yarbrough, H. C., Assistant Surgeon. Granted ten days' leave of absence en route to Chicago.

Woods, E. O., Assistant Surgeon. Relieved at Seattle from duty and will report to the commanding officer of the Coast Guard cutter *Unalga* for duty.

Boards Convened.

Surgeons C. H. Gardner and J. M. Holt detailed as members of a Coast Guard Retiring Board, which met at the Marine Hospital, Buffalo, N. Y. November 27, 1916.

Boards of medical officers convened November 22, 1916, for the examination of Coast Guard officers for promotion, as follows: Baltimore: Detail for the board, Surgeon C. W. Vogel and Assistant Surgeon J. D. Reichard; Seattle, Wash., Surgeon B. J. Lloyd and Passed Assistant Surgeon E. Krulish; Astoria, Ore., Surgeon H. G. Ebert and Acting Assistant Surgeon J. Tuttle; Boston, Mass., Passed Assistant Surgeons W. M. Bryan and R. A. Kearny; San Francisco, Cal., Assistant Surgeons D. S. Baughman and J. F. Worley.

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the three weeks ending November 18, 1916:

Ames, M. H., Surgeon. Detached from the *Salem* and ordered to the *Maine*.

Clifford, A. B., Passed Assistant Surgeon. Detached from the *Washington* and ordered to the *Virginia* for duty.

Donelson, M., Passed Assistant Surgeon. Detached from duty on the receiving ship at Norfolk, Va., and ordered to the *Pennsylvania* for duty.

Dragoo, C., Passed Assistant Surgeon. Detached from the Naval Hospital at Newport, R. I., and ordered to the Naval Training Station at Newport, R. I.

Farwell, W. G., Passed Assistant Surgeon. Detached from the *Culgoa* and will await orders.

Freeman, G. F., Surgeon. Ordered to the Naval Hospital at Boston, Mass., for duty.

Henry, R. E., Surgeon. Ordered to the Naval Training Station at Norfolk, Va., for duty.

May, H. A., Passed Assistant Surgeon. Ordered to the Naval Hospital, Annapolis, Md., for duty.

McLean, N. T., Passed Assistant Surgeon. Ordered to report at Washington, D. C., for promotion.

Mink, O. J., Passed Assistant Surgeon. Ordered to the *Columbia* for duty.

Plummer, T. W., Surgeon. Detached from the *Alabama* and ordered to the *North Dakota*.

Porter, F. L., Passed Assistant Surgeon. Detached from the *San Francisco* and ordered to Washington, D. C., to await orders.

Rhoades, G. C., Passed Assistant Surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the *San Francisco* for duty.

Sheehan, R. F., Passed Assistant Surgeon. Detached from the Naval Medical School and ordered to the *Culgoa* for duty.

Shepard, G. W., Passed Assistant Surgeon. Detached from the Norfolk Receiving Ship and ordered to the Training Station at St. Helena, Va.

Stalnaker, P. R., Passed Assistant Surgeon. Detached from the *Columbia* and ordered home to await orders.

Tribou, H. A., Assistant Surgeon. Detached from the *Virginia* and ordered to the *Tacoma* for duty.

Wentzel, W. S., Assistant Surgeon. Resignation accepted, to take effect November 8, 1916.

Wickersham, W. W., Assistant Surgeon. Detached from the *Prairie* and ordered to duty with the Marine Expeditionary Forces at San Domingo, D. R.

Ziegler, J. G., Passed Assistant Surgeon. Detached from the Coast Torpedo Force, Pacific Fleet, and ordered to the *Chattanooga* for duty.

◆

Births, Marriages, and Deaths

Died.

Bailey.—In Dayton, Ohio, on Tuesday, November 14th, Dr. Jesse K. Bailey, aged sixty-five years.

Beith.—In Bowmanville, Ont., on Friday, November 10th, Dr. Alexander Beith, aged seventy-six years.

Boam.—In Topeka, Kan., on Wednesday, November 15th, Dr. Silas A. Boam, aged seventy years.

Breakell.—In Cross River, N. Y., on Saturday, November 18th, Dr. James A. Breakell, aged sixty-six years.

Claytor.—In Bedford City, Va., on Thursday, November 16th, Dr. David Mitchell Claytor, aged eighty-four years.

Darrow.—In Aurora, Minn., on Sunday, November 12th, Dr. Edward Darrow, aged forty-two years.

Dunn.—In New York, N. Y., on Thursday, November 23rd, Dr. T. Joseph Dunn, aged fifty-two years.

Faris.—In Sacramento, Cal., on Thursday, November 16th, Dr. Clifton Maupin Faris, aged thirty-eight years.

Grady.—In Natchez, Mass., on Monday, November 13th, Dr. John I. Grady, aged thirty-eight years.

Hermany.—In Mahanoy City, Pa., on Saturday, November 18th, Dr. Phaon Hermany, aged seventy-six years.

Johnstone.—In Reno, Nev., on Thursday, November 9th, Dr. Oscar Percy Johnstone, aged forty-five years.

Kenney.—In Providence, R. I., on Sunday, November 19th, Dr. William F Kenney, aged sixty-three years.

Kerr.—In Corsicana, Tex., on Sunday, November 12th, Dr. William J. W. Kerr, aged eighty-two years.

Maguire.—In Dubuque, Iowa, on Wednesday, November 8th, Dr. John E. Maguire, aged forty-six years.

Mayer.—In Willow Street, Pa., on Monday, November 13th, Dr. Isaac H. Mayer, aged seventy-two years.

Norris.—In New York, N. Y., on Sunday, November 19th, Dr. Henry Selden Norris, aged sixty-eight years.

Sanborn.—In Spencer, Mass., on Monday, November 20th, Dr. Frederick J. Sanborn, aged fifty-five years.

Schwagmeyer.—In Clifton, Ohio, on Saturday, November 11th, Dr. August W. Schwagmeyer, aged seventy-two years.

Sutton.—In Kansas City, Mo., on Friday, November 10th, Dr. Walter S. Sutton, aged thirty-nine years.

Varno.—In Thompsonville, Conn., on Saturday, November 18th, Dr. Henry G. Varno, aged sixty-six years.

Walker.—In Carnegie, Pa., on Sunday, November 19th, Dr. Robert Latshaw Walker, aged seventy-nine years.

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Original Communications

GONORRHEA A CURABLE SCOURGE.

By George A. Wyeth, M. D.,
New York.

The title of this paper is chosen advisedly: Gonorrhea is a curable scourge. The modern means at the command of the physician are so definite and precise that it is inexcusable for a case of gonorrhea to remain uncured.

I do not suggest that it is always a simple and an easy thing to fight the gonococcus. Painstaking care in diagnosis, and definite location of the lesion are possible only by the microscope and the urethroscope. It is a fortunate thing for gonorrheics, and for society in general, that the day of haphazard treatment of all urethral infections is drawing to an end. That form of optimism which led the practitioner to employ only internal medication or perfunctory injections, and to discharge as cured patients whose condition demanded a further and more penetrating treatment, has worked incalculable harm and hardship.

Until a short time ago, both profession and laity joined in considering gonorrhea an unimportant affection. The seriousness of syphilis was early recognized, but it is only recently that we have appreciated the gravity of uncured gonorrhea and the horrors of its sequelæ. It is indeed gratifying to find leading journals like the *Times, Tribune,* and *Globe* occasionally lending their columns to the fight against these diseases, for only by education can headway against them be made. Once remove the veil of secrecy and shame under which the gonococcus thrives and it will perish. Mr. A. Foerster, of London, writes:

> It is being more and more realized that the fact of contracting a venereal disease is purely and simply a misfortune—and it seems timely to bring the principal member gonorrhea, to the front. There can be no doubt that its victims deserve our fullest sympathy, and they require the same care and attention as patients suffering from other diseases, were it only for the sake of their surroundings and their offspring. Our medicosurgical measures are excellent and practically guarantee a cure. They appear, however, to be inadequately known, and even among medical men a certain uncertainty appears to exist, so far as the treatment of gonorrhea is concerned.

An experience of many years in the study and treatment of this interesting disease has taught me the surpassing value of certain remedies, and their superiority over others which formerly were considered effectual The fact that gonorrhea—a preventable and curable disease—continues to scourge humanity is justification enough for a further presentation of the modern scientific means of eradicating it. As to its frequency and cost to social economy, I refrain from quoting statistics, for I believe few are reliable and many are the products of enthusiasts. So conservative a writer as Professor Osler, however, has written:

> Gonorrhea, one of the most widespread and serious of infectious diseases, presents many features for consideration. As a cause of ill health and disability, the gonococcus occupies a position of very first rank among its fellows. While the local lesion is too often thought to be trifling, in its singular obstinacy, in the possibilities of permanent sexual damage to the individual himself, and still more in the "grisly troop" which may follow in its train, gonorrheal infection does not fall very short of syphilis in importance.

Gonorrhea is a *preventable* disease, as has been amply proved in the U. S. Navy.

Gonorrhea *can be aborted* in the majority of cases if seen within twenty-four hours after a purulent discharge has begun, except in primary cases.

Gonorrhea *is a curable* disease.

Notwithstanding all this, gonorrhea is our most prevalent disease. So numerous are the innocent women invalided and robbed of motherhood, so numerous the babies blinded at birth, so numerous the crippled men and the ruined homes, as a result of its ravages, I incline to the opinion that gonorrhea is our greatest hidden peril.

Generally speaking, gonorrhea begins as an acute and usually ends as a subacute or chronic process. Nature at first makes a great effort to rid herself of the offending organism (profuse discharge), but eventually comes to tolerate its presence under mild protest. After a variable period, determined by the virulence of the infection, the resistive power of the patient, and the treatment applied, the acute stage begins to decline. It is not the purpose of this paper to treat of acute gonorrhea. For the treatment of this condition the reader is referred to the New York Medical Journal for February 5, 1916. In the subacute stage the number of gonococci has greatly decreased; phagocytosis is less marked; the embryonic infiltrations are being absorbed; the vascular changes are less conspicuous, and the destroyed epithelium is being regenerated. The process of repair has set in, and in a certain proportion of cases goes on to a happy termination. Unfortunately, this happy ending is not the

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rule. Gonococci remain hidden somewhere in the tissues, and it is incumbent upon the physician, first, to determine their exact site; second, to eradicate them; and, third, to bring about a restitution of the tissues. Acute gonorrhea is a more or less diffuse process, but chronic gonorrhea is always localized to one or more areas, so that the matter of definite location is not a difficult one. All chronic gonorrheas are either anterior, posterior, or both, according to whether the pathological process is situated in front or behind the anterior layer of the triangular ligament.

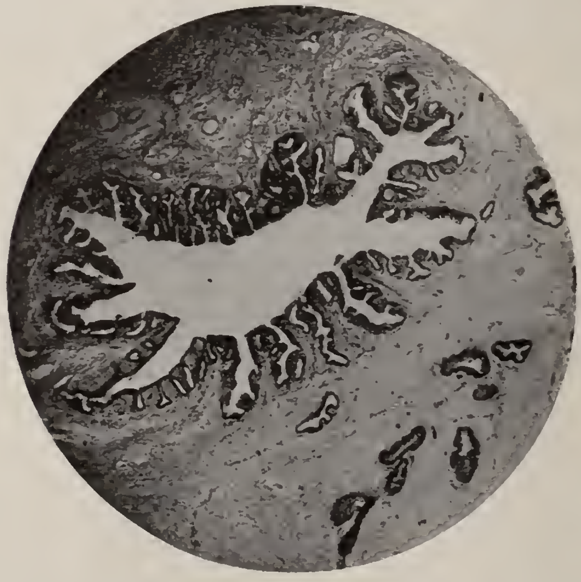

Fig. 1.—Cross section of membranous urethra x28, showing abundance of glands—many being deep seated.

If posterior, it generally means an involvement of the prostate (rarely the seminal vesicles, in my experience), and I believe the membranous urethra is much more frequently involved than is commonly believed. Here glands are abundant. Many are deep seated and extend into the depth of the tissues as shown by cross sectioning. (Fig. 1.) To determine if the prostate is involved, little reliance is placed upon the "two glass test" but the patient is instructed to urinate into three glasses and the bladder is irrigated with 0.25 or 0.5 per cent. protargol solution. The prostate is then massaged and prostatic fluid expressed on a slide, fixed, stained, and examined under the microscope. If the prostate is found diseased, systematic, gentle massage is instituted, always irrigating before and after, and controlled by the microscope. This is continued until a liberal supply of lecithin bodies are returned, absolutely no gonococci are found on many examinations, and only three or four pus cells (not epithelial cells) to the field are found in the prostatic secretion. Gentle massage, moving the forefinger only, generally suffices to clear up this condition. Stubborn cases are assisted by the rectal psychrophore, hot rectal irrigations, hot perineal applications, vaccines, general tonics, and out of door life.

If anterior, the lesion is usually situated in or about the glands of Littré, and Morgagni's lacunæ. These are the great harboring places in chronic gonorrhea, and are, in my opinion, largely responsible for the widespread distribution of this disease (Fig. 2). Here gonococci may persist for years in spite of treatment. There are three predominant pathological processes common to the urethra when chronically inflamed, namely, infiltration of embryonic tissue cells, changes in the epithelium, and changes in the glandular tissue. The proliferation of embryonic elements goes on to connective tissue formation. This in time cicatrizes with stenosis, so that all neglected cases of chronic gonorrhea are invariably followed by stricture. Particularly is this true of the membranous urethra which is surrounded by the cut off muscle, which by its strong contractions fissures the mucosa and accounts for the frequency of stricture in this region. The epithelium as it regenerates is never restored as normal cylindrical epithelium, but always as numerous layers of flat, keratinized epithelial cells. The mucosa thus loses its elasticity and permeability to a marked degree, so that it is practically impermeable to injections. The glands may atrophy, form polypi, become occluded with the formation of small cysts or periurethral abscesses with fistulæ, or they may become hyperactive with a continual outpouring of mucus which may or may not contain gonococci. The microscope must determine this fact before we institute treatment, for here the pathway divides and he who aspires to cure gonorrhea should possess a knowledge of bacteriology which will enable him definitely to determine this fundamental factor.

Should the prostatic secretion prove free of infection and the anterior condition persist, local treatment is begun to destroy the gonococci which have been harbored in the glands and lacunæ, to cause an absorption of the round cell infiltration, and to restore the mucous membrane to as near normal as possible. This is best accomplished by means of the Frank modification of the Kollmann dilator, which is an anterior, irrigating dilator with three prongs instead of four. It has an irrigating attachment with holes in the shaft of the instrument to allow the inflow of fluid, and an outlet to permit the escape of fluid while the instrument is *in situ*. Irrigation and dilatation are performed simultaneously, and the ad-

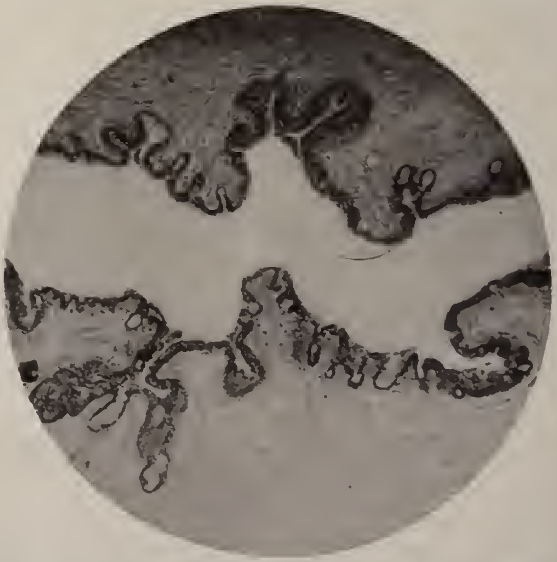

Fig. 2.—Cross section of anterior urethra x30, showing Morgagni's lacunæ and glands of Littré.

vantage of the three prong construction is readily appreciated. Since most of the folds, lacunæ, and glands are situated on the upper surface of the urethra, the four prong dilator makes pressure directly against this surface, while the three prong instrument dilates it laterally and allows a full irrigating flow against the upper aspect, where it is most needed. The urethra is first flushed thoroughly with 150 c.c. of solution and the instrument is introduced as far as the cut off muscle. Slow, gradual dilatation is begun, and at the same time the canal is irrigated with a liberal amount of the solution. Care must be taken against overdilatation, and after the withdrawal of the instrument the entire urethra is again thoroughly flushed. Dilatations are made every second or third day, the patient continuing his hand injections until the urethra is well dilated, when all treatment is discontinued and the patient is kept under observation. I have never seen any complications from the use of this instrument, and have yet to find the first case where it has carried the disease posteriorly.

Should gonococci reappear after such a course of treatment, it is generally an indication that the deeper seated glands are involved and should be destroyed by electrolysis. After thoroughly cleansing the urethra, an endoscopic examination is made, and the infected glands are located by their wide, gaping mouths. The apparatus for electrolysis comprises an electrolytic needle, a milliampère meter, rheostat, and sponge electrode, so disposed that the patient holds the positive pole (sponge electrode) against the groin, while the negative pole (the needle) is passed through the endoscope into the open mouth of the gland. By making pressure on the small button in the handle of the needle, electrical contact is made, the rheostat is set for three to five milliamperes, and the application is maintained for from one to two minutes. Bubbles of hydrogen are seen to come from the gland opening. Four or five glands are thus electrolyzed at each treatment, after which the urethra is irrigated. It is important that the current for the light of the endoscope and that for the electrolytic needle be taken from different sources, so as not to cause a short circuit when the instruments are in place.

It is not within the scope of this paper to describe minutely the treatment of female patients, and I can only mention that our method follows the same general principles as outlined—first, definitely to locate the seat of infection and treat it locally by irrigations and applications. Here, too, mild solutions of protargol have served us well.

I wish to emphasize the importance of the systematic use of the microscope in treating this disease; first from a diagnostic standpoint. Surely no one can say positively of any given case of urethral discharge that the cause is gonorrheal unless gonococci are demonstrated. More than once has it been my pleasing experience to convince a patient who thought himself infected with gonorrhea, that his belief lacked foundation.

Since there can be no hard and fast rule as to the duration of an attack of gonorrhea, the physician is, and must be dependent upon the microscope for definite information as to the progress of his patient. No objection can be urged on the score of time needed, for a slide can be prepared and stained in a very few minutes. It is impossible to emphasize too strongly the need of employing all the scientific aids at our command in the fight against gonorrhea.

In conclusion, I wish to quote from Dr. George Luys, of Paris, who says in his *Traité de la blennorrhagie:* "Our therapy is nowadays so perfect that it is not permissible for a medical man to allow a case of gonorrheal urethritis to go on without curing it. Modern science has made such conquests that we can say without exaggeration that there is no inflammation of the urethra which cannot be cured completely by appropriate treatment. But it should not be forgotten that this result is obtained only by means of prolonged and painstaking observation and that urethroscopy alone enables us to diagnose the local lesions with accuracy, and to apply the sovereign remedy correctly. Without the control of his eye it is impossible for the medical man to select the best and most efficacious treatment."

30 East Forty-second Street.

HAY FEVER.

Its Relation to Seasons, Occupations, Sex, and Color,

By William Scheppegrell, A. M., M. D.,
New Orleans,
President, American Hay Fever Prevention Association; Ex-President, American Academy of Ophthalmology and Oto-Laryngology.

In our efforts to collect statistical information on hay fever, remarkable features were the paucity of available data and the many erroneous impressions in connection with the subject. Among the latter is the popular idea that the farmers, who are most exposed to weed pollens, are rarely subjects of hay fever. Among the criticisms of the relation of pollen to hay fever, this is frequently brought forward as a contradiction of the theory.

Another erroneous impression is that the colored population is rarely affected with hay fever. The first substantial contradiction of this was given when in company with D. D. Moore, editor of the *New Orleans Times-Picayune,* a popular lecture was given before the confederation of colored societies in New Orleans on civic improvement, in which the writer referred to the advantages of weed eradication from both a civic and sanitary standpoint. In discussing the lecture, the colored audience spoke of themselves or members of their families as suffering from hay fever in almost the same manner as a white audience. The quantitative ratio was afterward established by the United States Public Health Service.

Another popular fallacy, frequently referred to in works on hay fever, is that this disease is uncommon below the thirty-fifth parallel of latitude. South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, half of Arkansas, and most of Texas are south of this parallel, but the ratio of hay fever cases to the population differs but little from those between the thirty-fifth and forty-fifth parallel.

Equally striking was the lack of information regarding the seasons of hay fever in the various States. With few exceptions, the State boards of health, to which the first queries on the subject were addressed, replied that, as hay fever was not a reportable disease, the seasons could not be given. A large number of physicians in the various States were also unable to give this information. By persistent efforts, which were greatly facilitated by having representatives in almost all the States, the American Hay Fever Prevention Association has succeeded in obtaining definite information on the subject of the hay fever seasons. One of the difficulties presented is that the seasons are not always identical in all parts of the same State. This is sometimes due to a difference in the humidity of the soil causing marked change in the vegetation, as in the Gulf States; or a marked disparity in latitude owing to the size of the State, as in Texas and California; or a great variation in altitude, affecting the vegetation and its seasons of development.

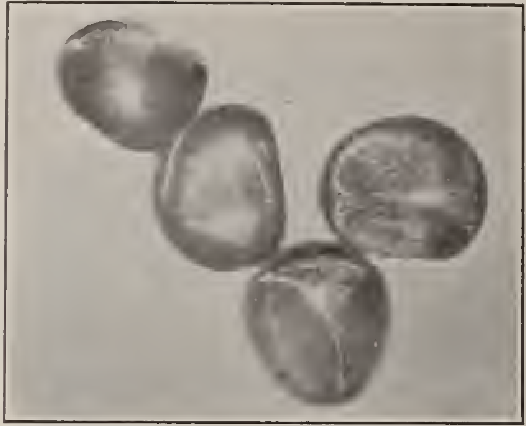

Fig. 1.—Pollen of Johnson grass, Andropogon halapense. (45 microns magnified 500 diameters.) Important cause of summer hay fever. These pollens were photomicrographed at the biological laboratory of the American Hay Fever Prevention Association.

In such cases, an average is made of the dates submitted, which is approximately correct for each State. The exact dates, however, are kept on file for special references. In California, for instance, reports were received from San Francisco, Los Angeles, Sacramento, and Berkeley, the seasons differing somewhat, but the average of May 5th to July 5th for the summer form of hay fever, and July 15th to September 10th for the autumnal form, are approximately correct for this State.

Other statistical information regarding hay fever, such as the relation of sex, occupations, and color, was obtained from the United States Public Health Service, which sent, through Epidemiologist Oscar Dowling, a list of questions to all the physicians of Louisiana. While these data refer more especially to the State of Louisiana, most of them are applicable to the United States generally.

THE SEASONS IN HAY FEVER.

The development of hay fever in any locality depends upon the atmospheric hay fever pollens increasing to a point which overcomes the resistance of the patient. This has been confirmed by the atmospheric pollen plates which have been exposed by our research department in various sections during the past hay fever season. It was ascertained that most of the spring and summer cases of hay fever are caused by the pollen of the grasses (*Gramineæ*, Fig. 1), although the pollen of other plants, such as the Yellow Dock (*Rumex crispus*), Amaranth (*Amaranthus spinosus*, Fig. 2), Goose foot (*Chenopodium anthelminticum*), etc., may cause the attack, or help to maintain it when set up by the grass pollens.

The cases of hay fever caused by the grasses are not only milder in character than those caused by the rag weeds, but are easier to prevent. The size of the pollen is relatively large (average forty microns in diameter), frequently twenty times larger than the common rag weed pollen (fifteen microns in diameter; Fig. 3). On this account, the grass pollens are carried a much shorter distance by the wind, and rarely remain long in the atmosphere. Municipal efforts, therefore, for its control have every prospect of success, as illustrated in New Orleans during the past hay fever season.[1]

The uniformity of the development of autumnal hay fever cases is practically always associated with atmospheric disturbances. In the vicinity of New Orleans, the rag weed usually begins to pollinate about August 1st, and on August 10th the pollen are in sufficient numbers in the air to appear on the exposed atmospheric pollen plates. This year, the number gradually increased until on August 20th it had reached seven per cent.,[2] with only a few reports of autumnal hay fever cases, these being from subjects living in close proximity to these weeds. On August 21st, the wind acquired a velocity of twenty-three miles an hour and the pollen count rose to eighty-seven per cent. The largest number of patients who had autumnal hay fever during the present season suffered their first attack within a few hours of this rise in the pollen count. The simultaneous development of hay fever in these cases was therefore not psychical, but was due to the uniform distribution of the exciting cause.[3]

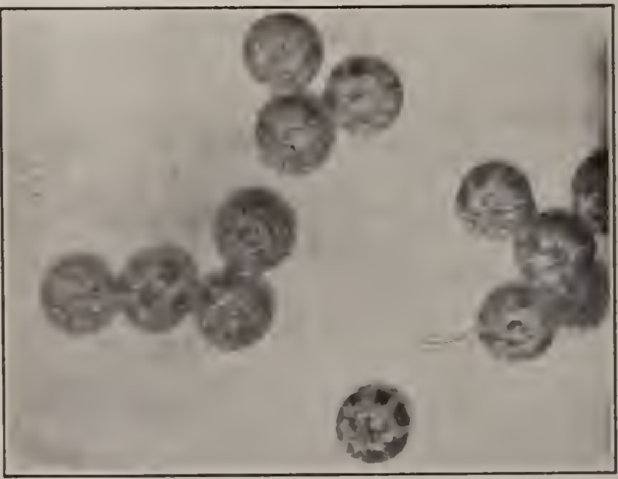

Fig. 2.—Pollen of spiny amaranth, Amaranthus spinosus. (20 microns magnified 500 diameters.) Minor cause of summer hay fever.

This rise of the pollen count also illustrates the buoyancy of the common rag weed pollen (*Ambrosia elatior*, Fig. 3). This weed does not grow within five miles of the residential section of New Orleans, being replaced by the giant rag weed (*Ambrosia tri-*

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[1] Scheppegrell, *United States Public Health Reports*, July 21, 1916.

[2] For the sake of convenience, 100 pollen to the square cm. of exposed plate for twenty-four hours is considered 100 per cent. The amount, however, is sometimes much higher during the active season of pollination of the rag weeds.

[3] After the initial attack, the nasal mucosa becomes more sensitive and reacts to a smaller number of hay fever pollens.

fida, Fig. 4). During the prevalence of this wind, however, the number of common rag weed pollens exceeded those of the giant rag weed, whose greater size (twenty microns) reduces their potential area. Another important feature was that for a week after the high winds there was little difference in the number of common rag weed pollen per kilolitre near the ground (Biological Laboratory—ten feet) and an altitude of 100 feet (eighth floor of office building and tower of Loyola University).

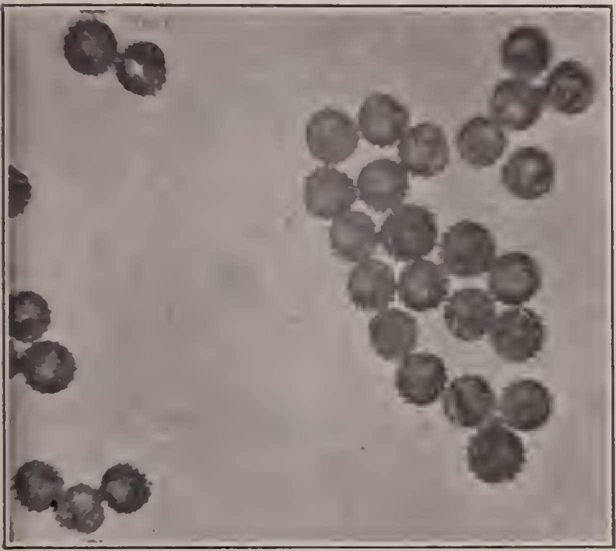

Fig. 3.—Pollen of common rag weed, Ambrosia elatior. (15 microns magnified 500 diameters), principal cause of autumn hay fever.

The etiological relation of the rag weeds (Ambrosias) as the exciting cause of autumn hay fever was also clearly demonstrated. The development, increase, decrease, and final disappearance of hay fever bore a definite ratio to the atmospheric pollen count of the Ambrosias. On October 16th, when these pollens had practically disappeared (one to two per cent.), all reports showed that the hay fever season had passed.

The pollen of the Canadian golden rod (Solidago canadensis, Fig. 8), which is so popularly associated with hay fever, was never found on these atmospheric pollen plates. Its insignificance in hay fever was also proved by the fact that after the hay fever season in Louisiana had passed, the golden rod was still conspicuous for its florescence.[4]

The following table gives the approximate dates of the development of spring and summer, and of autumn hay fever. These have been obtained from the most reliable source available, most of them being an average of several answers received from each State.[5]

In any locality, the development of hay fever may be delayed by rains which prevent the spread of the pollen; or it may be advanced several days by weather conditions accelerating the growth and pollination of the hay fever weeds. An early frost may also shorten the autumn form.

HAY FEVER SEASONS IN THE UNITED STATES.

	SPRING AND SUMMER FORM.	AUTUMNAL FORM.
Alabama	April 15 to July 15	Aug. 18 to Oct. 10
Arkansas	June 10 to July 15	Aug. 16 to Sept. 17
Arizona	May 5 to June 5	July 15 to Oct. 1
California	May 5 to July 5	July 15 to Sept. 10
Colorado	May 10 to July 1	July 20 to Sept. 15
Connecticut	June 1 to July 15	Aug. 17 to Oct. 1
Delaware	May 5 to July 10	Aug. 13 to Sept. 20
Florida	May 1 to July 10	Aug. 18 to Oct. 10
Georgia	May 10 to July 5	Aug. 18 to Oct. 4
Idaho	May 5 to June 10	Aug. 1 to Sept. 16
Illinois	June 10 to July 20	Aug. 15 to Sept. 20
Indiana	June 5 to July 15	Aug. 17 to Sept. 25
Iowa	June 2 to July 16	Aug. 13 to Sept. 27
Kansas	May 16 to July 15	Aug. 16 to Sept. 28
Kentucky	June 1 to July 18	Aug. 15 to Oct. 1
Louisiana	May 5 to July 25	Aug. 20 to Oct. 16
Maine	June 5 to July 10	Aug. 17 to Sept. 24
Maryland	May 15 to July 10	Aug. 16 to Oct 5
Massachusetts	June 5 to July 18	Aug. 13 to Sept. 25
Michigan	June 8 to July 15	Aug. 15 to Sept. 25
Minnesota	June 5 to July 19	Aug. 14 to Sept. 26
Mississippi	May 10 to July 10	Aug. 18 to Oct. 15
Missouri	May 10 to July 26	Aug. 12 to Sept. 24
Montana	May 15 to July 15	Aug. 5 to Sept. 15
Nebraska	May 15 to July 15	Aug. 8 to Sept. 18
Nevada	May 1 to July 15	Aug. 12 to Sept. 15
New Jersey	June 10 to July 24	Aug. 17 to Sept. 28
New Hampshire	June 10 to July 16	Aug. 16 to Oct. 1
New Mexico	May 3 to July 5	July 12 to Sept. 28
New York	June 5 to July 19	Aug. 16 to Sept. 28
North Carolina	May 15 to June 29	Aug. 20 to Oct. 5
North Dakota	May 20 to July 15	Aug. 10 to Sept. 15
Ohio	May 28 to July 13	Aug. 13 to Sept. 15
Oklahoma	May 10 to June 24	July 25 to Oct. 1
Oregon	April 25 to May 29	July 1 to Sept. 1
Pennsylvania	June 3 to July 24	Aug. 16 to Sept. 27
Rhode Island	June 8 to July 22	Aug 15 to Sept. 26
South Carolina	May 10 to July 5	Aug. 18 to Oct. 10
South Dakota	May 13 to July 10	Aug. 8 to Sept. 22
Tennessee	June 5 to July 22	Aug. 15 to Oct. 5
Texas	May 15 to July 15	Aug. 18 to Oct. 15
Texas	June 22 to July 27	Aug. 5 to Sept. 15
Virginia	May 15 to June 29	Aug. 18 to Oct. 3
Vermont	June 10 to July 22	Aug. 14 to Sept. 24
Washington	June 12 to July 1	July 5 to Oct. 7 (Fall rains)
West Virginia	May 15 to June 29	Aug. 12 to Sept. 28
Wisconsin	June 7 to July 18	Aug. 17 to Sept. 28
Wyoming	May 1 to May 15	Aug. 5 to Sept. 15

PERCENTAGE OF HAY FEVER CASES.

Although sufficient data had been obtained from many sections to give an approximate idea of the proportion of hay fever cases to the population, no complete information was available until the United States Public Health Service sent out a list of questions to all the physicians of Louisiana. The result of this questionnaire, which was made at the request of the American Hay Fever Prevention Association, coincided closely with the estimated average proportion of hay fever cases, viz., one per cent. of the population. This percentage sometimes varies in dif-

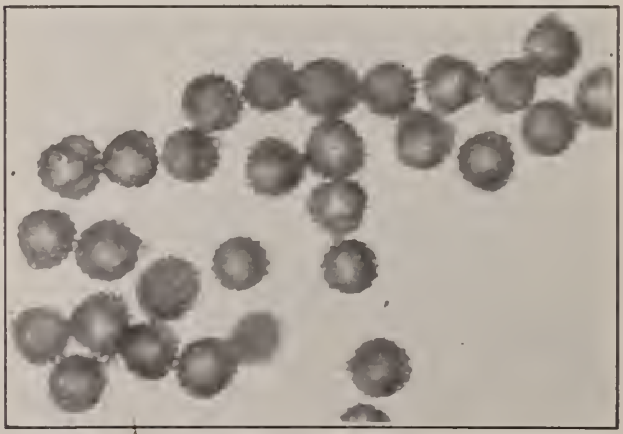

Fig. 4.—Pollen of giant rag weed, Ambrosia trifida. (20 microns magnified 500 diameters.) Important cause of hay fever.

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[4] By means of the anemophilometer, an instrument devised in the biological laboratory of the American Hay Fever Prevention Association for testing the wind pollination of plants, it was shown that the amount of pollen distributed into the air by the golden rods compared with the rag weeds is practically inappreciable. Scheppegrell, *Scientific American*, October 7, 1916.

[5] Any further information on this subject submitted by practitioners in the various States, will be carefully considered for a future report on this subject.

ferent parts of the same State, owing to the change of the hay fever weeds which are influenced by climatic conditions and altitudes.

Great altitudes, however, are without the important influence that has often been ascribed to them In the section of the Allegheny range of mountains, hay fever is not only found, but is remarkably prevalent up to an altitude of 5,000 feet. Even at this high level the common rag weed is frequently found in the section east of Kansas. In the Rocky Mountain and Pacific States, in which the common rag weed is rare, the sage wormwood (Artemisia frigida) is found at altitudes as great as 6,000 feet and is a common cause of hay fever.

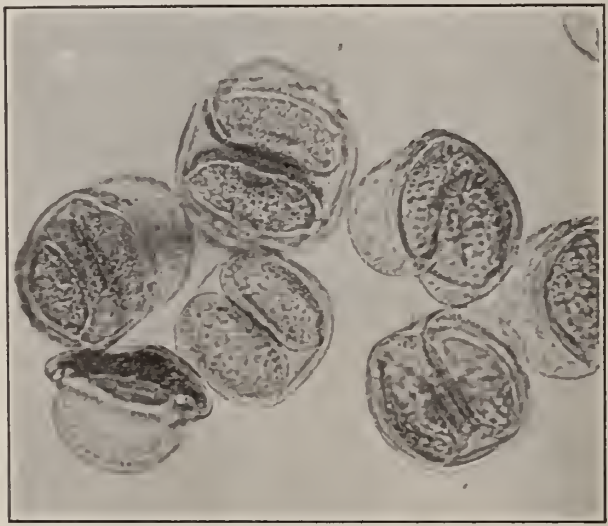

Fig. 5.—Pollen of pine tree, Pinus palustris (42 microns magnified 500 diameters), distributed in enormous quantities, but negative in hay fever.

The answers of the questionnaire of the United States Public Health Service show that the proportion of hay fever cases in northern Louisiana was eight ninths of one per cent., and in southern Louisiana one per cent., or an average of 0.94 per cent. for the State. This is somewhat lower than the estimated proportion north of the thirty-fifth parallel, which is usually one per cent. or more.

The principal weeds that cause hay fever are largely parasites of agriculture.[6] This is especially the case with the common rag weed (Ambrosia elatior, Fig. 3), the seeds of which are disseminated in land recently brought under cultivation by means of the grains, hay, and cattle. On this account, hay fever is uncommon where there are extensive forests, but quickly develops where these are replaced by cultivated lands.

Although most of the trees are wind pollinated, only a few are responsible for hay fever. The pines (Pinus palustris et alii) generate enormous quantities of pollens (Fig. 5), which, however, are negative in hay fever. The oak, willow, ailanthus, and a few others are mildly positive, but are comparatively unimportant. One exception, however, is the cottonwood (Populus sargentii, Populus angustifolia being much less active), which gives a marked reaction in hay fever, and which is sufficiently common in some of the western States to cause a considerable number of hay fever cases.

In some of the western States the percentage of hay fever is found considerably below the general average, this being due, to a large extent, to the absence of cultivated land, of which most of the hay fever weeds are parasitic. As agriculture is developed in these sections, however, the number of hay fever weeds will rapidly increase unless special precautions are taken. In many of these places, hay fever, rare a few years ago, is becoming prevalent.

PROPORTION OF EARLY AND AUTUMNAL HAY FEVER.

Autumnal hay fever is the principal form in the United States, both on account of the greater severity of the disease and the larger number of cases. The answers to the questionnaire indicate that sixty-seven per cent. of the cases belong to the autumnal, twenty-eight per cent. to the spring and summer, and five per cent. to the combined form. While this is approximately correct for the United States generally, there are many sections in which autumnal hay fever forms eighty per cent. of all the cases. On the Pacific Coast, however, the earlier form of hay fever predominates, this being partly due to the absence of the common rag weed (Ambrosia elatior), whose ubiquity, aided by the remarkable buoyancy of its pollen, is responsible for eighty-five per cent. of the autumnal hay fever cases east of Kansas.

On the Gulf Coast, in what is known as the Zone of the Gulf Flora, in portions of Pennsylvania and Indiana, and in some sections of the Pacific States, the giant rag weed (Ambrosia trifida, Fig. 4) predominates. It gives a similar reaction to the common rag weed (Ambrosia elatior), but its greater size (twenty microns in diameter, or twice the volume and weight of the common rag weed) reduces its potential radius to one sixteenth of that of the common rag weed.

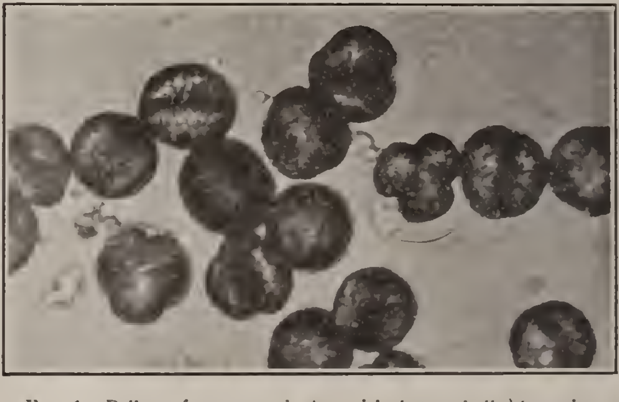

Fig. 6.—Pollen of wormwood, Artemisia heterophylla (22 microns magnified 500 diameters), one of the principal causes of autumn hay fever on the Pacific Coast.

In the Rocky Mountain and Pacific States, autumnal hay fever is caused by the wormwoods (Artemisias, Fig. 6), marsh elders (Ivas), western rag weed (Ambrosia psilostachya), and gætnerias, which, however, are not as abundant as the common rag weeds (Ambrosia elatior) are east of Kansas. The larger size of their pollen also diminishes their buoyancy and correspondingly restricts their potential area.

Most of the causes of spring and summer hay fever are due to the pollen of the grasses (gramineæ), this being confirmed by the records of our atmospheric pollen plates during the past season.[7] While corn and rye belong to this family, the size of their pollens, especially of corn (Fig. 7, eighty microns), prevents them from causing hay fever except in close proximity to such crops.

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[6] Many of the principal hay fever weeds are described in Hay Fever: Its Cause and Prevention, by William Scheppegrell, *Journal A. M. A.*, March 4, 1916.

A small proportion of spring and summer hay fever cases are caused by other pollens, such as of the dock (Rumex crispus and obtusifolius), goosefoot (Chenopodium anthelminticum and album), water hemp (Acnida tamarascina), etc., but these are usually more responsible for aggravating cases which have already been caused by the grass pollens.

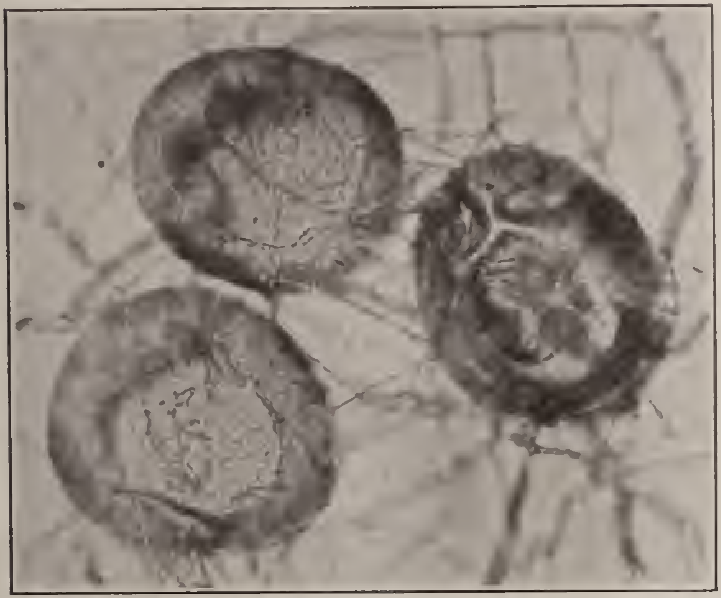

Fig. 7.—Pollen of corn (80 microns magnified 500 diameters). Its large size gives it a limited potential area.

AGE AT WHICH HAY FEVER DEVELOPS.

The age at which hay fever develops was found to be most common between twenty and forty years (sixty-two per cent.), the next most frequent age being between ten and twenty years (seventeen per cent.). Hay fever in children, however, is much more apt to be mistaken for "colds," as even in adults it is frequently not until the patient has had hay fever for several years that the periodicity of the attacks suggests the correct diagnosis. As the condition is better understood, it is probable that the age of the first development of the attack will be more correctly adjusted.

OCCUPATIONS OF HAY FEVER SUBJECTS.

The report on occupations is one of the most interesting results of this questionnaire. It is commonly supposed that persons in the country suffer little from hay fever, and the alleged fact that farmers are not affected is often used as an argument against the pollen theory. This investigation, however, demonstrates that the occupation which has the largest number of hay fever cases (thirty-eight per cent.) in Louisiana is that of the farmer. As they are most exposed to the pollen, this is only natural, and shows that the greater resistance due to their outdoor life is offset by the greater exposure.

Although professional men are supposed to be especially prone to hay fever, this was found not to be the case, as they represent only six per cent. of the cases. Next to the farmers, the greatest number of cases were in persons with indoor occupations (twenty-nine per cent.), those with outdoor occupations being nineteen per cent.

RELATIVE PROPORTION OF THE SEXES.

The proportion of males and females having hay fever is probably due not so much to difference of susceptibility as of exposure. The males have sixty-three per cent. of the hay fever cases against thirty-seven per cent. of the females, the difference being probably due to the men being more exposed to hay fever pollens by their occupations.

PROPORTION OF WHITE AND COLORED VICTIMS.

Many reports and books on hay fever refer to its rarity in the colored race. The answers, however, show that the proportion of white and colored are seventy-nine and twenty-one per cent. respectively. As the United States Census states that there were 713,874 colored and 941,086 white persons in Louisiana, this indicates that the colored are affected with hay fever about one third as often as the whites.

The data from which the information on the hay fever seasons was obtained were furnished by physicians in the various States of the Union, whose contributions were of great assistance. The cooperation of the United States Public Health Service is especially appreciated, as the answers to the questions on hay fever have furnished valuable information. While the analysis of the answers refers more particularly to Louisiana, the answers themselves will be found to be fairly applicable to the United States generally, and are therefore submitted as giving the first definite information published on this subject.

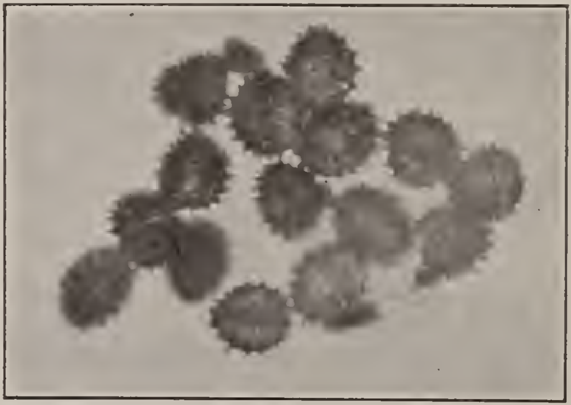

Fig. 8.—Pollen of Canadian golden rod, Soldago canadensis (15 microns magnified 500 diameters). Continues to bloom after the hay fever season has passed. Its pollens were not found on the atmospheric pollen plates.

844-846 Audubon Building.

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[7] The iodine-potassium iodide solution forms a convenient test for the grass pollens, as their starch contents quickly respond to the iodine. This solution is also a convenient stain, through its amylogenic reaction, for pollens in general, whose protein contents and reaction have been established by the biological tests.

SURGICAL IMMUNITY.*

Some Old and Frequently Neglected Factors.

By W. Wayne Babcock, M. D.,
Philadelphia,
Surgeon, Samaritan and Garretson Hospitals.

Therapeutics has long been typified by two schools, one militant and aggressive, the other passive and conservative. One rather disdains the normal forces, and seeks relief from external agencies, the other depends upon the natural defenses within the body which it tries to protect and develop. One is typified by the teachings of Benjamin Rush, and is represented by the drastic bleeding, purging, emesis, sweating, and refrigerating treatments that now have largely been discarded; the other by John Hilton, who, by rest and exemption from irritation, sought to conserve and render efficient the normal protective forces. While some of the more drastic types of treatment of the first form are no longer popular, the principle still exists in medicine, as is shown by the heroic, and at times indiscriminate internal use of antiseptics to supplant normal antibodies, of vaccines to lash the protective forces to increased endeavor, or serums to render less necessary the production of normal antitoxins. While we no longer see patients bled, and purged, and sweated until they collapse, we do from time to time observe patients with every evidence that their protective forces are struggling to the uttermost against a violent infection, now shocked by the intravascular injection of an antiseptic solution, again pale, perspiring, collapsed, from the throes of a violent chill after the intravascular injection of a vaccine, or burning and gasping from the secondary pyrexia; or in another case struggling against the superadded toxicity of an alien serum or protein, while blood tests, lumbar punctures, aspirations, polygraphic tracings, and other records performed at frequent intervals, prevent rest, increase pain and mental anxiety, and add to the exhausting effects of the disease. I do not wish to disparage or deny the usefulness of any of these important measures, but there are times when the patient must be considered first, and it seems to me a sad thing to see a desperately ill patient, especially one of prominence and wealth (for the poor ward patient more rarely receives an overplus of attention) surrounded by a group of highly trained—shall I say, ultrascientific?—consultants who vie with one another as to the number and type of examinations and immunity producing procedures they can suggest, or have carried out. There are times when rest, protection, and encouragement mean more to the patient than the most complete scientific examinations, or the employment of the latest methods for producing artificial immunity, and we should realize that we have not yet learned to interpret the reactions obtained in healthy young animals in the light of the tissue reactions of the desperately ill human subject.

It is not my desire to speak as much of aggressive or militant measures in medicine, of which I see little, as in surgery, of which I see more. It is not long since that we had what has been well termed the "carnivorous" period in surgery, in which the operator, proud of his boldness and daring, fell upon the patient, and with much tearing, rending, and crushing, triumphantly tore away the diseased part. For minor conditions the surgeon was also aggressive; scraping, scrubbing, disinfecting, gouging, squeezing, milking, punching, packing; unmindful of the fact that traumatized tissues suffer more than do the contained bacteria. Fortunately, in surgery, the present tendency is to treat damaged tissue cells with more compassion; precision and gentleness distinguish the modern operator, rather than quickness and boldness. And yet the militant spirit has not entirely disappeared, and we have not fully learned the great principle that *it is not what we put into the tissues, but what we get out of them that determines recovery from disease.*

For the successful treatment of many surgical conditions the production of an artificial immunity is much less important than the maintenance of the normal bodily resistance. Too frequently we forget that vaccines and serums can never replace such timeworn aids to immunity as rest, support, noninterference, protection, and other important measures that have been reiterated and forgotten many times. It has been well said that surgery should be retaught every seven years, so that the useful things of the past are not forgotten and thrust aside by the innovations of the present. It is my intention briefly to review a number of conditions in which attempts to produce artificial immunity are of secondary importance in the treatment of the affection. As surgeons no longer believe that disease is an evil to be scourged from the body by fire and other drastic measures, inflamed tissues are handled with greater gentleness, not because the handling is painful, but because we realize that traumatism may destroy the local immunity, or may diffuse infection beyond imperfectly erected tissue barriers. It has long been recognized that absolute, general, and local rest, frequently determines whether a contused wound leads to disorganizing infection, or a simple aseptic wound healing. A crushed hand treated by aseptization, and a careful dressing, but put back at once to work, is frequently followed by a disorganizing phlegmon that spreads up the arm. The same injury treated with a simple wet dressing, support, elevation, and complete local and general rest, may heal without inflammatory reaction. Against the handicap imposed by the first plan of treatment, no vaccine or other measure for the production of artificial immunity will avail. Again, many of us have seen a crushed and lacerated hand treated by painstaking aseptization, and the most accurate suture of the divided deep and superficial tissue, swell, become necrotic and disorganized from tension, infection, and secondary inflammatory processes. The same injury treated without suture of the divided tissues, especially the overlying skin, but by the free division of any skin that may cause constricting tension when the secondary swelling occurs, may heal with no sign of infection. No method of artificial immunity has been devised that will take the place of absence of local tension, or of local or general rest in the treatment of certain wounds.

Local traumatism has many examples as to its influence in decreasing tissue immunity. In the second stage of appendicitis a free incision with wide separation of adhesions, and especially the thorough scouring or mechanical or chemical cleansing of the peritoneum, opens lymph spaces, overcomes the local protective process, and is often followed by an overwhelming and fatal toxemia or bacteriemia.

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*Read at the seventeenth annual meeting of the American Therapeutic Society, Detroit, Mich., June 10, 1916.

In perforation in typhoid fever the mortality has been shown to have a distinct ratio to the extent of the intraabdominal manipulation, being greatest with evisceration and thorough irrigating and cleansing of the cavity, less when cleansing is accomplished only by careful sponging, and least when only the simple occlusion of the opening with drainage is carried out.

In curettage for septic infections of the endometrium, especially after abortion, the use of the sharp curette sows the bacteria into the deeper tissues and permits widespread invasion, and probably has been responsible for many tubal and pelvic infections.

In acute local infections how often puncture or ineffective incision increases the inflammatory process! The pustule that is punctured or squeezed becomes a furuncle, the furuncle that is traumatically irritated becomes a carbuncle, the carbuncle that is massaged, punctured, and squeezed, may terminate in a fatal bacteriemia.

The traumatism of a local anesthetic, or the general toxemia of inhalation anesthesia, may also seriously reduce a patient's immunity. An infection involving the root of the second or third molar treated by the usual simple dental methods, may resolve without serious symptoms. Extraction under nitrous oxide may be followed by a sharp attack of osteomyelitis of the jaw. If at the height of this osteomyelitis the patient is deeply etherized, the tissues are freely incised, the maxilla is thoroughly scraped, curetted, or gouged; the patient may be lucky if he escapes with his life. At the acme of an acute surgical infection operative intervention must be carried out with great care, and is often a source of great danger. An acute streptococcus or staphylococcus lymphadenitis of the groin, neck, or other part of the body, in the acute stage when the fever is high, the pulse rapid, the tissues' defenses as yet unerected, is often best let alone; if incised at all at this stage, it should be opened with the least possible local traumatism, and in the simplest manner. I have seen several deaths follow the careful enucleation of glands in such an acute inflammatory stage. At a little later stage, drainage, or enucleation may safely be carried out. Likewise in an acute infectious phlebitis of the leg, I have seen massage followed by sudden pulmonary embolism and death, and in every case that has come to my knowledge in which an attempt has been made to remove the vein, or the clot from the vein, in such an acute septic condition, the patient has died of a general septicemia. On the other hand, for a suppurative inflammation within a vein, a simple sharp incision after the acute stage has subsided, carried out with the least possible handling or local traumatism, is a relatively safe procedure.

In septic thrombosis of the cranial sinuses, recovery following the removal of clots with curettage of the sinus, or the irrigation of the sinus, in my opinion usually occurs in spite of the treatment rather than because of it. In these infections the operation should be limited to a simple incision with drainage, and no attempt should be made to break down the clot, or to open through the clot into the normal blood stream.

The bacterial element. Much depends upon the causative bacteria. In an acute salpingitis due to the staphylococcus or streptococcus, abdominal section is a serious procedure, and many unnecessary deaths have followed such an intervention despite free drainage and an attempt to isolate the septic focus. On the other hand, an acute gonorrheal salpingitis may be treated by abdominal section almost with impunity. The pus that enters the peritoneal cavity produces little irritation, and what escapes into the skin incision does not infect it. The skin and deeper tissues may therefore be closed without drainage exactly as if no pus was present, and no attempt at disinfection or protection of the tissues from the bacteria and pus cells is required. We have usually found such wounds to heal with little or no signs of irritation; the reason of course is the fact that the gonoccocus shows its chief influence upon the mucous membranes and the smaller serous sacs, rarely produces a serious peritonitis, and is without influence upon the skin, fat, or fascia. Likewise in acute tuberculous infections, especially of the peritoneum or of the lymph nodes, operations carried out during the acute stage seem to involve little danger of diffusing the infection. Upon the other hand, there seems to be some danger from trauma in the operative treatment of an old tuberculous joint cavity, especially when later fixation and rest cannot be carried out. In suppurative conditions due to Bacillus typhosus, early surgical intervention also seems to involve little additional risk.

In acute metastatic arthritis the importance of rest and support cannot be too greatly emphasized. In the acute stage rest is to be obtained by extension and aspiration, so that the joint surfaces are held apart, with proper support by bandages and appliances to prevent movement. In these infections neglect of these simple measures is often responsible for a disorganizing arthritis that leaves the patient crippled, possibly for life. For certain chronically stiff joints due to traumatism, however, where infection is not a factor, rough handling, breaking up of adhesions, so called "bone setting" manipulations, often promptly restore function to the damaged joint, so that judgment is required in the selection of cases that require support and rest, and in cases that need violent disruption of limiting adhesions.

Anthrax is a good example of a disease in which complete rest is a great factor in aiding the recovery of the patient. In guineapigs and some other lower animals anthrax produces a rapidly fatal bacteriemia. In the human subject, the tendency is for this organism to produce a localized carbuncle, more rarely a bacteriemia. The usual treatment for such anthrax carbuncles has been most drastic. It has usually been advised to burn out or excise the infected area, and to apply strong antiseptic solutions. Curettage has often been used, or injections made of weak solutions of carbolic acid around the carbuncle. It is difficult to believe that even the most drastic of these measures suffices to destroy all the bacteria in the area, and the result of such brutal treatment must mean the breaking down of many tissue barriers, and a tendency to increase the danger of blood invasion. Von Bergmann has shown how well anthrax pustules heal when treated simply by complete rest and local protection, the local agents employed being of the blandest character possible, while no incision or mechanical separation of the secondary sloughs is undertaken.

Heat and cold are agents often improperly employed. After the very early stage of inflammation, cold should be discontinued, as it retards the normal protective forces and may cause vesiculation or necrosis of the skin. From the prolonged application of ice bags in appendicitis, the patient may come to operation with the abdominal wall partially necrotic.

In normal healing, especially in the old and very young, the diabetic, or debilitated patient, repair is often retarded by the use of such toxic applications as iodoform, bismuth, or carbolic solution. Dr. Robert T. Morris has pointed out the value of protectives or epithelial conductors which give local rest and protection in epithelialization.

Finally, while we would not disparage the use of measures to produce an artificial immunity, we urge that the surgeon have vision enough not to let them interfere with more important, although perhaps old fashioned measures that conserve the normal immunity of the patient.

2033 Walnut Street.

THE PSYCHOPATHOLOGY OF NOISE.[*]

By A. A. Brill, Ph. B., M. D.,
New York.

Those who are acquainted with the nature and mechanism of the psychoneuroses, particularly hysteria, know that the psychoneurotic symptoms are polymorphous in distribution, and that there is no part of the somatic or psychic spheres that does not on occasion assume the role of a hysterogenous zone or symptom. No function is spared; and no matter how great our experience may be, there are always surprises in store for us. From my own experience I can state that every case evinces something that is new and strange, which I dare say could never be imagined by the most experienced and fertile imagination. To cite only a few examples that have recently come to my notice: We usually expect nervous women to be more nervous during the menstrual period, but I was surprised to hear from an hysteric who consulted me for chronic exhaustion, that the only time she felt strong was during this period. A man cannot move his bowels in the morning because it causes pain for the rest of the day, but when this function is performed in the evening everything goes well, even if he remains awake the whole night. A man suffers from an attack of migraine which is always aggravated during his wife's menstruation. A woman becomes nauseated when she is disturbed by certain noises. Such examples are very common, and, although at first sight they give the impression of strangeness and lawlessness, we regularly find on deeper investigation that they follow a certain regularity in reaction.

Of late years I have endeavored to classify and study the psychoneurotic disturbances of the different physical and psychical functions with a view of throwing some light on normal and abnormal reactions of the functions concerned, and I shall discuss here some of the results.

Aphonia as an hysterical symptom is generally found in the textbooks under the caption of Disturbances of Motility and belongs to the somatic disturbances of hysteria, but when we analyze an hysterical aphonia, we soon find that the manifest symptom is only a fragmentary expression of a general psychic disturbance in the sphere of speech or, more precisely expressed, in the sphere of sound. Thus the first case of hysterical aphonia which came under my notice not only evinced attacks of aphonia lasting from days to months, but the intervals between the attacks were characterized by other strange disturbances in the spheres of sound expression. Thus the patient had attacks during which she spoke in an embellished manner; at other times she showed distinct flighty speech varied by attacks of crying and screaming. I remember that at first her hysterical speech manifestations recalled the manic depressive symptom complex, although there was no doubt that we dealt with a clear case of hysteria. Since then I have seen a number of cases showing in a very pronounced manner symptoms referable to the spheres of sound expression, and some of the results are very interesting. To be sure we are well aware that disturbances of sound expressions have always been known to participate in the symptom complex of the psychoneuroses. Even in our college days, the professor could not possibly speak of hysteria without mentioning crying spells and laughing spells, and he never failed to tell us that patients often laugh when they should cry, and cry when they should laugh. But as far as I could discover none of our old professors ever made the effort to explain these paradoxical manifestations, nor could the patient explain them. I have on record eleven patients who asked for ~~treatment~~ mainly because they suffered from - obsessive spells of screaming. The patients themselves were as mystified by their attacks as their relatives and friends, and conceived their affliction as disagreeably as the persons surrounding them. To illustrate, I am selecting one of the simplest cases:

Case. Mrs. S., a woman of forty-six years, complained of spells of obsessive screaming with which she had been afflicted for years. She stated that she would suddenly begin to scream without reason and continue for about two to three minutes or longer until one or all members of her household came upon the scene. She would then stop and feel much ashamed of her action; sometimes the screaming spell was followed by a long crying spell. Examination showed that we dealt with a case of anxiety hysteria, which showed most of the other symptoms of that malady. Thus one of the very aggravating symptoms was a hyperesthesia to sound.[1] She could not fall asleep because the slightest street noise was most disagreeable and annoying, yet the monotonous ticking of a watch always calmed her to sleep. Here, we see, we were confronted with a contradiction. One sound was extremely annoying to the patient, but another sound acted soothingly. What was still more peculiar was that the ticking of a clock was more offensive to her. It was almost impossible for her to live in any summer hotel or travel because no matter how secluded the rooms were, she was sure to hear the clocks in the office and in the adjoining rooms. That the ticking of the watch should act as a hypnotic and the ticking of the clock as an excitant, or that the same stimulus should produce different results is not very strange; pharmacology offers many similar examples. As we know, there is hardly a hypnotic or narcotic that does not act in a similar manner. Thus alcohol, morphine, and many other drugs act differently on different persons, and a mere change of dose will produce in the same person stimulation instead of calm sleep. It may therefore be said that the same sensory perceptions and feelings, no matter how produced, may act in two ways, stimulating and exciting, or retarding and paralyzing. Now without going into a long discussion on the nature and mechanisms of hysteria as conceived by Freud, with which most readers are acquainted, I will briefly give my finding of this case. Mrs. S. was unhappily married. From what I heard of her husband, I was convinced that he was a paranoid character whose commitment to an asylum was only a question of time. He literally tortured her, and their two children, he denied them the bare necessities of life despite his great wealth, he was extremely jealous of his son whom he had often beaten brutally at home and in public places, he drank to excess, he was filthy in his habits, and his sexual life was abnormal. There were a great many other factors in the case which need only be superficially enumerated here to show the true situation. She was a girl of the middle class, and when she met her husband she was engaged to be married to a man of her own station. She broke her engagement and married the rich man. Years later, when she was very unhappy with her husband, she went through a rather tragic intrigue with her former lover. In fine, we could easily demonstrate all the etiological factors of an anxiety hysteria, and analysis showed that the screaming spells always appeared at the height of a revenge fantasy against her husband or lover. At times she began to scream when she reflected over her hopeless lot and fancied herself committing suicide. In the language of psychanalysis, the screaming was merely a flight from painful thoughts, the loud noise drowned as it were the inner painful and disagreeable voices.[2] Similar mechanisms were found in all my other cases of obsessive screaming; the noise was a flight from reality, like the familiar fainting spells which always appear at the proper moment, and like the artificially produced flights through alcohol (dipsomania) and drugs (morphinism), the aphonia also represented a flight. It usually appeared when she was about to see her husband, or when she was about to have an interview with her lawyer; to be sure the symptom was more complex in its determination, showing the mechanism of "displacement from above to below."[3]

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[*] Read before the Vidonian Club, March 24, 1916.

[1] Cf. Freud: *Papers on Hysteria*, p. 134; Brill: *Psychanalysis, Its Theories and Application*, p. 82.

It is to be noted that all the other patients were suffering from anxiety hysteria; only three showed besides some conversion symptoms.[4] It is a fact that the symptoms of anxiety hysteria evince more primitiveness in their manifestations than those of pure hysteria.[5] This is particularly true of those manifesting themselves in screaming spells which recall the defense mechanism of early childhood. Children one and two years old always react to annoyances with screaming, a reaction which gradually disappears with the advance in age, but which always remains as the characteristic expressionless scream in those who are mentally stunted, especially idiots.

The eleven cases of screaming spells studied by me did not belong to Doctor Hoch's shut in personalities; they did not represent the quiet thinking kind of persons who suffer in silence, and then react with a complicated conversion hysteria or with a philosophical præcox system; on the contrary, they were of the talkative sort whose reactions, even in daily life, express themselves in laughing, crying, and shouting. Their neurotic and psychotic reactions were distinctly of the infantile type. For it is well known that the great majority of hysterias among children belong to the group of anxiety hysteria; we rarely see a conversion hysteria among children. And when we study primitive people we find that their neurotic reactions are plainly of the infantile type. In my paper on *Piblokto* I showed that the hysterical attacks as evinced by the Eskimos were all of the same nature. Instead of a complicated hysterical attack they manifested an emotional outburst of the most primitive type. Professor MacMillan, who was with Peary, described the attacks as follows: "A woman will be heard softly singing and accompanying herself by striking the fist of one hand with the palm of the second making three sounds, one long followed by two short ones. The rhythm and motion continue to increase for some time, during which she usually tears off her clothing and ends in a fit of crying or screaming in which the woman may imitate the cry of some familiar animal."[6] It is therefore safe to say that those neurotic and psychotic symptoms which manifest themselves through disturbance of sound expression, especially noise, belong to the most primitive and infantile periods. It may also be assumed that most of the neurotic disturbances of sound expression appearing in the form of noise or flighty talk in maniacs, serve as paralyzers of conscious reflection in order to drown disagreeable and painful feelings. It often happens that so long as the patient is maniacal and has flights of ideas, he is also happy, and the moment his flights stop and he becomes retarded or mute, he is also depressed.

As neurotic and psychotic persons show only exaggeration of the normal, we may ask whether normal persons make use of sound or noise in a manner similar to the cases described. According to Lessing, this is actually the case. He says: "The tendency of the person to make a noise and act noisily, one of the deepest and most fundamental tendencies of the human psyche, having its origin in the impulse to live, to act, and to be powerful, may at the same time be the expression of a need for numbing consciousness, or quite the opposite, it may be the expression of a need for excitement and stimulation.[7] ' That is, noise and the tendency of people to be noisy where noise is unnecessary is most intimately connected with the wish for rest and calm. Just as alcohol is used to deaden worry and produce instead a sense of euphoria, so music and its spurious part, noise, act as strong human narcotics; they control the painful tension of conscious thinking and paralyze it when it becomes dangerous. Lessing also maintains that the amount of noise evinced by a person, a people, or a state of culture, is in the first place to be conceived as the standard of its psychic and intellectual state of development. It shows whether the impulsive emotional side, or the rational psychic interest of the subject predominates. Thus it is known that the southern races live and manifest themselves more loudly because they are backward in the rational control of the impulses, and in the discipline of life characteristic of the more intellectually developed northern races. All human beings, no matter of what race, show a tendency to fly from consciousness, and what music does for the majority of intellectual persons, noise does for the masses. It takes us away from conscious reflection, and from the knowledge of our own empty existence. That probably accounts for the enormous amount of money spent on music. Mr. John C. Freund, the editor of one of our leading musical journals, stated at the Saratoga convention of music teachers, held in June, 1913, that exclusive of musical comedies, the amount spent annually in the United States for music in all its forms was $593,000,000. This only shows how we crave narcotics, or how much need we have for forgetting reality.

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[2] Brill, *Psychanalysis*, p. 109.
[3] Freud, *Interpretation of Dreams*, p. 234.
[4] Freud: *Selected Papers on Hysteria*, p. 47.
[5] Brill, *loco citato*, p. 81.
[6] Brill, Piblokto among Peary's Eskimos; *Journal of Nervous and Mental Diseases*. August, 1913.
[7] Lessing: Ueber die Psychologie des Lärms, *Zeitschrift f. Psychotherapie und medizinische Psychol.*, v. 1, p. 77.

Still when we enter into the lives of some persons we find that not all behave alike to sound. Thus I know a musical genius at present very much engrossed with futuristic music, who suffers from an extreme degree of auditory hyperesthesia. In fact he first consulted me for insomnia, which he maintained was caused by street noises in the city, and by whippoorwills and crickets in the country. Here we have a person who is kept awake by the slightest sounds, but speaks of Schönberg and Strawinsky as the greatest composers that ever lived. I am sure that among patients who come to doctors complaining of insomnia because of noise, we often find some who are themselves very noisy. Indeed some of the greatest apostles of the antinoise movements belong to this type. They were either noisy or show the need for noise. Thus John Stewart Mills, who was fanatical on calm and rest, and an enemy of all noise, hired a boy to beat a drum next to the room in which he worked in order to stimulate his thoughts. It is also known that Hegel finished his principal work on the eve of the battle of Jena amidst the thunder of cannon, which, he averred, stimulated his thoughts. In these cases noise, which usually interferes with conscious thinking, produced the opposite effect, it stimulated thinking. This again can be compared to a remarkable neurological fact. A drug, which in normal states would be a stimulant and keep a person from sleeping, will produce sleep in states of exhaustion when the patient is so tired and restless that sleep is impossible. Sleep according to its nature is a diminution of conscious ideation, and hence cannot take place when the stream of ideas is already so exhausted and diminished that concentration on a single idea is impossible. The mechanism of dreams, as we know, is based on the fact that day remnants capable of wish formation are taken up and made into dreams in order to deflect the interest from consciousness and so enable the subject to fall asleep. So also in some abnormal cases, especially in subjects of the acoustic motor type, noise serves to release that amount of affective vividness which helps to grasp and adhere to thoughts having no special feeling tone. According to Lessing, these mechanisms are demonstrated in Charles Dickens and Thomas Carlyle. Next to Schopenhauer, the former was probably the first great writer who took up the fight against noise. In 1864, he edited a pamphlet containing antinoise arguments contributed by some of the greatest persons of his time, and in every way showed himself as an implacable foe of noise. Yet despite his oversensitiveness to noise, he evinced a general need for it. When we read his letters and diaries, we find that he felt himself so much a Cockney that he could not stay away for more than a few weeks from the noisy streets of London. He repeatedly complained that the lack of streets and the lonesomeness of the country caused him headache, anxiety, and dizziness. He evidently possessed so much animal spirit that he needed a constant nervous stimulant where a more delicate person would need a sedative. He was constantly annoyed and driven from place to place by negro minstrels and German bands, yet he could not dispense with the noise of the great city which he seemed to require either as a stimulant or narcotic.

Carlyle presents a similar case. It is notorious that noise played a most important part in his life. The diary of his wife, Jane Wels Carlyle, is filled with entries about the tortures she went through on account of her husband's annoyance and rage at noise. Although his studio was soundproof and was situated in one of the most secluded spots in Chelsea, he continually repeated that a person can neither think nor exist in such noisy surroundings. On the other hand, it is well known that he himself was one of the loudest of all rhetoricians, that he was a burden to his neighbors. Darwin, speaking of a visit to Herbert Spencer, where he met Carlyle, says of the latter: "That unbearable man sat for three hours and talked to me continuously about the 'sacred force of silence.'" Carlyle was so full of emotion that he simply could not bear any stimulus emanating from others. Carlyle's type is very common in psychiatric practice; I have seen many. I had under treatment one of the most active men in this city; to use his own words, he was constantly on the go. It is no exaggeration to say that he was occupied every minute of the day. He was known to be a good pedestrian, and when free from business duties, he walked miles daily either in the city or country. Yet one of his chief complaints when he came to me was that he hated to see objects like moving trains, or the moving electric signs on the Great White Way. He maintained that they drove him to distraction. He also hated persons who resembled him in activity. This man suffered from an anxiety hysteria, and judging by him and others, I have no doubt that most of those who are suffering from auditory hyperesthesia to the extent of making a problem of noise, are confirmed psychoneurotics. The symptoms complained of by Dickens, headaches, anxiety, and dizziness, belong to the most prominent symptoms of the anxiety neurosis, and any one who reads the life of Carlyle, especially as depicted by his wife, will entertain no doubt as to his anxiety hysteria on the usual etiological basis, sex. That music or its spurious part, noise, should play a part in the love life of a person, is not at all strange when we consider the part played by sound in every person's life. The first forms of expression in the human being are produced by primitive sounds which to the outsider are nothing but disagreeable noise, and music is merely a rhythmic combination of primitive sounds which develop with age. In other words, the older and more civilized a person, the quieter is the rhythm. It is well known that music which deals with the emotions of love is calm and soothing, while martial music is loud and noisy.

As all culture is psychologically a rationalization or control of affects, and a localization of human impulses, the older and more civilized a nation, the more controlled and refined are its impulses. Homer characterizes the mental superiority of the Greeks over the Trojans by making the Greeks march into battle without noise and without war cries. The Japanese of today is ashamed to express loudly his sorrows or joys, whereas the southern nations are very noisy in all their emotional manifestations. Our own "strong personalities" are usually the loudest noise makers. But even in our own environment, where the accomplished conversationalist is highly favored in society, it is considered a great compliment to be able to pass time with a person without having to talk much. As one of my patients put it: "It is such a comfort to spend a few hours with Mrs. X; we understand each other so well that we don't have to talk at all." The language of lovers is usually subdued and quiet, though wooing, which presupposes aggression and combat, is usually loud and noisy in the male.

The question may be asked, why such music as Wagner's which depicts the most subtle emotions is rather loud and noisy, and why the last word in modern music is so cacophonous and noisy that some of our greatest musicians refer to it as excruciating.

The real Wagnerian music began with the *Flying Dutchman,* when Wagner, having been disappointed with love and with life, in fine with reality, sought refuge in his early infantile fancies.[8] The love impulse which could no longer be gratified in marriage, found an outlet in the fantasies of his boyhood years. Wagner identified himself with the legendary flying Dutchman, and all the heroes of his later operas were modified reproductions of the Dutchman, or concrete visualizations or reincarnations of his fantasies from childhood. Wagner saw himself in the flying Dutchman, and later the same figure appears in his other operas, thus Tannhäuser, Wotan, Tristan, Amfortas, all of them showed the same traits, the same struggles; they all strove for the love of a woman, they were all tired of life, and longed for death. The heroines, too, were only symbolizations of the same figure, namely, his own mother. Senta, Elizabeth, Elsa, Eva, all represent the same type. As Wagner's music had its origin in his stormy childhood and dealt with primitive infantile feelings, we can understand its seeming loudness. There is a marked difference, however, between Wagner's music and the modern futurist music, a difference which we can also find when we compare the other forms of art with their most recent modes of expressions. Wagner's music, as well as most music of his predecessors, was an expression of *object love.* Any one studying Wagner's intimate life and his works can clearly see it. He himself as well as his heroes constantly sought salvation through a woman. The same was true of most of the other artists. Their productions were as a rule the expression of heterosexuality or homosexuality, but they represented object love. On the other hand, most of the futurist music, like the futurist art, is an expression of autoerotism or narcism.[9] Here no effort is made to put oneself *en rapport* with anybody, the artist strives only to gratify himself and cares little for the audience. That is why the futurist music offers no harmony or rhythm in the usual sense; for harmony and rhythm are expressions of object love. One of the great leaders in this modern art in this country expressed this feeling when speaking of his own productions, he said: "As to its content, it should satisfy my need of creating a record of an experience."[10] Such productions may possess great artistic value, but they can hardly be called "artistic expressions"; they are expressions of an artist. They satisfy his feelings and have no meaning to any one else. We behave toward those artistic expressions as toward some one else's dreams; we are interested only when we know their meaning. That is why over fifty intelligent adults could not tell what Mr. Walkowitze's *New York* represented. That is why the futurist music is so cacophonous and noisy to most people. Such productions are nothing but adults' attempts at rationalization of primitive infantile sounds without any attempt at rhythm which, as its name signifies, means to put oneself *en rapport* with others. Any one listening to Wagner's *Passions Musik und Liebestodt,* or the storm scene in the *Flying Dutchman,* can easily divine what Wagner was trying to represent, whereas it is hardly possible to tell the meaning of anything produced by Strawinsky, Ravel, or the other futurists. We might say it is the artist's attempt to give expression to noise, and to judge by some of the enthusiasts of this music, I feel that they are more than first cousins to the antinoise protagonists.

1 West Seventieth Street.

Localization of Variola.—Fritz Willner (*Medizinische Klinik,* October 1, 1916) asserts that the early diagnosis of variola is often a matter of considerable difficulty, especially in persons who have gained some degree of protection from previous vaccination. Willner has observed the appearance of the characteristic eruption and its rapid development on the inner surface of the prepuce. The eruption develops in this location before it is present on any other portion of the body, and this may be of great assistance in the early diagnosis of doubtful cases. On the third day small, bright red points appear on the prepuce. They develop into vesicles on the next day, with clear contents; pustulation appears on the fifth day, and these break on the day following. The smegma is then found to contain Guarnieri's bodies. Healing is complete by the end of the second week.

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[8] Graf; Richard Wagner, *Der fliegende Holländer.*

[9] As artistic expressions are sublimations of the person's erotic life, they can be divided into those of autoerotism, narcism, and object love. Cf. Freud, Three Contributions to the Theory of Sex. Monograph Series, *Journal of Nervous and Mental Diseases.*

[10] See *Catalogue of Forum Exhibition of Modern American Painters,* March, 1916.

PROFOUND SECONDARY ANEMIA DUE TO ULCERATED INTERNAL HEMORRHOIDS.*

A Report of Three Cases,

By J. F. Saphir, M. D.,
New York,

Assistant Surgeon, Rectal Department, O. P. D., Gouverneur Hospital; Visiting Surgeon, Diseases of the Rectum and Anus, People's Hospital; Etc.

My object in presenting the following cases of profound secondary anemia is to bring before the profession, as forcibly as I know how, the effect of neglect of patients who pass blood with the stools; the great quantity of blood that can be lost on account of ulcerated internal hemorrhoids, almost completely exsanguinating some patients, while driving others into invalidism, to succumb to the extreme loss of blood or to some other disease which they have acquired.

Case I. Mr. M. G., aged twenty-four years, operator, was referred to me by Dr. Dexter D. Ashley, who had been treating him for the past three years for some orthopedic condition caused by a fall. He received ten tuberculin injections at the Vanderbilt Clinic. At the ninth injection, he lost one pound and a half and then discontinued treatment. For the past seven or eight years he noticed blood with his stools; the past two years he passed blood with every stool; and on straining at stool, whether with a constipated or diarrheal movement, he noticed protrusions with blood and mucus, from four to six stools a day. April 26, 1916, proctoscopic examination revealed proctitis with ulceration and ulcerated internal hemorrhoids. He was put under the irrigation treatment for his proctitis, which was relieved. He then had but one movement a day, and there was no further discharge of mucus, but he still passed blood with his stool. I then lost track of him until June 9th, when Doctor Ashley sent him into the People's Hospital for operation. The history he then gave was that he lost blood with every stool, felt very weak, was unable to work, had lost fourteen pounds in weight, weighing only 122 pounds, while his maximum weight was 136; and in the past three months lost eight pounds. He complained of general weakness, shortness of breath, and cardiac palpitation, especially on going up stairs. For the past three weeks he had been nauseated, especially in the morning, and he vomited occasionally. He also complained of dimness of vision and dizziness. On examination, I found a young man profoundly anemic, with a waxy, deathlike look, face white to a ghastly yellow, mucous membranes blanched; he breathed with difficulty, and complained of palpitation. The patient was lackadaisical, stupid, and unconcerned as to his surroundings. His general appearance was that of one suffering with malignant disease. I placed him under tonic treatment, consisting of dilute hydrochloric acid minims xv, three times daily, Fowler's solution, and iron, quinine, and strychnine, and ordered immediate transfusion of blood, because he was in too weak and exsanguinated a condition to be operated upon under either local or general anesthesia. His lungs were negative, and his heart presented a systolic murmur over the base and apex and slightly over the axillary space. Through the kindness of Dr. G. I. Miller, he received, on June 15th, a blood transfusion from a healthy male adult, aged twenty-five years, of 1,100 c. c. He began to show immediate improvement, his color was getting better day by day, but his bleeding per rectum persisted; he continued the tonics, but was still in too weakened a condition for operation. June 29th, I injected a ten per cent. solution of quinine and urea hydrochloride into the hemorrhoids, to check the bleeding. This caused a production of fibrin, which by mechanical pressure about the damaged vessels checked bleeding. Hemorrhage stopped after the first injection, but I also noticed that the hemorrhoids began to shrink, so I followed this up with injections, July 3rd and August 25th, with the result that the hemorrhoids shrank and were absorbed, his bleeding ceased, and no further operative measures were indicated.

Examination of blood showed the following stages of improvement: June 9th, on admission, red cells 2,800,000, hemoglobin thirty per cent; June 17th, two days after transfusion, red cells 3,950,000, hemoglobin sixty per cent; September 5th, red cells 5,250,000, hemoglobin seventy-five per cent.; October 5th, red cells 5,800,000, hemoglobin eighty-five per cent.

He now has good color, his mucous membranes are normal, he attends to his work, and has gained eleven pounds in three weeks, his last weight being over 140 pounds on October 5th, a gain of four pounds over his previous maximum.

Doctor Ashley, in speaking of the case a few weeks ago, told me that on the day previous to his admission to the People's Hospital, he asked a certain hospital to admit this patient, but the admitting physician refused, because he considered him moribund; and the patient tells me that this same admitting physician told the patient's relatives that he could not live twenty-four hours.

Case II. Mr. K. C., aged sixty-two years, merchant, referred to me by Dr. G. G. Wolf, September 9, 1916, gave a history of operation for hemorrhoids two years ago to relieve protrusions and profuse bleeding at every act of defecation. He felt well for a year. During the past year he again noticed bleeding with every movement, which got worse daily and more blood was passed with each successive movement. During the last three months, he lost very much blood per rectum, accompanied with protrusions and pain at every defecation. These protrusions did not return by themselves; he had to return them by hand. He now complained of bleeding per rectum regardless of stool. He also complained of dizziness in the head for the past month, had noises in the head, and felt faint, and weaker every day. Examination showed a man very pale and anemic, face waxy in appearance, could hardly sit up without getting faint and dizzy, seemed very feeble and exhausted, had a cadaverous look as if suffering from malignant disease. Proctoscopic examination revealed nothing above an inch from the anal opening. The rectum and sigmoid were normal, with the exception of the pale look of the mucous membranes. Anorectal examination showed large and distinct ulcerated internal hemorrhoids, which bled freely on straining. He was in no condition to be operated on. Blood examination showed red cells 3,100,000, hemoglobin thirty-five per cent. Dr. G. I. Miller gave him a blood transfusion of 500 c. c., September 9th. Doctor Wolf did not think it advisable to transfuse more, for fear of causing a too sudden dilatation of the heart. September 12th, the bleeding was so intense that I thought it advisable to operate, and owing to his weak heart, I performed the ligature operation under local anesthesia of quinine and urea hydrochloride solution 0.33 per cent. He was also placed ~~on~~ tonic treatment. He walked down from the operating table; the next day he was walking about, and had a fecal movement. He had no pain during or after the operation, and had a painless fecal movement daily afterward, without trace of blood. He left the hospital a few days later, and was asked to report for a blood examination; on September 20th this showed red cells 4,400,000, hemoglobin forty-seven per cent.

Case III. Mrs. C. R., aged forty-five years, referred to me by Dr. A. Goldstein, gave a history of constipation and protrusions for the past fourteen years, accompanied with blood at every stool for the past two years. During the past two months she noticed severe bleeding with every stool, which left her weak and faint, also protrusions, which she had to return by hand. Four days before I saw her, she had noticed on straining during defecation, protrusions the size of her fist, which gave her severe pain and which she could not return. She had to be helped to bed, and had had continuous pain since. Examination showed prolapsed and ulcerated internal thrombotic hemorrhoids, partly gangrenous, external thrombotic hemorrhoids, large skin tags, and a lipomatous growth the size of a pigeon's egg growing from one of these skin tags; the entire mass was the size of a man's fist, and there was a continuous oozing of blood. She was very weak and anemic, mucous membranes profoundly blanched, almost white, face waxy, yellow, and cadaverous. She refused to go to the hospital for transfusion, and begged just to get some relief from the pain, since she had not slept in four days. Hers was a cardionephritic case, so under quinine and urea hydrochloride 0.5 per cent solution, she was relieved of her condition and then put on tonic treatment and dilute hydrochloric acid, which seemed to have a wonderful effect in arresting bleeding from the rectum.

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*Presented to the Eastern Medical Society, October 13, 1916.

She has had a daily bowel movement regularly since the operation, without any blood, has had no pain during or since the operation, and was out of bed on the third day. She is slowly improving, but is not yet sufficiently strong to be permitted to go out of doors alone.

The points of interest that suggest themselves are:

1. All cases with a history of bleeding from the rectum should receive a thorough rectal examination; although slight bleeding may point to some malignant growth, yet severe bleeding from the rectum, with much loss of weight and cachexia, does not necessarily mean cancer.
2. No physician should allow a patient complaining of bleeding from the rectum to get into as weakened a condition as these did without insisting upon operation.
3. Attempts at temporary relief of rectal bleeding, or checking by means of astringent salves or powders or suppositories, with the hope of obtaining a cure, is poor practice.
4. Bleeding from ulcerated internal hemorrhoids may produce such complete exsanguination that transfusion becomes a necessity to save life.
5. Operative interference under local or general anesthesia, and removal of the cause of bleeding should be advised as early as possible, thereby saving the patient much agony and suffering, and obviating the danger which is apt to follow local or expectant treatment.

62 West Eighty-ninth Street.

INTERNAL HEMORRHOIDS.

Their Operative Treatment Under Local Anesthesia,

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Assistant, Department Rectal Surgery, Post-Graduate Medical School;
Deputy Surgeon, Diseases of the Rectum, O. P. D.,
New York Hospital; Etc.

It is good ethics as well as sound common sense that the first means to be considered in correcting pathological conditions should be such as give promise of accomplishing the result, without subjecting the patient to unnecessary danger, pain, or detention from business; only when these are exhausted, or appear to be unsuitable, is the physician justified in resorting to others which may interfere with the patient's happiness, or endanger his life.

To advise operation when it is possible to cure without, shows poor judgment, and is besides an injustice to the patient; to subject a person to the uncertainties of general anesthesia when it is perfectly feasible to carry out what measures we have in mind without it, is unfair, and justly deserving of criticism.

There are many people suffering from hemorrhoids, who either do not require an operation, or in whom there are definite contraindications. It is common experience to find persons approaching middle age with one or two small piles, which give rise to no subjective disturbance whatever. There are others, and they constitute the majority of the sufferers from this affection, to whom complete cure may be promised, in competent hands, without resort to general anesthesia, and without great pain.

We are bound to admit that in the most advanced cases, when there are fully developed tumors and organized masses nothing short of radical removal will effect a cure. But in the milder ones, a great deal may be done to relieve troublesome symptoms and secure comfort, by a judicious combination of local and constitutional measures. It may be broadly stated, without going into much detail, that regulation of the bowels, the adoption of a suitable diet, the avoidance of excesses and stimulants, the use of cold baths and enemata, will go far toward making the patient's life comfortable. Such persons may go along for years, leading an untroubled existence, until some indiscretion excites an acute attack, and causes them to seek operative relief.

What factors should guide us in advising operative treatment for hemorrhoids?

1. The possibility of the development of complications which would threaten the patient's life. Ordinarily there is no immediate danger to life from hemorrhoids, but there are cases on record of sudden death from uncontrollable hemorrhage from piles; Mummery and Joski (1) cite the case of a man of forty-three years, who on his admission into the hospital, was found to have strangulated hemorrhoids with thrombosis of the anal veins extending upward two inches, which resulted in sloughing of the entire rectum and death of the patient.

2. Hemorrhage in small amounts, occurring over long periods. Some piles may never bleed, others ooze constantly, once they become ulcerated, and bleed freely when the patient strains at stool, or makes any unusual exertion. There is a decided tendency for hemorrhoidal tumors to become ulcerated from a disturbance of their nutrition and from friction of hard stools, with resulting bleeding and secondary anemia. Patients are not uncommonly seen in rectal clinics, who have been bled white from loss of blood from ulcerating piles; clearly if such exhausting drains are unchecked, grave consequences must ensue.

3. Pain from thrombosis, inflammation, or strangulation of piles may be so excessive as to become unbearable. Pain is an important factor in shock, and animals in which it has been produced experimentally show organic changes in the Nissl bodies, absence of hyperchromatic cells, and disintegration of the nuclei of the multipolar cells of the cerebellum (2). Pain is relative, and persons react to it differently. The phlegmatic Chinaman and the excitable European do not suffer alike, yet there are few people who can stand pain in the anal region with philosophical resignation. The pain from acute affections of the lower portions of the anal canal is exquisite, often entirely out of proportion to the size of the lesion. This need occasion no surprise, if we remember the rich sensory supply of the anus and perianal region, and the fact that the nerves com-

municate with each other freely, hence a painful stimulus sets up a reaction in a wide area. They radiate toward the anus from the anococcygeal nerve, the inferior hemorrhoidal, deep branches of the perineal, perforating branches of the second, third, and fourth sacral, and the long perineal branch of the posterior cutaneous nerve of the thigh. Their fibrils interlace and provide this portion of the body with a network of nerves which is a revelation to the man who dissects the anoperineal region carefully. Furthermore, lesions of the anal canal are likely to set up spasmodic contractions of the sphincters from a reflex disturbance of the nervous mechanism, extremely distressing in a portion of the body which moves with every change in the abdominal pressure.

4. Sloughing and gangrenous internal hemorrhoids from strangulation of the blood supply, require surgical treatment. Some years ago an eminent gastroenterologist (3) seriously recommended a cure for hemorrhoids which was based on the amputation of the mass by sloughing, after it was drawn out with a Bier cup and caught in the external sphincter. It must be obvious that this method of curing a surgical condition is painful, uncertain, and unscientific, but it may not be generally known that it is likely to be dangerous as well. In children and emaciated persons, the bottom of the rectovesical pouch may be as low as one inch from the anal margin, in which case the patient would be exposed to serious danger of infection of the peritoneal cavity by direct extension of the inflammation from below (4). It certainly seems more rational to use clean cut surgical methods, when we can, which enable us to a large degree to control and limit the extent of the inflammatory process.

5. A person suffering from hemorrhoids faces the possibility of abrasion and ulceration of the mucous membrane, with the development of abscess, fistula, phlebitis, fissure, stricture, etc. Prolapse of the bowel caused mechanically by the traction of hemorrhoidal masses is not infrequently noted as a complication. It is good surgery to remove a condition which is fraught with inherent possibilities of so much mischief.

Contraindications to the operation are obstructions to the portal circulation from cirrhosis and irremovable tumors, advanced pulmonary, cardiac, or nephritic disease, diabetes which cannot be made sugar free, chronic alcoholism with nervous complications, hemophilia, purpura hæmorrhagica, icterus, and blood states accompanied by diminished coagulation. The first and last months of gestation and the first week of the puerperium are obviously unsuited for any operation on the rectum which may be delayed.

If we now decide that operation is necessary, it is more than likely that our patient will want to know whether he cannot be cured without "taking ether"; indeed this is a very important question for him. Local anesthesia is inapplicable to children, or adults of a highly neurotic temperament, subjects with a congenitally small or tight anal canal, or such in whom the tumors are high up, and cannot be brought down within reach. Generally speaking, all external, and about ninety per cent. of internal piles may be removed painlessly and treated successfully under local anesthesia.

It is true that the danger from the inhalation of most general anesthetics is slight, but there is a mortality, and it adds one more element of risk which the patient must face. If we assume that there is one fatality in 20,000, that one may be your patient, kinsman, or dear friend, and there is no mortality from a nontoxic local anesthetic. In addition, operations under local anesthesia are not followed by the usual postanesthetic discomforts, reflex urinary disturbances, or ill effects on heart, kidney, or lungs, and need cause but trifling detention from one's regular duties.

Of the agents used for local anesthesia in rectal practice, cocaine, betaeucaine, novocaine, and quinine and urea hydrochloride, are best known. The three former possess the advantage of producing efficient anesthesia very promptly, but they are toxic, do not keep well in solution, are expensive, and their use has been followed by bleeding from secondary relaxation of the bloodvessels. The double salt of quinine and urea, in one per cent. solution, is not open to any of these objections, and its effect is prolonged from seven to eight hours to as many days, an obvious advantage in the aftertreatment of rectal patients. It has been studied by Hertzler (5) and extensively used by Hirshman (6), the former of whom attributes its action to a deposition of a granular fibrin on the nerve endings, and asserts that the anesthesia lasts until this is absorbed. It has been urged against it that it retards healing and causes sloughing of the wound, results which those who have had a wide experience with it will by no means concede.

Gant introduced the use of sterile water, which is worth remembering in an emergency, as tap water is obtainable everywhere. It acts by pressure on the terminal filaments of the nerves, but its action is fleeting and uncertain; he has abandoned it for eucaine 0.25 per cent., which is in this dilution practically nontoxic, and a thoroughly dependable local anesthetic.

There are various methods of operation, all of them designed to destroy the tumors, or get rid of the pilebearing area; some by crushing, burning, injection of irritating substances, electrolysis, excision, and what not. None of them present the simplicity, effectiveness, and freedom from complications of the ligature operation. The patient is prepared by the administration of a physic the day before the expected operation, and an enema of a pint of boric acid solution two hours before. He is placed upon the table in the left lateral position, with legs flexed on thighs, and thighs on abdomen, with his back to the source of light. The parts are thoroughly cleansed with soap and warm water, and the anal canal is swabbed with cotton plugs saturated with a mild antiseptic. An assistant holds the buttocks apart, while the patient is told to bear down, which is usually followed by the protrusion of the hemorrhoidal masses; if any difficulty is experienced in bringing them out, he is directed to strain down in the squatting position, or is given an enema of a pint of glycerin and warm water. The pile tumors are thoroughly anesthetized with quinine and urea in one per cent. solution, by slowly injecting the fluid into each tumor until it is blanched and stands out prominently, and a hemostat is clamped on it at the point of puncture, in order to prevent the solution from oozing out. The drug is absorbed slowly, and at least twenty minutes must be allowed to secure a complete effect. The mass is then pulled down by gentle traction on the hemostat, to include any redundant tissue, which should be ligated off with the pile, and mucous membrane dissected off from its distal end, well tied with a strong silk or linen ligature, the part above it cut off, and all the other masses treated similarly. We tie the knot tightly to prevent bleeding, and leave a good sized stump in order to prevent slipping of the ligature. A thin strip of gauze, dipped into sterile oil, is introduced into the rectum to keep the raw edges apart and prevent agglutination, but the anal canal is not packed, as that would interfere with free drainage. It is not needed if the work has been done carefully, while its removal, after granulations have grown into the meshes of the gauze, inflicts unnecessary pain.

The writer does not pretend to describe an original operation, but simply to give an outline of the method in use in one of the largest rectal clinics in this city for the past fifteen years, a method which has been gradually simplified so that it does not require an elaborate technic or many assistants, consumes but little time, needs but few instruments, is painless in execution, and gratifying in its final results.

The patient leaves for his home after a period of rest, to present himself at the clinic every second day for a week, thereafter at longer intervals until the wound is healed. The bowels are moved on the third day by a dose of castor oil, and when the desire for stool comes on, an injection of a little olive oil.

The aim of the postoperative treatment is to conserve the patient's strength, induce rapid healing, and prevent complications. These do not occur frequently, but occasionally we meet with secondary bleeding, delayed healing from protracted ulceration, chronic fissure, sloughing, abscess or fistula, sepsis, acute phlegmonous periproctitis, dysuria, postoperative stricture, and incontinence.

Secondary bleeding was not uncommon in the days when the clamp and cautery and crushing operations had their vogue, and was caused either by the loosening of the clot which sealed the bleeding vessels, or by a portion of the tissue which was to have been burned slipping away from the clamp and being incompletely cauterized. It is rarely seen after the ligature operation, and only if the stump has been cut off too short, or the knot poorly tied.

Delayed healing from chronic fissure or protracted ulceration may be the result of constitutional conditions, such as syphilis, chronic nephritis, diabetes, or tuberculosis, or a choice of a poor operative method, as seen on the Continent, especially in Italy, where the Whitehead operation still enjoys a strong following.

Abscess, fistula, and general sepsis are in most instances preventable complications, so far as they are caused by faulty asepsis; it must not be forgotten, however, that we are dealing with an operative field which cannot be properly sterilized, and it is really surprising that infections are not more common.

Acute phlegmonous periproctitis is a formidable complication which leads to rapid destruction of the soft parts of the anorectal region, and to the death of the patient from exhaustion and septic poisoning. Traumatism and operations about the rectum are mentioned as causes by the older writers, but it is more probable that it is an infection by a malignant strain of streptococcus, which, according to the recent studies of Rosenow, may assume added virulence by reason of a favorable environment.

Dysuria is a temporary condition, a reflex phenomenon from the nerves which supply the levator ani, whose anterior fibres find their insertion in the urethra and prostate.

Stricture of the anal canal is due to free removal of the perianal skin with resulting contracture from scar tissue, cutting away too much mucous membrane, ulceration following the Whitehead operation, or faulty aftertreatment.

Incontinence is an unfortunate sequel of an operation for the cure of hemorrhoids, and is generally traceable to permanent damage of the sphincters from forcible tearing of their fibres by unskillful dilatation.

Recurrences are not common, but our duty to our patient is not ended until we have given him a word of warning in regard to the prevention of similar trouble in the future. If the same influences which caused the disease in the first place continue to exist, there need be no surprise if other venules of the lower anal canal in time become the seat of dilatations and varicosities. He should therefore avoid conditions which are responsible for hemorrhoids in subjects predisposed to them, such as constipation, straining from any cause, the habitual use of strong or irritating purgatives or enemata, indiscretions in diet, excesses in stimulants, etc. These have a tendency to weaken the resistance of the bloodvessels by constant engorgement and excessive pressure in their walls, particularly when they are already defective from hereditary or environmental conditions.

It must be evident from what has been written that an operation for the cure of hemorrhoids is by no means the simple matter it is sometimes made out to be, but an important surgical procedure, which in all cases ought to be intrusted only to those who are skilled in the surgery of the region, and experienced in avoiding its many pitfalls.

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17 EAST THIRTY-EIGHTH STREET.

Malignant Pustule and Neosalvarsan. — F. Heim (*Correspondenz-Blatt für schweizer Aerzte*, September 30th) reports a case of malignant pustule which was not arrested by local treatment. The patient's temperature continued to rise, and his general condition to grow worse, until 0.45 gram of neosalvarsan was injected into his veins; improvement followed immediately.

HARD WATER AND HEALTH.

A Critical Review,

By Frank Leslie Rector, B. S., M. D.,
New York.

The place occupied by water in the economy of life is one of first importance. Approximately seventy-five per cent. of the human body is water, varying from two per cent. in the teeth, to ninety-nine per cent. in the blood. The amount ingested should reach two quarts daily, but few people take this quantity. It is an important constituent of food, and plays no small part in digestion. Henderson (9) says:

> Water is ingested in greater amounts than all other substances combined, and it is no less the chief excretion. It is the vehicle of the principal foods and excretory products, for most of these are dissolved as they enter or leave the body. Indeed, as clearer ideas of the physicochemical organization of protoplasm have developed, it has become evident that the organism itself is essentially an aqueous solution in which are spread out colloidal substances of vast complexity. As a result of these conditions, there is hardly a physiological process in which water is not of fundamental importance.

Its value in Nature is attested by its almost universal presence upon the surface of the earth, there being few places where it cannot be obtained, either from the surface or from a variable distance below the surface. This enormous volume is what is termed natural water, formed by the falling rain which comes in contact with the soil and subsoil, dissolving certain salts which are carried with it in its subsequent journeys. All natural water holds salts in solution in greater or less quantity, and the only way these salts can be separated from the solvent is by distillation, a process which gives an artificial product quite different in composition and taste from that of the original product.

We are told by some that the use of this natural water, if it contains any considerable quantity of chlorides and elements which make up the hardness of a water, viz., the carbonates and sulphates of calcium and magnesium, will exert a harmful effect upon the human economy, and lead to serious physical derangements. Others would dismiss this contention by saying that if the Almighty had planned for the life of the universe to depend on water containing no minerals He would have provided such a supply; and that as such a water is unknown in nature the use of an artificial product is not according to Divine intent. There are undoubtedly good arguments for such a line of reasoning. The writer desires, however, to discuss this question rather from a scientific standpoint in the light of present day knowledge of the subject.

Modern scientific laboratories are able to duplicate synthetically almost any substance found in nature. It is even possible to analyze the protoplasmic cell, determining its various chemical constituents. But after all these constituents have been assembled again in their proper proportions, we do not have a living cell. The elements are there, combined as nearly as possible in the way we found them; but that subtle *something* necessary to stimulate the assembled material to action, and which we call *life*, is lacking. It is not tangible, it is not visible, it is not capable of analysis, yet it provides the necessary vital force for the proper functioning of that particular combination of chemical elements.

We find the same thing true when dealing with natural and artificial waters. In Nature's laboratory, the life cycle, so to speak, of vaporization, cloud formation, rainfall, and contact with the earth, has wrought changes which defy the ingenuity of man to duplicate. We can produce the same thing chemically just as we can produce a cell chemically, but the vital, subtle, *something* which gives a natural water its characteristics has remained up to the present time locked in Nature's storehouse safe from human knowledge.

In searching the literature we find that advocates of distilled water are pretty generally those whose environment precludes the use of any other, except at occasional times; naval men, seafaring men, and military men serving in the tropics comprise this group. Not all military men are of this opinion, for Davis (6) says: "From long experience I am convinced that the constant use of boiled or distilled water is not conducive to health."

The writer believes that the medical profession, as a whole, are pretty well agreed that the constant use of an artificial water is not best for our general health. Distilled water has its place in the treatment of disease, and that place is usually filled in the compounding of prescriptions. There are few diseases in the treatment of which distilled water is indicated.

On account of the ease with which distilled water becomes contaminated, large numbers of bacteria are frequently found. Barladean (2) says: "Mueller examined sixteen samples of distilled water from various pharmacies and found only two in which the germ content was less than 100,000 per c. c. One contained 6,050,000, and two over 700,000 per c. c."

The health of the American navy is frequently pointed to as evidence of the value of distilled water in the human economy. But can the condition of this group be attributed solely to the use of distilled water? In the first place, the great majority of the men of the navy are young, vigorous, and strong, being selected only after passing a rigid physical examination. They are the pick of the country from a physical standpoint. Less than twenty per cent. of the applicants for service in 1915 were accepted. On page 12 of the *Annual Report* of the Chief of the Bureau of Navigation to the Secretary of the Navy for the fiscal year 1915, we find: "There has been no trouble in getting applicants for enlistment. Only about one sixth of these, however, are accepted, as the navy will have only the best of the young men of the country." Their term of enlistment is for only three or four years, and as a considerable number do not reenlist, fresh vigorous recruits take their places.

From the report quoted above we find that nearly twenty-two per cent. of the men in the naval service are serving their first year of enlistment, and that approximately this proportion is added each year. While in service the habits and modes of life of the enlisted men are so rigidly controlled that they are kept up to the highest efficiency by plenty of exercise, and the proper regulation of their habits. By immunization they are protected from typhoid fever and other diseases which so often play a large part in undermining the health of an individual. The short period of enlistment of the average sailor, combined with his regular habits, gives insufficient time for the development of permanently unfavorable conditions. While the service of naval officers is longer than that of the men, the same argument holds good in their case.

Von Wedekind (20) attributes the physical condition of the men to the fact that only distilled water is used in the navy for cooking and drinking purposes. He says: "I am urging strongly that the rest of the world live as we do, some 70,000 strong, using distilled water for cooking and drinking, and live on and on, youths at sixty-five. We do not have arterial degeneration, gout, and rheumatism, though not surrounded by home comforts, regular seasons, regular amusements, and home life." In connection with this statement the following table, compiled from the *Annual Reports* of the Surgeon General, U. S. Navy, for the years indicated, may be of interest.

TABLE OF OCCURRENCE OF CERTAIN DISEASES IN THE U. S. NAVY DURING FOUR CALENDAR YEARS 1911-1914.

	1911	1912	1913	1914
Total Force	61,399	61,897	65,926	67,141
Rheumatism (all forms)	819	700	614	702
Arthritis	163	105	80	138
Arteriosclerosis	2	10	10	5
Goitre	0	1	18	20

Deductions drawn from a study of highly restricted and specialized groups cannot be applied with fairness to the entire population, surrounded as it is with a variable and ever changing environment.

Jackson (10) believes that it is much better to drink soft water. He says: "The lime salts in the waters which are drunk are not utilized physiologically as far as known." Just why the lime of water should not be utilized by the system and that contained in other foods as milk, meat, and vegetables should be useful to the bodily upkeep is not made clear by Jackson. The writer believes that these salts in water are used as in any other food product, and being in solution are much more easily absorbed.

The statement that a natural water that is mineralized to a considerable degree is not beneficial to young children, is not borne out when we consider that milk, a food admitted to be the one perfect food for children, contains many times as much lime as does a water classed as hard. Under ordinary conditions milk is prescribed in unlimited quantities and its use by young children is encouraged as fully as possible.

Many authorities in expressing views upon this subject maintain that a hard water is beneficial to health, or at least is not injurious; and some show the harmfulness of distilled water. Ogden (13) says:

> No water, as used for drinking purposes, is absolutely pure, according to the standards of chemistry. Distilled water is the nearest approach to pure water obtainable, and it is said by physicians that such water is not desirable as a habitual and constant beverage. The human body requires certain mineral salts, particularly for the bones and muscles, and while these salts are provided in a large measure by food, a number are also furnished by drinking water.

Mason (12) in discussing the question of drinking water and disease says that the minerals that give to the water the characteristics known as "hardness" obtain to a greater or less degree in every public supply:

> As to the wholesomeness of such a water, there is widespread opinion that a high degree of hardness is not compatible with safety; but although hard waters do often produce certain intestinal derangements in persons not accustomed to their use, there are no sufficient statistics on record tending to confirm the popular belief that they lead to the formation of urinary calculi.
>
> As has been pointed out by Professor Drown, the waters of the south of England are excessively hard, but the statistics do not show an increase of death rate resulting therefrom.
>
> The English Rivers Pollution Commission (*Sixth Report*) collected statistics from towns of the same character having hard and soft water supplies. Twenty-three towns with soft water supplies had an average death rate per 1,000 of twenty-six; while in forty-three towns supplied with hard water the average death rate was 23.5. The commission concluded that: "Where the chief sanitary conditions prevail with tolerable uniformity, the rate of mortality is practically uninfluenced by the softness or hardness of the water."

Mason concludes the discussion of the relation of drinking water to goitre by saying that: "Our present knowledge upon the subject is, therefore, in a very unsatisfactory state, except in so far as we may be assured that the chemical ingredients of a water cannot be held to be goitre producing."

According to Woodward (21), "Considerable diversity of opinion has been expressed on the relative merits of hard and soft water for drinking purposes, but statistics relating to health in many localities where supplies of hard and soft water are used do not indicate any noticeable difference in the death rate." He says further: "The notion that chalk water is liable to produce gout or calculus is a fallacy"; and that "soft waters are more apt than hard waters to take up organic impurities; therefore a moderate degree of hardness is generally to be commended in a potable water."

Berg (3) concludes that the harder the drinking water of a district, the better the physical development of the children. The conclusions were drawn principally from the examination of the condition of the teeth. The composition of the saliva was also studied with reference to the effect of drinking waters of varying hardness, and diets containing varying amounts of calcium. It was found that the amount of saliva excreted increases with the hardness of the water, and children who habitually drink hard water secrete a saliva both relatively and absolutely more alkaline than is the case with children in neighborhoods supplied with soft water.

Lewis (11) discusses the arguments which have been advanced both for and against the use of hard drinking water. In speaking of goitre he says: "Melted snow water is supposed commonly to exert more influence in the causation of this disease than any other waters, however hard."

Other argument advanced by Lewis against the use of hard waters are the astringent and desiccative action of calcium salts upon the skin, the formation of urinary calculi, and the production of arteriosclerosis; all of which he dismisses with the statement that there is no evidence to prove the contention.

He then considers the evidence in favor of the use of hard waters, among them the fact that Nature had provided four fifths of the earth's surface with hard water which was pretty good evidence that it was harmless; that hard water was less easily contaminated than soft; that it was far preferable for growing children to soft water; and concludes his article as follows: "To sum up, then, there is no evidence that hard water has any bad effect; on the contrary, all the evidence is the other way."

Thresh (19), in his work on water supplies, says: "There is no evidence whatever to show that moderately hard waters have any influence whatever upon health." He quotes Doctor Cartin, medical officer to the Eastern and Western Telegraph Companies, as stating that at several of their stations in tropical climates where the only water available is distilled water, the teeth of the men are seriously affected. This difficulty was overcome by adding both lime and salt to the water.

TABLE I, SHOWING COMPOSITION OF FOREIGN WATERS.[3]

Name	Location	Chlorides P. P. M.	Bicarbonates P. P. M.	Sulphates P. P. M.	Total Solids P. P. M.
Kranchen 1	Ems	1026.03	2409.93	71.21	3556.33
Kranchen 2	Ems	1085.70	2318.05	65.08	3518.88
Kesselbrunnen	Ems	1068.83	1354.52	56.47	3524.18
Kaiserbrunnen	Ems	974.78	2360.79	57.73	3440.41
Victoriaquelle	Ems	1016.61	2447.94	62.62	3576.79
König Wilhelms Felsenquelle	Ems	996.89	2388.02	61.94	3482.61
Neuquelle	Ems	889.71	2066.04	81.82	3303.44
Stahlbrunnen	Langenschalbach	6.72	556.35	11.66	606.81
Weinbrunnen	Langenschalbach	8.63	1489.48	13.66	1558.27
Paulinenbrunnen	Langenschalbach	6.60	481.65	10.48	524.64
Neubrunnen	Langenschalbach	6.22	587.51	15.67	638.58
Ehebrunnen	Langenschalbach	5.95	904.44	12.43	960.84
Adelheidbrunnen	Langenschalbach	6.55	675.31	21.80	740.03
Schactiquelle	Schlangenbad	270.48	75.44	13.86	402.40
Sulphur Spring	Weilbach	271.31	794.82	38.82	1511.75
Sodio Lithia	Weilbach	1258.82	1640.00	55.12	3190.56
Königlich Selters	Niederselters	2352.24	2008.30	46.30	4437.36
Fachingen	Fachingen	671.73	4808.46	47.85	5555.14
Geilnau	Geilnau	36.10	1953.10	26.10	2045.40
Trinkquelle	Nenndorf	227.49	516.05	1868.75	2684.63
Brine Spring	Nenndorf	56521.11	128.40		61632.20
Rehburg	Rehburg	50.44	385.41	491.27	938.28

[3] Album of the Spas and Mineral Springs owned by the Royal Prussian Board of Domains.

Thresh also states that: "A French commission arrived at the conclusion that a moderately hard water was the best, and that persons residing in districts supplied with such water had a better physique than those living in districts where soft water was used; and a Vienna commission expressed the same opinion."

Coles Finch (5) has this to say regarding the subject of hardness and its influence upon health: "I am of the opinion that hard water is beneficial to the human system to a far greater extent than we are generally aware, especially to children and young people, the lime in the water helping to build up their frames. Children cannot drink too much of this water; for as has been noted in hard water districts the absence of rickets is apparent, and the inhabitants generally have better teeth than those living in soft water districts. If this is so, the whole frame must also derive an equal benefit, though not so apparent."

Again he says: "Wanklyn, in his practical treatise on water analysis, says: 'The Metropolitan water contains four or five times as much solid matter as the Manchester and Glasgow waters. The healthfulness of London is higher than either, and I am warranted in saying and maintaining that a high solid residue in drinking water can have no very markedly injurious effect on public health.'"

Coles Finch quotes from the *Lancet* as follows:

> It is a popular, but probably wrong, impression that hard drinking waters are prejudicial to health, and moreover are injurious to delicate skins when used regularly for ablutionary purposes. Gout, kidney disease, and dyspepsia, by an interesting line of reasoning, have been supposed to be due to, or aggravated by the drinking of excessively hard water. Some mysterious connection between the chalk of the water and the formation of "stone" in the kidney, or of "chalk" in the joints, in gout, is a favorite speculation with many; but in the history of the world's water supplies there is no trustworthy evidence that the drinking of hard water influences for the worse these diseases. The idea is, in fact, chimerical.

Gammage (8) in discussing the relation between water hardness and health says: "The consensus today seems to be that in similar class towns having like principal sanitary conditions, the death rate is not raised or lowered by the softness or hardness of the water." From a study of his data Gammage concludes that: "Neither in the individual results nor in the group results is there enough consistency to say that hard waters are more destructive to life than soft waters."

Dole (7) cites analyses of waters containing solids up to 5,000 parts in the million which have been used for years for all domestic purposes without noticeable ill effect. He sums up his conclusions by saying: "The amount of inorganic matter that may be present in drinking waters without having appreciable physiological effect is comparatively great."

If natural water containing salts in comparatively large quantities is so harmful as some would have us believe, why are physicians continually sending patients to American and foreign spas for treatment? The waters at these various places contain from hundreds to thousands of parts in the million of solids, mostly carbonates, sulphates, and chlorides, yet they are prescribed freely for gout, rheumatism, arteriosclerosis, kidney and urinary disorders, etc. Our own Saratoga waters, and such foreign waters as Ems, Fachingen, Langenschwalbach, Vichy, Folkstone, and others are classed as valuable medicinal agents in alleviating the unhealthful conditions mentioned.

The following tables give the sulphates, chlorides, bicarbonates, and total solid content of some of the better known American and foreign waters that are used and recommended by physicians in the treatment of disease. No attempt is made to include all sources of this nature, and those given are for illustrative purposes only. Tens of thousands of patients visit these spas each year solely for their curative effects. Thompson (18) is authority for the statement that Kissingen alone is visited annually by more than 34,000 patients, and that upward of 1,600 American patients have been in the habit of going to Nauheim each year.

Of the diseases usually attributed to the use of hard water, arteriosclerosis, rheumatism, gout, goitre, and various renal affections are the most prominent. In the table of foreign spas noted above, almost without exception the water is recommended in one or more of these diseased conditions; while the report of the commissioners of the State Reservation at Saratoga, for 1913, says that rheumatism, arteriosclerosis, and renal diseases have been benefited greatly by a course of treatment at these spas.

TABLE II, SHOWING COMPOSITION OF AMERICAN WATERS, SARATOGA SPRINGS.[1]

Name	Chlorides P. P. M.	Sulphates P. P. M.	Bicarbonates P. P. M.	Total Solids P. P. M.
Old Red	382.27	7.91	1495.55	1968.16
New Red	903.27	9.46	1909.67	2928.22
Magnetic	1112.52	14.95	1942.25	3129.17
Emperor	2664.44	4.88	3140.05	5851.73
Peerless	2718.58	31.67	3753.43	6541.21
Hathorn 1	3338.57	15.56	4146.28	7542.21
Hathorn 2	11887.36	5.33	7336.74	19348.72
Hathorn 3	10000.51	10.04	6511.84	16608.42
Coesa	5728.18	8.37	5179.35	10956.62
Geyser	2254.07	19.36	4710.24	7023.92
Adams	6406.90	3.40	5163.81	11654.09
Pump well No. 4..	1504.13	11.13	2352.51	3898.67
Flat well No. 2....	7067.41	4.26	5941.27	13242.48
Ditch well No. 2..	2083.57	7.91	2571.93	4766.08
Island	4446.51	12.17	4203.06	8704.73
Other Waters:				
Veronica Water[2]... Santa Barbara. Cal.	3339.74	15698.30	1397.80	22842.64
Mt. Clemens Water[2] Mt. Clemens, Mich.	26910.50	777.60	217.50	12864.80
Manitou Water[2] ... Manitou, Colo.	440.83	324.20	3530.20	4344.88

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[1] Report of the Commissioners of the State Reservation at Saratoga Springs, 1913.

[2] Bulletin 98, Bureau of Chemistry, Mineral Waters of the United States.

Such men as Osler, Anders, Hare, Stevens, and others recommend spa treatment. Osler (14), in speaking of the treatment of arteriosclerosis, says· "The use of mineral waters, or a residence every year at one of the mineral springs is usually serviceable"; and of rheumatism: "A residence at Bath, England, the Hot Springs of Virginia, Arkansas, or Santa Rosalia, Mexico, or at Banff, in the Rocky Mountains, on the Canadian Pacific Railway, will sometimes cure even obstinate cases."

Anders (1), on the treatment of rheumatism, says: "The thermal springs whose waters are alkaline or contain sulphur, and of which the hot springs of Arkansas and Virginia, and the Richfield Springs, New York, furnish good examples, have been strongly advocated, and sometimes prove curative in their effects." Of gout, he says: "Mineral waters, particularly the alkaline, are highly advantageous, and sometimes curative. Their value, like that of warm baths and systematic exercise, is dependent upon their power to increase renal elimination."

Stevens (17) says regarding the treatment of gout: "Visits to certain mineral springs, Bedford, Saratoga, Harrowgate, Carlsbad, Contrexéville, Aix-les-Bains, are sometimes of greatest value."

In a recent admirable article, Bolduan (4) discusses the cause of arterial degeneration, Bright's disease, and apoplexy, under the heads of alcohol, tobacco, syphilis, chronic poisons, social environment, sex, age, etc. At no time does he mention the influence of hard water, and concludes that the preponderating cause is syphilis.

The argument that too much lime is taken into the system in a hard water has been answered partially in reference to the use of milk by children. Furthermore, the average therapeutic dose of lime is about sixty grains a day. A hard water is usually spoken of as one containing 200 parts in the million or more of lime. Therefore, in order to obtain a therapeutic dose of lime from such a water it would be necessary to drink six gallons in twenty-four hours, a feat difficult of accomplishment by the average person. A common glassful of such water would contain approximately three fourths of a grain of lime.

This is analogous to the statements of the lithia water adherents, who assert that the spectroscopic traces of lithium found at times in a water renders it a panacea for various and sundry diseases. There are various court records where this question was involved where it was shown, in one case, that in order to obtain a medicinal dose of lithium it would be necessary to drink 1,000 gallons daily; in another case, the amount consumed would have to totalize 100,000 gallons daily in order to meet the therapeutic requirements for the administration of lithium!

In summing up, then, it seems to the writer that the weight of authoritative evidence is in favor of the use of a natural water containing a moderate amount of mineral, at least enough to avoid the flatness in taste of distilled and soft waters.

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36 FORTY-FIRST STREET, BROOKLYN.

Specific and Other Forms of Spondylitis.—B. Sachs (*American Journal of Medical Sciences*, November, 1916) says that the specific cases of spondylitis should be treated most vigorously with intravenous injections of salvarsan, combined with intramuscular injections of mercury, or inunctions. The nonspecific cases must be treated either by rest, by intense heat, or by orthopedic measures.

PARENCHYMATOUS GLOSSITIS.*

With Report of a Case.

By Max Lubman, M. D.,
New York,
Associate Otologist, Har Moriah Hospital.

Case. Miss M. S., nineteen years old, became ill on March 8, 1916. Family history, negative. Past history: Had influenza two years ago. On March 8th, she went to bed in good health. About 4 a. m., on March 9th, she awoke with pains in the neck, back of the head, and throat. The pains were aggravated by talking or swallowing, and she felt feverish. Early in the morning, the left side of her tongue became swollen and painful. During the day, the right side of the tongue also became swollen. Speech was painful and swallowing impossible. She was unable to close her mouth. Temperature was 103° F., pulse 100. The case was referred to me on March 10th by Dr. Charles J. Mark. The patient wore an anxious, pitiful expression. Her voice sounded as though affected with a double quinsy. Speech came with great difficulty and was very hard to understand. The tongue protruded from the mouth, dribbling saliva. Temperature by rectum was 103° F., pulse 106. Upon examination the tongue was found to be uniformly swollen on both sides and very tender to the touch. It had a leathery consistence. With great difficulty I inspected the tonsils, pharynx, and the larynx, which were negative. The salivary glands were neither involved nor tender to the touch. The cervical glands were not involved or painful. The examination of the nose was also negative. A diagnosis of parenchymatous glossitis was made. The treatment hereafter outlined was prescribed, resulting in a complete recovery.

Etiology. The disease is noticed mostly during the winter months, and attacks males more frequently than females. It occurs chiefly between the ages of twenty and forty years, though A. B. Bennet (1) states that cases have been reported at the respective ages of nine months and eighty years. The disease is quite infrequent. Butlin (2) says: "Acute inflammation of the tongue is admitted by all to be a rare disease. Even the largest hospital in this country (England) does not in many years record a single case. It appears to be occasionally endemic (Fleming, 3) and at times epidemic (Reil, 4). It is difficult to state the direct etiological factor. Undoubtedly there must be some predisposing and some exciting causes. Still idiopathic cases occur where no cause can be found. The sudden or prolonged exposure to atmospheric changes, i. e., to cold and moisture as when working in damp and wet localities, is often the apparent determining cause. Graves (5) relates a case of Dr. Nelgian, in Jervis Street Hospital, in 1846, which serves to substantiate this etiological factor. It happened to a stout villager, forty years of age, who, engaged in draining a river, worked for several days in water up to his waist. The affection came on with rigors and ordinary symptoms of fever. The entire tongue became enlarged and so enormously swollen as to prevent articulation, swallowing, or the cleansing of the throat. Still he reports another case where there was no exposure to wet at all. The case is as follows: Mr. B. A., a medical student, was laboring under febrile symptoms for an entire week, ushered in by violent rigors and great pain in the neck and occiput; he was somewhat relieved on the second day by a profuse epistaxis. The left half of the tongue was gradually increased in size, then became very tender and painful. The tongue was enormously swollen and nearly filled the entire cavity of the mouth, which could scarcely be closed on account of the protrusion of the tongue. The right half of the tongue was perfectly normal, and its comparatively diminutive size formed a striking contrast with that of the left, the median line forming a perfect boundary between the swollen and healthy sides.

In some cases, it seems, glossitis may be produced from a reflex, as the following two cases will illustrate: Dr. R. Lewis (6) reports a female, forty-eight years of age, who was being treated for a chronic suppurative otitis media complicated by excessive granulations. The woman was in average good health, with no hysterical tendency. After the third application of chromic acid, the patient complained that during the night following the treatment her tongue began to swell, and that for a few hours it was very difficult for her to breathe. The condition passed away without treatment. Six hours later another application of chromic acid was made to the ear, and in thirteen hours the tongue began to swell so rapidly that in two hours she could not protrude the tongue, nor could the jaws be closed, the swollen tissues interfering so greatly with breathing that tracheotomy was seriously considered.

Dr. Frank C. Raynor (7), of Brooklyn, reports a case of parenchymatous glossitis following a submucous resection: H. H., aged twenty-six years, single, American, was first seen in the Brooklyn Eye and Ear Hospital Clinic on November 12, 1914. An examination showed the septum deviated anteriorly to the right, and posteriorly to the left. Submucous resection by the house assistant on November 16th; dressed on November 17th. Seen again on November 20th and apparently doing well. On November 22nd patient awoke with "a sore throat" which grew worse during the day, so that he was unable to swallow. He consulted a local physician, who prescribed a gargle. Continuing to grow worse, he applied to the hospital and was admitted on the evening of November 23rd. Examination disclosed the tongue greatly swollen, completely filling the mouth, and protruding dry and coated; the patient was unable to swallow anything. There was no associated stomatitis, and the pharynx, so far as inspection allowed, showed no infection. Axillary temperature was 103.4° F. He complained only of slight tenderness on pressure over the submaxillary glands. On November 24th, at 3 p. m., temperature was 103° F.; culture taken from the tongue near the frenum, which was somewhat abraded from contact with the teeth, proved the infection to be streptococcus.

It may also be of interest to mention a case related to me by Dr. A. M., of New York, a colleague of mine, who said that when eight years of age, in Rumania, his native land, he had parenchymatous glossitis. The physician called to attend his case said that the etiological factor of this disease was that food already partly eaten by a rat (not a mouse) must also have been eaten by the patient. Taking this as an etiological factor, we can readily understand the possibility of the disease being occasionally endemic (Fleming) and occasionally epidemic (Reil). This would also in a measure account for the rarity of the disease at the present time, because the vast improvement in our methods of living, as well as the great care now exercised in the preservation of foodstuffs, make contamination from this source well nigh impossible.

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*Presented at the Clinical Society of Har Moriah Hospital, April 24, 1916

Other etiological factors are: Jagged edges of broken teeth and carious teeth; wounds from splinters of tooth picks, spiculæ of bone, pins, and needles; wounds from teeth during epileptic seizures, and other convulsive paroxysms; the contact of the tongue with cold iron in cold weather; the contact of the tongue with acrid corrosive substances; concealed calculi in the tongue; bites and stings of venomous insects, such as the wasp and bee.

Symptoms. Symptoms appear quite suddenly, usually unilateral, even when they subsequently become bilateral. These symptoms are, at first, a sensation of heat and tumefaction of the tongue, quickly followed by stiffness and considerable impediment in its movement. The local symptoms are often preceded by rigor and followed by fever, cephalalgia, and pain in the neck and occiput. In a few hours the entire organ may become so involved and enlarged as to keep the lower jaw depressed and almost fill the entire oral cavity. The tongue projects beyond the teeth and the lips. The soft palate is lifted and the epiglottis often pressed down, making respiration very laborious. Deglutition is difficult and articulation impeded or impossible. The sublingual and submaxillary glands are seldom involved unless the lesion undergoes suppuration.

The tongue becomes very hard to the touch, the face pitiful, and the expression anxious. Sleep is disturbed, saliva dribbles externally, thirst is intense, odor from mouth fetid. The pulse as a rule is slow, ranging from 100 to 110, with a temperature of 103° to 104° F. Bowels are constipated; urine is scanty and high colored. These symptoms reach their height in less than forty-eight hours and then begin gradually to subside. Should the process begin to terminate in suppuration, the local symptoms increase in severity until the pus is evacuated.

Pathology. It has been advanced that in idiopathic glossitis engorgement of the vessels is probably a sequence of vasodilator influence of the glossopharyngeal nerve for the base of the tongue, and the chorda tympani for the anterior portion. For an instance of herpetic glossitis from probable irritation of the chorda tympani nerve by an aural polypus, see Berkely Hill (8). Pepper (9) gives the following pathology: However engendered, there is a rapid distention of the organ by blood, followed by infiltration of fibrin and serum into the intermuscular connective tissue and into the planes of connective tissue separating the muscular fasciculi.

Prognosis. The prognosis should be guarded. Bennet, however, states that of the 145 cases only four ended fatally, or less than three per cent.

Treatment. The patient should be put to bed. The bowels should be kept open, and leeches applied at the hyoid bone on each side. Small pieces of ice may be kept in the mouth to allay the thirst and the burning sensation. Wash the tongue as well as the mouth with a bland antiseptic as often as possible. Apply cold compresses around the neck. Small doses of morphine may be given if the patient's restlessness requires it. It is important if the condition does go on to suppuration, that deep incisions be made.

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616 MADISON AVENUE.

Abstracts and Reviews

CHEMOTHERAPY IN TUBERCULOSIS.*

BY PAUL A. LEWIS,

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The use of the term, chemotherapy, had become so loose that the author deemed it necessary to define it before proceeding to the main subject of his lecture. He said that it was in Ehrlich's sense that the term should be employed, i. e., to mean the use of an agent which possessed more or less definitely specific and selective chemical affinities for the causative organism of a disease, which affinities were inherent in the chemical relations between the substance and the organism or its constituents.

The idea of the development of a chemotherapy of tuberculosis was not new, for it was expressed by Koch and his associates, von Behring and Ehrlich, at the time of Koch's discovery of the specific organism. They then sought a means of chemical disinfection of the body invaded by the tubercle bacillus, but these efforts, as well as many subsequent ones, were unavailing. Springing from these studies, however, investigations showed that certain substances did possess far greater affinities for the tubercle bacilli in vitro than for other pathogenic organisms, and in this sense were specific disinfectants. These substances did not prove destructive to the organisms in experimentally infected animals, the failure being due to several factors, among which the most important were those of dilution and distribution, which acted to prevent the access of the disinfectants to the tubercle bacilli in the bodies of living animals, or at least their access in sufficient amounts to prove destructive or inhibitory to the growth of the bacilli.

More recent studies have demonstrated the fact that some substances are inactive as disinfectants or inhibitory agents against the tubercle bacilli in vitro, yet are active in one of these directions when administered to infected animals. The explanation of this phenomenon was probably that these substances underwent some modification after introduction into the living animal which altered their properties in the direction of converting them into active agents against the organisms.

Still a third group of substances has now been found which are possessed both of active inhibitory or disinfectant properties toward tubercle bacilli, and of distribution coefficients in the animal body which permit their reaching the foci of the bacilli in effective amounts. It was with such substances that the author and his associates had made their experiments.

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*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York; November 25, 1916.

The lecturer said that, to the uninitiated, experimental human or bovine tuberculous infection of animals offered an ideal set of conditions for the study of the effects of such chemotherapeutic agents. Such, however, was not the case and the scope of disturbing factors was truly enormous. Among these were the facts that experimental infections, even with the same strain, did not run a perfectly regular course; that cultures differed widely among themselves; that a given culture would change with continued propagation; that the amount and manner of the inoculations greatly modified the course; that the differences in the time of death following experimental inoculation were very great; that the post mortem lesions after spontaneous death varied greatly in distribution, extent, and type; and, finally, that the slow progress of the disease and the large number of animals made the studies very time consuming and very expensive. To counterbalance these disadvantages the disease had one great advantage, namely, the development of anatomical lesions in the form of tubercles. By means of these the selective penetration of such substances as dyes and stains could be easily and accurately determined. The belief had been strongly established in the mind of the author that the tubercles were relatively walled off from the circulation to such an extent as even to cause necrosis of their centres through lack of nutrition. He also felt that the general impression was that the tubercles were relatively impermeable to the usual materials and he was, therefore, surprised to find the ease with which they were actually penetrated by certain vital stains, such as isamine blue, which stained all the outer layers, and trypan red, which penetrated to the very interior of the tubercles.

Following this lead, efforts were made to determine which of a very large number of dyes were capable of specifically penetrating the tubercles in experimental animals. It was found that methylene blue, trypan blue, and many of the azo dyes were possessed of this power of penetration. Methylene blue not only penetrated the tubercles well, but was largely reduced in them. The problem then resolved itself into the building up of a large number of substances and combinations which had this penetrating power. Concretely, it was begun with trypan red, which entered tubercles well. The first steps were to form substances which retained this power of penetrating and which had the added power of destroying the tubercle bacilli or of inhibiting their growth sufficiently to aid the animal to recover from the infection. The dye was therefore combined with iodine, the phenols, etc., and these preparations were then tested on infected animals. Iodine was used on account of the long standing belief among clinicians that it had some special affinity for the tubercle bacilli. Phenol, guaiacol, etc., were known to be antiseptic toward the tubercle bacilli. This work had just got well under way when the war broke out and closed the market for the needed dye.

Search was therefore necessary for some other parent substance for modification. This was found in the commercial dye known as Niagara Blue II B, which had the advantage of being similar to trypan red chemically.

Parallel with this search for dyes with penetrating powers and capable of chemical modifications and additions, a series of studies was also undertaken to find substances which had specific antiseptic or inhibitory properties against tubercle bacilli. Several hundred substances were formed and tested in this respect, comparing their antiseptic properties against tubercle bacilli with those against staphylococci, pneumococci, and typhoid bacilli. The general results of these investigations showed that the typhoid bacillus was the most resistent of all the organisms to the anilin dyes; that the triphenyl methane group of dyes were least active on the tubercle bacilli; and that the group of azo dyes was the most highly specific against these organisms.

The conditions to be met were, then, first to find substances capable of chemical modification and having a high degree of penetration for tuberculous tissues; second, to find substances which had highly developed specific disinfectant or inhibitory actions toward the tubercle bacilli; and, finally, to combine these substances in such a way as to preserve both properties to the resulting combination. The first two problems were now fairly on the way to solution, but the third offered difficulties which had not yet been overcome. Thus it was found that generally efforts to increase the inhibitory action of a substance deprived it largely or entirely of its penetrating power in the living animal. Certain compounds of creosote, however, were produced which seemed to retain both properties in good measure. The testing of these compounds upon infected animals had now only been just begun and the results so far indicated that the use of the creosote compounds influenced the infected animals favorably in that they seemed to prolong their lives. But in this respect they were inferior to tuberculin and not superior to several other chemotherapeutic agents described by others.

The present status of the chemotherapy of tuberculosis might be stated to be hopeful for the future, although the experiments thus far carried out could not be described as successful, except as giving direction to the work yet to be done.

The Manual Treatment of Intussusception.—John Zahorsky (*Medical Fortnightly*, November, 1916) gives the following as the technic he uses: The infant is anesthetized and a pad is placed beneath the hips. After relaxation of the abdominal wall is obtained the tumor is grasped and a steady pressure is made upon it. It should be maintained for a minute or more and repeated several times. The knees or hips are firmly grasped and the abdomen shaken vigorously. When the tumor is centrally located an up and down motion may be used: when on the right side a lateral movement is more effective. In addition, stripping of the intestine, either from above downward or from below upward, may be practised. The taxis and shaking should be alternately repeated until the tumor has disappeared. The repeated jerks tend to throw the heavier mass away from the attached intestine.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD AND EFFICIENCY.

By Martha Tracy, M. D.,
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Professor of Physiological Chemistry, Woman's Medical College, Pennsylvania.

IV.

DAILY REQUIREMENTS OF THE HUMAN BODY.

(*Continued from page 1056.*)

In regard to the reliability of the appetite in determining the amount of food needed, Sherman states:

> If by following the appetite one becomes unduly stout, or is visited by digestive disturbances which are an obvious effort on the part of the body to free itself of a part of the food eaten; or, on the other hand, if one becomes unduly thin, or does not get sufficient fuel to support a full day's work, it is certain that some standard other than the appetite would be of decided advantage. But if from year to year the body keeps in good condition for its work and maintains a fairly constant weight, which bears such proportion to the height as to show that a desirable store of fat is being carried, it is reasonably certain that the amount of food eaten in the course of the year is substantially that which is suited to the degree of activity maintained; and, while it is possible that still further benefits might accrue from a different selection of food materials, it is not likely that any advantage could result from a material change in the amount (fuel value) of food consumed. Especially is it in the highest degree improbable that in such a case the same work could be done and the same weight maintained on food of much lower fuel value, however selected, prepared, or eaten.
>
> It is of interest to note that a well ordered appetite may not only serve as an indication of the amounts of food needed over long periods and under different conditions of activity, but also when the conditions of life are fairly uniform may be highly efficient in determining a regular intake of calories from day to day. Thus a healthy young woman living on unrestricted diet with menus varied daily and eating simply according to appetite was found to take on five successive days 2,140, 2,025, 2,040, 2,250, 2,255 calories respectively.

That an appetite not as "well ordered" as that of the young woman referred to by Sherman cannot be depended upon as a guide to adequate food intake, is brought out in the following figures, the result of a dietary study by Dr. Caroline Croasdale in association with the writer. The figures are taken at random from over 200 observations of students attending the Philadelphia Normal School for Girls. All of the subjects are believed to be normal young women, who have passed the physical examination required for gymnasium work, and whose ages range from seventeen to twenty-one years. Each student made careful observation of her diet for several days, including all candy and other "between meal" indulgences, and calculated, under direction, from one of the reliable food value tables available, the caloric value of the food eaten.

The cases are arranged in four groups, as shown in the table. We have then added from the official records of the school a statement of the scholarship of each student, and also a sign which represents the vitality or efficiency, or margin of available energy of the individual. The student of so called "negative vitality" is quiet and listless, often anemic, and with no energy for anything beyond her school day of work, or even too little energy for this. The student of so called "positive vitality" is full of life, excellent at gymnastic work, leading in dances and entertainments, and in general with energy enough and to spare. Between the two is the neutral individual conspicuous in neither direction.

The table shows a summary of the results obtained and indicates the scholarship and vitality of the students in the different "food intake" groups stated in percentages.

Groups.	Scholarship. Poor	 Fair	 Good	Vitality. Negative	 Neutral	 Positive
26 students taking less than 1600 calories a day	57.6	30.7	11.5	57.7	11.5	30.7
38 students taking from 1600-2000 calories a day..........	23.6	42.1	34.2	63.2	7.8	28.9
24 students taking from 2000-2300 calories a day..........	8.3	54.1	37.5	50.0	0.0	50.0
37 students taking over 2300 calories a day.............	2.7	54.0	43.2	8.1	18.9	72.9

The students in the first group are evidently taking an amount of food very close to the minimum or basal metabolic requirement, and quite inadequate for the maintenance of normal vigor at moderate activity. In over fifty per cent. of this group the vitality and the scholarship are below par. On the other hand, students taking an amount of food about equal to that suggested for adults under such conditions, show less than ten per cent. of poor vitality and scholarship, while "positive vitality" is noted in 72.9 per cent. of the group.

Such a study, though exceedingly superficial, is nevertheless extremely suggestive of the need of popular education as to the very definite and practical relation existing between the food requirement and intake.

V.

PROTEIN.

Having shown, then, that the average young adult requires a diet representing a total energy value of 2,500 calories, we have next to consider what part of this total food supply must be in the form of the essential tissue-building foodstuff, the nitrogen containing material, protein.

Here again both dietary and statistical studies (method 1 in the previous paper) and exact observations on intake and output of nitrogenous material (method 2 in the previous paper) have proved of value. Dietary studies show that the amount of protein eaten by men at different kinds of work does not vary as greatly as does the total fuel value of the food consumed. In Langworthy's table, cited above, it is seen that farmers, mechanics, business and professional men, students and laborers vary in protein intake only from 100 to 110 or 112 grams, while the total fuel value of the food varies from

2,511 to 3,480 calories. There is one conspicuous instance of an average for men at hard work of 177 grams of protein a day, and a few instances among the very poor of protein intake as low as sixty-nine and eighty-six grams. The professional men of Japan also showed a lower protein intake of eighty-seven grams a day, but at the same time with a lower total food intake of 2,190 calories.

On the whole, however, the protein intake as determined by choice is evidently little influenced by the amount of muscular work done, unless this is unusually great, and differs strikingly from the total need and choice in this respect.

Perfected methods for determining the amount of nitrogen in the food ingested, and in the urine and feces excreted, have been the means of reaching the conclusion that nitrogen balance experiments constitute the best method for determining the actual protein needs of the body. Under normal conditions the body protein must be maintained; the tissue cells must not be broken down faster than repair or reconstruction can take place; there must not be a greater excretion of nitrogenous material in the urine, feces, and sweat than is made good by ingestion of nitrogenous or protein material in the food. If the food protein in a day contains fifteen grams of nitrogen, and in the urine and feces for the same period there are twenty grams of nitrogen, the body has lost the amount of cell or protein tissue represented by that difference of five grams of nitrogen. The amount of nitrogen lost in the sweat under ordinary circumstances is so small as to warrant its neglect for ordinary clinical purposes.

If the nitrogen excreted is equal to the nitrogen of the food eaten, the subject is said to be in "nitrogen equilibrium," and a normal adult should remain in fairly constant nitrogen equilibrium. Studies which bear upon this subject have shown that a subject may alter his or her nutritive plane, and by ingesting a large but constant amount of protein may arrive at a nitrogen equilibrium on a high level; or by gradually reducing the amount of protein eaten, may again reach nitrogen equilibrium at a lower level.

The body protein can be maintained at a low level of nitrogen equilibrium only when adequate fuel food, carbohydrate and fat, is supplied. These fuel foods are therefore said to be "sparers" of protein. They enable the cells to conserve the protein for the more important tissue-building purposes, and none of it need, in the adequate presence of these sparers, be wasted for mere fuel.

Thus the physiologist, Siven, found that if his diet supplied a total of 2,484 calories (41.4 calories per kgm.), he could maintain nitrogen equilibrium on thirty-nine grams of protein a day, but if he decreased the protein to twenty-eight grams, there was loss of body nitrogen, or as it is termed, a minus or negative nitrogen balance. Such observations have therefore shown that the *minimum protein requirement* of the adult may be very much less than the amount of this material actually taken by the subjects of Langworthy's statistical table, who ingested somewhat more than 100 grams a day. Whether this *minimum* is necessarily the *physiological optimum* of protein requirement has been the subject of much controversy.

R. H. Chittenden,[1] of Yale University, as a result of an extended series of dietetic experiments on groups of subjects which included himself and his professional associates, soldiers on garrison duty at New Haven, and university athletes, reached the conclusion that sixty grams of protein a day is an adequate amount to maintain an average man at moderate activity on a sufficiently high nutritive plane as regards protein, providing carbohydrates and fats are supplied in sufficient amounts to make up a daily total of 2,500 to 2,800 calories. Other physiologists incline to the belief that Chittenden's allowance of sixty grams of protein a day is too low for the physiological optimum, and we are accustomed now to consider a protein ration of from seventy-five grams to ninety grams as more desirable. By thus allowing a supply of this tissue-building material somewhat in excess of the minimum, we are providing in the body a "factor of safety," as Meltzer puts it, a supply of material available for immediate use in reconstruction of cell protein, should any sudden emergency of cell destruction demand it. Persons, living in temperate climates, who, with adequate fuel supply from other sources, are taking daily over 100 grams of protein, are in all probability exceeding the physiological optimum.

Only under special physiological circumstances, such as pregnancy, or during the construction of tissue which takes place in the development of muscles during athletic training, or the building of tissue which occurs as body weight is restored after a long wasting disease—only under such conditions as these do we expect to find a plus nitrogen balance in the adult. Here there is a special call for building material and a larger part of the nitrogenous food eaten will be retained in the body. The excretion of nitrogen will be less than the intake.

In the child, on the contrary, there is always normally retention of nitrogen, a plus nitrogen balance, and a proportionately higher protein requirement to maintain the constant cell construction of proper growth. Nature's recognition of the tissue-building needs of the young animal is shown in the following interesting table:

Species of animal.	Days required to double weight.	Proportion of protein in the mother's milk.
Human	180	1.5 per cent.
Horse	60	2.0 per cent.
Cow	47	3.5 per cent.
Goat	22	3.7 per cent.
Sheep	15	4.9 per cent.
Pig	14	5.2 per cent.
Cat	9.5	7.0 per cent.
Dog	9.0	7.4 per cent.
Rabbit	6.0	14.4 per cent.

The human infant builds tissue at a rate which enables it to double its weight in 180 days, and for this purpose a food is provided containing 1.5 per cent. of protein. Fat and carbohydrate are also present as fuel. The table shows what a close relation exists between the rate of growth of the young animal and the concentration of the tissue-building material in its mother's milk. As the rapidity of growth is greater, as shown by the decreasing length of time necessary for the young animal to double its weight, so the percentage of protein in the milk is increased. A safe working rule as to the amount of protein to be provided in the diet of the child or of the adult, is indicated by Sherman, who points out that in the infant's daily milk ration, as well as in the adequate food supply of the adult, one tenth of the total fuel value of the daily food is furnished in the form of this nitrogenous material.

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[1] *The Nutrition of Man.*

It is important to remember, moreover, that the kind of protein is of considerable moment, for if certain of those aminoacids, referred to in an earlier paper as the building stones of the protein, are lacking, such a protein is inadequate for tissue construction, and must be supplemented in the dietary by others which will make good the lack.

There is another effect of the ingestion of protein food which deserves some consideration in relation to practical dietetics, the so called "specific dynamic action" of protein food. By this term we designate a certain stimulant effect upon the total body metabolism, a more rapid rate of combustion of the body fuel, and a greater generation of body heat, which follows the protein intake, so that more protein must be eaten than would theoretically be thought necessary to prevent loss of body substance. There is a similar specific dynamic effect following the ingestion of fats and carbohydrates, but it is much less marked than in the case of protein. Thus a larger amount of protein food may be eaten with advantage in cold weather, while the natural tendency to eat less meat in summer has this true physiological basis.

If seventy-five grams of protein are taken, then, as the adequate ration for the average adult, this will supply somewhat less than 300 of the total number of calories necessary for the day's fuel supply, the amount of this protein available for fuel being determined by the amount of tissue repair. Of our average apportionment of 2,500 calories a day, there will remain at least 2,200 calories to be supplied by carbohydrate and fat.

These substances, carbohydrates and fats, were referred to above as "sparers" of protein, but they are not of equal value in this respect. Fat is considerably less efficient as a saver of body protein than is carbohydrate, and while its actual fuel value when completely burned, is over twice as great, gram for gram, as is that of carbohydrate, it appears to burn less readily in the body, and cannot be used exclusively to complete the total fuel requirement. When such use of fat, to the complete or partial exclusion of carbohydrate from the diet is attempted, derangements of digestion are likely to occur, nitrogen equilibrium is not maintained, and a condition of acidosis results owing to formation and incomplete combustion of fatty acids from the superabundant fat. It is found that if one half or more of the fuel requirement is supplied in the form of carbohydrate, fat may advantageously be used to furnish the remainder. Taste can usually be trusted to accomplish this apportionment and will rarely it ever, under normal conditions, lead to excessive fat intake.

(*To be continued.*)

Food Contamination.—The dangers from food contamination by the transmission of animal parasites and infectious diseases, and the present inadequate means of supervision and inspection, are brought to our attention by a recent report of the Henry Phipps Institute, on the Storage, Handling, and Sale of Food in Philadelphia. That there is room for increased activity in this new and important field of public health work is clearly evident by the following from the report:

Need for investigation.—The causes of ill health, the prevalence of disease, and the comparatively high death rate in Philadelphia must, of course, be many. Prominent among them is the food question. No one doubts that the way in which food is handled and stored before it reaches us has an intimate relation to our physical well being. If we knew and realized the conditions under which food is stored, the way and by whom it is handled, and how much dust and dirt it has accumulated during its exposure in the stores and markets before it is purchased, we would, if merely from a sense of decency, be more insistent upon better protection and inspection of our foodstuffs. Philadelphia now has numerous laws and ordinances regulating the sale of certain foods. It also has a municipal division of food inspection for enforcing these regulations.

Much can be accomplished directly through the education of consumers. The shopkeeper must meet the demands of his customers. If they want the food that they buy covered and protected from the dust and dirt, they have merely to tell their dealer this, and if he finds that he must comply with these requests to keep their trade, it can be depended upon that he will do it. This is plainly illustrated by the contrast between stores in the residential and in the congested sections of the city. But even in the better districts, where there is a demand for more careful handling of foods, there is still room for improvement. Even in many of the best stores in the city there are numerous instances of the exposure to dust and flies of foods eaten without further preparation, washing, or cooking. In many cases vegetables and fruits are not raised eighteen inches, or even a foot, above the floor.

Field covered.—The Sociological Department of the Henry Phipps Institute, in 1915, under the direction of Mrs. Janice S. Reed Lit, made an investigation in Philadelphia of over 1,000 stores and about 200 pushcarts and street stands. Being without laboratory facilities, the exact condition of foods with reference to bacteria could not be determined, but stores and carts were examined and scored for various determining elements—sanitation, type, and number of workers, protection of food against contamination, grade of food handled, storage of food in the homes of the vendors, etc. A tabulation of these stores discloses startling and disgraceful conditions.

Selection of districts.—The districts chosen for study are considered as representative of various sections of the city. Race or nationality, degree of congestion, and previous health investigations played a considerable part in their selection. Jewish, colored, American, Italian, German, Polish, Irish, and mixed settlements were studied; congested and residential sections; and an effort was made to include in the study those portions of the city covered in the report of the child federation on infant mortality, Phipps Institute's study on tuberculosis, standards of living and housing, and the housing commission's report on congestion, in the hope that the data on food might throw some additional light on these other problems.

Variety of shops.—All kinds of shops were studied, groceries, bakeries, meat shops, fish markets, creameries, ice cream and confectionery stores, and produce establishments.

Street exposure of foods.—Practically all kinds of food are exposed in the stores—meat, fish, poultry, vegetables, fruit, dried fruits and vegetables, milk, confectionery, bread, etc. Many also are on the streets without protection, particularly fruit and vegetables, dried fruits, and poultry. These foods, even though they may be washed and well cooked before they are eaten, very often have the dirt so ground into them that it is practically impossible to wash them clean.

In the course of this study several authorities on the danger and extent of contamination of foods that require to be cooked were consulted. While there is a difference of opinion as to the extent of this danger, all agree on the need for protection.

Relation of Diet to Beriberi and Other Deficiency Diseases.—Edward B. Vedder (*Journal A. M. A.*, November 18, 1916) concedes that beriberi is due to the deficiency of certain substances, or a certain substance in the diet, and that it has been conclusively shown by a number of workers that a substance exists in the outer layers of rice which will prevent the development of the disease and will cure polyneuritis in birds when given in extremely small amounts. This substance has never been isolated in pure form, and its precise chemical constitution is not known owing to its decomposing during the process of extraction and purification. Recently substances have been prepared synthetically which are also capable of curing polyneuritis of birds, and these have been found to be characterized chiefly by a remarkable degree of dynamic isomerism which has a profound influence on their curative properties. Such substances belong to the hydroxypyridins, but it is probable that their properties do not depend upon their special chemical nature, but rather upon their isomeric properties. The vitamine isolated from yeast—adenin—also exhibits a marked property of forming isomers. The exact mode of action and role of the vitamines is not yet known and all explanations are mere hypotheses. Vedder suggests the hypothesis that the antineuritic substance which prevents beriberi acts as an essential building stone for the repair of the nervous tissue and that the disease is produced through deficiency in this substance by the occurrence of an exhaustion going on to the production of degenerative changes. This hypothesis is supported by the fact that very early in the course of the experimental production of polyneuritis in birds, long before the occurrence of symptoms, microscopical changes are demonstrable in the nervous tissues. Study of the several forms of deficiency diseases indicates that there is a number of different vitamines, the absence of each of which is responsible for a definite form of disease. It is well known that the dietetic deficiency which produces beriberi does not lead to scurvy, and vice versa. It is, further, probable that pellagra is a deficiency disease, for those who are its victims live on diets known to produce scurvy and beriberi. They are probably, however, protected from these diseases by the introduction of other articles of food which still leave them susceptible to pellagra. Our knowledge of the deficiency diseases, though meagre, indicates the necessity of certain dietary rules to prevent their occurrence. Thus, where bread is a staple article of diet, it should be made of whole wheat flour; brown, undermilled rice should be used where this article is a staple in the diet; fresh beans, peas, and legumes should be given at least once weekly; fresh fruits and vegetables should be used once or twice weekly; barley, known to prevent beriberi, should be used in all soups; yellow, or water ground corn meal should be used; white potatoes and fresh meat should be given daily if possible, and in any case at least once weekly; canned goods should not be used too exclusively.

Boiled Milk in Infant Feeding.—Joseph Brennemann (*Journal A. M. A.*, Nov. 11, 1916), after a careful consideration of the facts, combined with an extensive experience of the use of both raw and boiled milk, has been led to give decided preference to the latter for both normal and sick infants on artificial feeding. He emphasizes the facts that, at best, raw cow's milk is not a natural food for human infants; it tends to coagulate in large, firm masses which are digested only with considerable difficulty and very imperfectly; there is little evidence to support the idea that it contains vitamines or kindred substances which are essential to human infants; it is always contaminated with more or less harmful bacteria; and it tends to produce diarrhea. As to boiled milk, however, he cites the following facts: There is little or no evidence to show that it is any more abnormal a food than when raw; the evidence that it tends to cause scurvy is not convincing; such tendency, if present, can be overcome easily by the use of orange juice; boiling sterilizes the milk; it makes it coagulate in very small, soft masses which are easily digested; and boiled milk tends to reduce the number of stools due to its more perfect digestion. Indigestion of casein does not occur with boiled milk, and when it has occurred from the use of raw milk it may be checked at once by the use of the boiled product. The experience of European pediatrists has long proved the value and harmlessness of boiled milk. The author's own experience has shown practically that much larger amounts of milk and much more concentrated feedings can be given safely when boiled milk is used. A healthy infant of nearly any age can begin with half boiled milk and half diluent, and undiluted milk can be given much earlier when boiled. Boiling is an easy and efficient means of modifying the casein to render it more digestible and entirely eliminates the problem of bacterial contamination. Feeding is made safer, easier, and more certain of success in both normal and sick infants. Boiling should be for a period of about five minutes and should be done in the home before the preparation of the feeding.

Milk and Communicable Diseases.—Linsly R. Williams (*Medical Record,* October 28, 1916) remarks that the chief objection to pasteurization is the change from long continued use of raw milk, and that the health insurance given by pasteurization in preventing epidemics of milk borne diseases is more important than the cost of the process. Changes in the taste of the milk occur only when too high a temperature is used. The slight danger of scurvy may be easily overcome by the administration of orange juice to children from the sixth month on. There is no foundation in fact for the statement that the amount of cream is diminished; truly, the cream line may be lessened, but the total amount of fat content remains the same.

Care of Digestion.—Max Einhorn (*Medical Record,* November 18, 1916) lays down the rule that in health the dietary should comprise a great variety of food, difficult of digestion as well as digestible, in order to give the digestive apparatus something to do in order to prevent deterioration. Meat should not be taken more than twice daily, and about four ounces suffice for an adult with vegetables, bread and butter, fruits, and salads. Water should be taken at each meal and between meals if there is thirst. Exercise in the fresh air such as walking, riding, and rowing, are of value. In short, care of digestion includes the simple life, with balanced work, recreation, regularity of meals, frugality, diversity of foods, abundance of water, and care of the bowels.

Diet in the Nephroses.—Fritz Munk (*Medizinische Klinik,* October 8, 1916) asks us to bear in mind in attempting to feed a patient with one of the nephroses, that we are dealing with a chronic condition and that dietetic regulation will have to be continued for long periods. Every effort should be made to make the diet as varied as possible, and palatable as well, so that the nutrition of the patient shall not suffer from distaste for food. During the stage of marked edema the patient eats so little that we should not further assault his appetite by attempting a saltfree diet. Instead, we should be content with a reduction of the salt to two or three grams daily, which will usually accomplish as much as the total removal of salt. The salt should then be very slowly increased as the patient recovers, about six grams daily being the highest amount desirable to reach. It is better to reduce the salt slightly and keep the amount constant than to resort to sudden fluctuations in the amount. The total protein intake should be reduced, but it is erroneous to allow no meats. On the contrary, it is better to employ small amounts of meat protein in an adequate mixed diet than to attempt to meet the patient's caloric needs with the milk diet so commonly prescribed. The diet should be free from all but traces of condiments, but enough of these should be used to appeal to the patient's appetite in order to encourage him to continue with the diet. It is not necessary to restrict the intake of carbohydrate. The total amount of fluid taken daily should be limited and should be reduced to 500 mils, if possible, though it will often be necessary to allow as much as one and a half litre. This can be made up of tea, coffee with milk, fruit juice drinks, thin gruels, and alkaline waters containing but little carbon dioxide. The control of the diet is best accomplished on the basis of the caloric needs of the patient and the caloric values of the foods prescribed. As much as half of the protein requirement may be supplied in the form of meat, fresh water fish, and sardines in oil. Eggs should be restricted to a maximum of three a day and should always be cooked. Artificial food preparations are not to be recommended.

Value of Thick Gruels in the Diet of Infants.—Erich Klose and Heinrich Bratke (*Medizinische Klinik,* September 24, 1916) prefer, like most pediatrists, the thick gruels made from cereals by prolonged boiling and straining, to the ordinary cereal soups made with brief cooking. The authors have made a series of observations upon these two forms of cereal preparations to determine the differences, and the reason for the preference of the one over the other. They found that there was relatively little difference in either the protein or the carbohydrate content of the two preparations—at least far too little to be the reason for preferring the long cooked gruel. After the elimination of all other possible differences they were forced to the conclusion that the gruel which had been made with long cooking—three quarters of an hour or over—possessed the one advantage of having had its contained starches so altered in form as to be much more readily digested and more completely assimilated by infants.

Gastrointestinal Acidosis in Infants.—Henry Dwight Chapin and Marshall Carleton Pease (*Journal A. M. A.,* November 4, 1916) conclude that this form of acidosis in infants is closely related to the feeding of whole milk or some form of whole milk formula, and that it is the protein of the milk which is primarily at fault. The probability is that the condition results from some partial breaking down of the protein through bacterial activity, with the production of toxic split products. It was noted that this form of acidosis was very quickly fatal, but that the children usually improved rapidly if they lived long enough for a cathartic to act. As a result of these observations starvation treatment was tried with excellent success. This starvation was complete, except for the administration of water and a solution of sodium bicarbonate. The sodium bicarbonate was only a temporary measure, and the starvation seemed the more important. This treatment was combined with the administration of a cathartic to clean out the entire intestine, and it was found that this could not be replaced by gastric and colonic lavage. The alkali was given till the urine was rendered alkaline or the blood showed a normal reaction. Every possible mode of administration was employed to introduce enough bicarbonate into the circulation to combat the urgent symptoms. After this immediate treatment the infant's diet was readjusted so as to eliminate milk entirely for a considerable time. Thick gruels, cooked for many hours, were given with sugar to meet the caloric needs of the child, and animal proteins were introduced only after some time on such a restricted diet and then very slowly and with great care.

Editorial Notes and Comments

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THE NARCOTIC DRUG EVIL.

At the last session of the legislature of the State of New York, a joint committee was appointed to investigate and report upon the narcotic drug evil in order to draft legislation to prevent its growth. This committee, under the chairmanship of Senator Henry M. Whitney, of Mechanicsville, himself a practising pharmacist, held public hearings during the past week at City Hall, New York. Several physicians and pharmacists appeared and a number of men who have been interested in the movement to suppress the illegal traffic. Among those who spoke was Burdette G. Lewis, Commissioner of Correction of the City of New York, who said that from the standpoint of his department, the treatment of the drug addict was a most serious question. Mr. Lewis submitted a mass of statistics regarding the prevalence of drug addiction among the correctional population, and said that of those who came under the care of his department the drug addicts were the most troublesome. He made a special plea for an indeterminate sentence for addicts sent to the department, since experience had demonstrated that a period of from four months to a year, or even more, was required for the cure and rehabilitation of a confirmed drug user, therefore no specific sentence would bring about the results desired. He particularly deplored the hurried treatment for a few days, followed by the discharge of the patient in such a state that recurrence of the habit was almost inevitable.

An earnest plea was made by one physician to the legislators on behalf of the sick and suffering whose pain could be alleviated only by the proper use of narcotic drugs, and on behalf of the medical profession whose duty it was to alleviate that pain. It was argued that it was not by the restriction and hampering of the physician and the druggist in the legitimate discharge of their duties to the sick, that relief from the drug evil was to be found; this was a police matter and not a board of health matter. Dr. Jackson R. C. Campbell, physician at the Harlem prison, said that the physicians and pharmacists were not at all involved in the growth of the narcotic drug evil, that few of the young men suffering from the drug habit had ever been seen by a physician, and that it was absurd to bring the doctor and the druggist into the matter at all. The illegitimate users of the drug had sources of supply entirely outside of the medical profession and the pharmacists. He invited the members of the committee to inspect the Harlem prison and see with their own eyes the condition of the habitués who were confined there. He knew whence the supply of narcotic drugs came, but his life would not be worth a day's purchase if he should divulge this knowledge.

The gratifying assertion that the medical profession and the pharmacists are not involved to any appreciable extent in the illegitimate traffic in narcotic drugs, was further confirmed by the statistics furnished by the District Attorney of the County of New York, who said that less than ten per cent. of the offenders against the narcotic drug laws were either doctors or druggists.

It seems then an outrage to impose still further restrictions on the legitimate practice of medicine and pharmacy in the handling of narcotic drugs. The remedy should be applied to the ninety per cent. of offenders outside these callings. In spite of these statistics, however, we find Judge Collins, who has been active in a campaign to suppress the narcotic drug evil, coming back to the proposal made two years ago, and advising the use of official prescription blanks, with an additional blank to be used when narcotic drugs are prescribed for addicts. The application of even a modicum of common sense would show the absurdity of attempting to correct this evil by dealing only with the very small proportion which can be laid at the doors of medicine and pharmacy. We know now that it is a social and not a medical problem, and it is a gross injustice to the medical profession and to the patients who have a legitimate need for narcotic drugs to impose further restrictions upon the doctor. Here is an opportunity for the New York State Medical Society to aid in protecting the profession from a most unjust law by preventing the imposition of additional restrictions on the practice of medicine as is now proposed. It is the business of the legislators to ascertain the source of supply and the channels of distribution of the drug in the underworld, and to close them. This can be done without further hampering the practice of medicine.

MINERAL OIL IN CONSTIPATION.

To judge by the number of manufacturers that have put some preparation of mineral oil upon the market, the prescription of it must have grown by leaps and bounds since it was first put forward as a sort of substitute for Sir Arbuthnot Lane's kink operation. Most of the "literature" is still of a proprietary nature, and it is natural, therefore, that we should read with interest the contribution to *Paris médical* for June 24, 1916, of Le Tanneur, on what he calls practical points in the use of mineral oil in constipation. Olive oil, he observes, has long been a favorite laxative in Provence and elsewhere, but only that portion of each dose that is not saponified by the liver and pancreas acts in a laxative manner, consequently there is fatigue at the expense of digestion on the part of these glands whenever it is exhibited. With mineral oil, on the other hand, there is no saponification and no reflex of any kind is excited; the fecal mass is simply lubricated and its passage greatly facilitated. Moreover, the interior of the intestine is covered with a thin protective film, and any tiny excoriations caused by rough particles of food are healed. Since we are concerned with a purely mechanical action, habituation to the oil on the part of the patient is impossible.

An interesting fact elicited by Le Tanneur is that at autopsy of several subjects who were under mineral oil treatment at the time of death, the appendix was found to be literally filled with oil; we must remember that this means absolute sterility of the appendix. Le Tanneur insists on the importance of prescribing a pure and specially prepared oil, one worthy of the dignity of inaugurating a perfectly new and unequalled form of treatment for an historically obstinate condition.

We prescribe two tablespoonfuls of the mineral oil daily, before breakfast, fasting, or after dinner, as the patient prefers. The first stool induced by the oil will appear in about forty-eight hours, and as there is, so to speak, no lubrication ahead of it, there may be some difficulty and straining in its passage; this should be forestalled by an enema. The bowels soon become regular, but the oil should be taken every day for at least a fortnight. The patient will then be astonished to note that the bowels continue to move daily, although the oil has been withdrawn. He should have the fact impressed upon him that he is not taking an ordinary cathartic, but a new treatment for constipation, which will cure if persisted in, and he is therefore not to be discouraged if the effects at first are not as great as he had expected. Children may have a sweetened preparation of the oil, but this is not usually necessary, as a good oil has not a fatty appearance, nor even a greasy taste. Le Tanneur gives credit to Gaudier, of Lille, and Pauchet, of Amiens, for their speedy appreciation of Sir Arbuthnot Lane's discovery and their immediate practical application of it.

FUNCTIONAL MEDICINE.

The present tendencies in medicine are largely based upon functional studies and experiments. The prevention of disease and the study of function are preeminent characteristics of modern medicine. The control of infectious diseases made possible by the advances in bacteriology has materially affected the incidence of such diseases. In their place we have an ever increasing number of functional derangements of every sort. For the diagnosis and treatment of these latter conditions a knowledge of what constitutes normal function is absolutely essential. In connection herewith the biological sciences, especially physiology, biochemistry, and psychology take on new value, and offer great opportunities for future development.

In order that these new discoveries may be of the greatest usefulness, however, there is need for a better understanding of fundamental physiological principles, and a much wider appreciation of functional possibilities. To these must be added the ability to correlate new findings, and to detect departures from the normal in their early stages. It is only from such studies as these that we may hope to acquire that breadth and keenness of vision so essential today to offset the narrowness and concentration of specialism. The old proverb of not being able to see the wood for the trees returns to mind with added vigor and warning.

Another advantage to be hoped for from these new physiological developments, is a return to simple remedies and the prescribing of healthful rules of life. The pride of many patients may suffer, and some of our methods of cure may have to be radically changed, but our diagnoses will be more fundamental and our therapeutics more vital.

THE ARTFUL ANOPHELINÆ.

Most of us associate the malarial mosquito with cesspools, marshes, swamps, etc., and are apt to forget that this wily insect may make use of very unexpected places to rear her offspring. This is brought to mind by a recent issue of the *Public Health Reports* (also NEW YORK MEDICAL JOURNAL, December 2d, page 1110), which contains a communication from Acting Assistant Surgeon W. J. Stewart, on duty at La Guaira, Venezuela. The American consul at this place had complained of the unusual prevalence of mosquitoes in his offices. Accordingly the immediate vicinity was searched for breeding spots, these being sought for in the usual places, such as rain gutters, sewers, etc. But no larvæ were found. By chance, however, attention was called to the water cooler in use in the office. This was of the inverted type where an ice chamber surrounds a porcelain compartment through which the water passes. Here it was that the mosquitoes were finally found, breeding in the ice cold water! The installation of thorough daily attention to the ice chamber was followed by the complete disappearance of the mosquitoes.

This utilization by the mosquito of a medium which we should think offhand would be incapable of supporting such forms of life should be a warning to us not to neglect any collection of standing water when we are on the search for the breeding places of the anophelinæ. Water coolers, water pitchers, flower vases, in fact any place where water is allowed to stand for a day or more, may become a focus of trouble, and we should not feel contented until we have investigated all such places.

PROTECTIVE OR DESTRUCTIVE?

One of the important problems before the physician day after day, is to determine whether a phenomenon of disease indicates that the body is being injured or protected thereby. It used to be supposed that a rise of temperature was always injurious, and in the days when that theory held sway every means was used to bring the temperature back to normal. At present the idea is advanced, if not substantiated, that fever is indicative of the attempt of the body to destroy or inhibit, by high temperature, the growth of bacteria, and, such being the case, the hyperpyrexia should be let alone unless it becomes too great. We know, however, that the body temperature may become elevated without bacterial invasion, so that, if sometimes a blessing, more or less in disguise, high temperature as in heat stroke may also be a curse. The rapid heart which accompanies infection would seem always to be a part of the general protective reaction, yet there are still those who, in the presence of such a symptom, invariably resort to aconite or veratrum. We know that diarrhea is a protective phenomenon, but is it always so? We know that coughing is a protective mechanism and needs usually to be encouraged, but again where there is nothing to clean from the air passages it is far from useful, and ought to be checked. Sneezing is undoubtedly protective, but not for the victim of hay fever. Because the measuring of blood pressure is a new procedure, a pressure above the usual has seemed a sign of menace, when, in many instances, it is merely a sign of compensation for incurable faults, and the patient is worse off if attempts are made to decrease the pressure. Again, thirst was once considered an abnormal condition in the feverish patient, and he was further tortured and injured by restriction in the amount of water he should consume.

Practically all symptomatic treatment—and most medicinal treatment is symptomatic—depends for its value on this determination of whether a function is increased or decreased to the advantage of the patient, and hence, whether we are to stimulate or check the activity of an organ. It does not do to follow fixed rules in the matter, for, like the firm believer in the importance of coloration in animals, we may be puzzled by finding a medical condition analogous to the coexistence in the same surroundings of both a black and a white animal. While strict laws cannot be laid down to cover all cases of overfunction or underfunction, it would be a great help if we knew more definitely about some of these phenomena. It is not yet established that fever is always, or ever a protective measure in infections; loss of appetite is by no means always understood, and we are much at sea whether the craving of the sick for certain foods is to be yielded to or denied. It would seem that much useful experimenting might be carried out along these lines for the establishment of better rules of guidance in such important matters.

NOMENCLATURE: ENTERIC AND TYPHOID.

Dr. Aldo Castellani writes from Rome to the *Lancet* for November 25th apropos of a recent suggestion that the term, enteric, should be used to cover the three infections, typhoid, paratyphoid A, and paratyphoid B, while the term, typhoid, was to be restricted to cases caused by the Eberth-Gaffky bacillus. Doctor Castellani points out that this distinction was made in 1913 in the second edition of the *Manual of Tropical Medicine*, written by him in collaboration with Doctor Chalmers.

AN UNUSUAL CAUSE OF ABORTION.

Joseph E. G. Calverley, of Folkestone, communicates to the *Lancet* for November 18, 1916, a case where the Fallopian tube became engaged in the sac of a femoral hernia and so caused abortion. The patient, aged thirty-six years, who was pregnant four months and had come to Folkestone for a holiday, was seized with acute abdominal pain in the left lower abdomen while at an entertainment. The following day (August 18th) the pain continued and was referred to the left femoral region, where a swelling the size of a chestnut was detected. This swelling was painful to the touch. The same day a blood stained vaginal discharge appeared, which was the starting of a miscarriage. For a few days there was no evident change in the swelling in the left femoral region, but on August 24th there was marked increase both in the severity of the pain and also in size, which called for surgical interference. The operation revealed a femoral sac containing a deeply congested, almost black Fallopian tube and its fimbriated extremity. This was excised. The following year the patient gave birth to a living child.

THE INDEX CATALOGUE.

One of the pleasures of editing a medical journal lies in the periodical welcoming of a new volume of the *Index Catalogue* of the library of the Surgeon General's office, United States Army. We have just received Volume XXI of the second series, authors and subjects, taking in titles from Waterworth to Zysman, and are again glad to note the scholarship, the care, the patience, and accuracy displayed in getting out the monumental production. Indispensable to professional medical writers, the catalogue should be welcome to all physicians of literary tastes, particularly at the remarkably low price, two dollars a volume. Lieutenant Colonel C. C. McCulloch, Jr., librarian of the surgeon general's office, gives a full list of the generous donors during the past year to the army's collection of books.

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Obituary

PHILIP MILLS JONES, M. D.,

of San Francisco.

Dr. Philip Mills Jones died at his residence in San Francisco on November 27th. He was born in Brooklyn-New York, on January 17, 1870, and was consequently in his forty-seventh year. He was educated at the Polytechnic Institute of Brooklyn until 1886, after which he spent a year at New York University. He graduated as M. D. from Long Island College Hospital in 1891, and practised medicine in Brooklyn until 1900, when he moved to San Francisco to take up archeological work for the University of California. In 1902 he became editor of the *California State Journal of Medicine,* a position he retained until his death. Doctor Jones was married only last year. He was a trustee of the American Medical Association, and had been vice-president of the American Academy of Medicine and secretary of the Medical Society of the State of California.

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News Items

Drug Habitués in New York State.—At a public hearing held by the legislative committee which is investigating the drug habit evil in this State, the statement was made that there were 200,000 persons in New York State addicted to drugs.

Harvey Society Lectures.—The fourth lecture in the course will be given on Saturday evening, December 16th, by Professor Henry H. Donaldson, of the Wistar Institute of Anatomy and Biology, Philadelphia, his subject being Growth Changes in the Mammalian Nervous System. The fifth lecture will be given on January 13th.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Tuesday, December 12th, Pediatric Society; Wednesday, December 13th, County Medical Society; Thursday, December 14th, Polyclinic Ophthalmic Society, Pathological Society; Friday, December 15th, Jefferson Hospital Clinical Society.

State Hospital Changes Name.—The name of the Long Island State Hospital for the Insane has been changed to Brooklyn State Hospital. The change in name was made to avoid confusion with the Long Island College Hospital. These two institutions are in two widely different parts of the city and there should be no further trouble over the misdirection of letters, packages, or patients.

Long Island College Hospital.—At a conclave of the student body and the faculty of the Long Island College Hospital, Brooklyn, held on Monday, December 4th, the graduating class presented to the college a photographic portrait of the late Dr. Joseph H. Raymond, formerly secretary of the faculty and professor of hygiene in the college. Dr. John D. Rushmore, dean of the faculty, made the address of acceptance.

Surgeons Wanted for War Hospitals.—The French War Relief Association has received an urgent call for two surgeons to take full charge of the operating wards of two military hospitals in France. The association will defray the cost of transportation to and from the hospitals, and the immediate needs of the surgeons will be met by the institutions. Applicants should address Dr. Joseph Leidy, 1319 Locust Street, Phiiadelphia.

The Mütter Lecture.—The 1916 Mütter Lecture on Surgical Pathology of the College of Physicians of Philadelphia will be delivered on Friday evening, December 15th, by Dr. Nelson M. Percy, of Chicago, professor of clinical surgery in the Medical School of the University of Illinois. His subject will be Pernicious Anemia with Special Reference to Its Surgical Management. All physicians are cordially invited to be present.

The Academy of Medicine to Organize a New Section.—Fellows of the New York Academy of Medicine are planning to organize a Section in Historical Medicine. The organization of new sections is provided for in Article VI of the constitution, which reads as follows:

> The academy may be divided into as many sections for the transaction of scientific business as may be recommended by the Council, after a request in writing by twenty or more Fellows, and approved by a three fourths vote of the Fellows present and voting at a stated meeting of the academy.

American Aid for Belgian Physicians.—Dr. F. F. Simpson, of Pittsburgh, treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, reports that during the quarter ending November 30, 1916, two contributions to the fund were received, one of $10 from Dr. Edward E. Mayer, of Pittsburgh, and one of $1.40 from Dr. W. C. Cahall, of Philadelphia. This is Doctor Cahall's third contribution. The total amount received by the committee is $7,958.26; total disbursements amount to $7,310.04, leaving a balance on hand of $648.22.

Ohio Valley Medical Association.—At the eighteenth annual meeting of this association, held in Evansville, Ind., Wednesday and Thursday, November 21st and 22d, Dr. William Shimer, of Indianapolis, was elected president, and other officers were elected as follows: First vice-president, Dr. J. Rawson Pennington, of Chicago; second vice-president, Dr. W. F. Boggess, of Louisville; third vice-president, Dr. M. L. Heidingsfeld, of Cincinnati; secretary and treasurer, Dr. Benjamin L. W. Floyd, of Evansville, reelected.

New Officers of Tri-State Medical Association.—At the thirty-second annual meeting of the Tri-State Medical Association of Mississippi, Arkansas, and Tennessee, held in Memphis recently, Dr. J. W. Gray, of Clarksdale, Miss., was elected president, and other officers were elected as follows: Dr. Rogers Hays, of Carrollton, vice-president for Mississippi; Dr. R. W. Griffin, of Tiptonville, vice-president for Tennessee; Dr. Floyd Webb, of Turrell, vice-president for Arkansas; Dr. J. L. Andrews, of Memphis, reelected secretary; Dr. J. A. Vaughan, of Memphis, reelected treasurer. Memphis is the permanent meeting place of the association.

The Sale of Red Cross Christmas Seals in New York.—There are three agencies for the sale of these seals in New York, namely, the State Charities Aid Association, which manages the sale throughout the State, including Staten Island; the New York Committee, which manages the sale for Manhattan and the Bronx, and the Brooklyn Tuberculosis Committee, which manages the sale of seals in Kings and Queens. Attention is called to the fact that the Brooklyn committee is entirely separate from the committee which manages the sale of seals in Manhattan, and only those seals which are sold in Brooklyn are credited to that borough. For the past two years Brooklyn has sold more seals in the United States than any city.

Columbia University.—Dr. E. E. Southard, professor of neuropathology in the Harvard Medical School and director of the Psychopathic Hospital, Boston, has been appointed nonresident lecturer in psychology in the College of Physicians and Surgeons. Dr. Alexander Lambert has been appointed professor of clinical medicine, and the following named doctors have been appointed instructors in medicine: Dr. Lewis Bibb, Dr. Edward L. Pratt, Dr. Edward C. Lyon, Dr. Charles E. Carr, and Dr. William Wheeler Cox.

Announcement is made of a gift of $5,000 from Mr. George L. Rives toward the medical school removal and rebuilding fund, and a gift of $750 from an anonymous donor toward salaries in the medical school.

Personal.—Dr. Barton K. Thomas, of Philadelphia, has been appointed an instructor in clinical medicine at the Jefferson Medical College.

Dr. William Hamilton Jefferys until three years ago a medical missionary in China, has been appointed superintendent of the P. E. City Mission of Philadelphia. Doctor Jefferys has taken an active part in the movement for occidental medical education in China.

Dr. Abraham Jablons, of New York, has been commissioned lieutenant surgeon of the White Cross Hospital and Relief Association, Incorporated, of Brooklyn, New York.

Dr. James J. Philips, of the University of North Carolina, has formed official connection with the medical department of the White Sulphur Springs, W. Va., bath establishment, and entered upon his duties on November 30th.

Dr. Ernest L. Walker has been appointed lecturer in tropical medicine at Harvard Medical School.

Dr. Hugh Cabot, of Boston, who was surgeon in chief of the Harvard unit at General Hospital No. 22, British Expeditionary Force in France, from June 29th to September 9th, and was succeeded by Dr. Daniel F. Jones, will soon return to France to act as head of the unit until the end of the war.

Dr. Joseph M. Thüringer, of Harvard Medical School, has been appointed head of the department of anatomy of the School of Medicine of the University of Alabama. Dr. Claude W. Mitchell, of Chicago, has been made head of the department of physiology and pharmacology.

Section in Pediatrics of the Academy of Medicine.—The following program has been arranged for the next meeting of the Section in Pediatrics of the New York Academy of Medicine, which will be held on Friday evening, December 15th: Report of a case of tuberculosis from ritual circumcision, by Dr. Mark S. Reuben; The History of Pediatrics in New York City, by Dr. Abraham Jacobi; The Problem of the Cardiac Child, by Dr. L. Emmett Holt; The Open Air Treatment of the Cardiac Child, by Dr. Herbert B. Wilcox; The Elucidation of Some Arrhythmias of the Heart in Children by Means of the Electrocardiograph, by Dr. Robert H. Halsey. The discussion will be opened by Dr. Walter B. James, president of the academy.

Bronx County Medical Society.—The annual meeting of this society will be held at Ebling's Casino, St. Ann's Avenue and 156th Street, the Bronx, Wednesday evening, December 20th, at 8:30 o'clock. The program includes a paper by Dr. William P. Healy on Incontinence of the Urinary Bladder in Women and a paper by Dr. John H. Telfair on Indications for Cæsarean Operation. The election of officers will take place at the close of the scientific session. At the November meeting of the society the following nominations were made: For president, Dr. J. Lewis Amster and Dr. Herman T. Radin; for first vice-president, Dr. John Decker and Dr. William M. Dunning; for second vice-president, Dr. Maximilian Zigler and Dr. Maurice Silverman; for treasurer, Dr. Philip Eichler; for secretary, Dr. Isadore J. Landaman and Dr. Vincent S. Hayward.

A Scotch Hospital Established in Brooklyn.—The Caledonian Hospital, situated at 53 Woodruff Avenue, corner St. Paul's Place, Brooklyn, was opened recently. It is the first Scotch hospital in America and is nonsectarian. Dr. William J. Cruikshank is president of the medical and surgical staff and Dr. William H. Rankin is secretary. The following are the heads of the different departments: Medicine, Dr. William J. Cruikshank; surgery, Dr. William H. Rankin; obstetrics and gynecology, Dr. Albert M. Judd, with Dr. Victor Robertson associate; genitourinary surgery, Dr. Robert Burns Anderson, with Dr. Burton Harris associate; neurology, Dr. Carroll L. Nichols; pediatrics, Dr. Walter D. Ludlum; ophthalmology, Dr. P. Chalmers Jameson; laryngology, Dr. Robert L. Moorhead; otology, Dr. Nathan T. Beers; röntgenology, Dr. William H. Wallace; anesthesia, Dr. Richard Mills.

New York Diagnostic Society.—Announcement is made of the organization and incorporation of this society, with the following officers to serve for the first year: President, Dr. Joseph Mandelbaum; first vice-president, Dr. De Witt Stetten; second vice-president, Dr. Otto Hensel; treasurer, Dr. Julius Auerbach; secretary, Dr. Monroe Künstler. The object of the society is to foster the establishment of institutes for group diagnosis, and it was organized through a suggestion, which Dr. Charles H. Mayo, of Rochester, Minn., recently made in an address before the Catholic Hospital Society of Milwaukee, in which he emphatically expressed the opinion that the one great need in hospital advancement was an institution devoted exclusively to diagnosis. Doctor Mandelbaum made an extended stay at the Mayo clinic last year, where he undertook an intensive study of their system and also of other important American clinics with the same object in view. Over three hundred practitioners of medicine in New York city and vicinity have already enrolled themselves as associate members of the society.

On Tuesday evening, December 5th, Doctor Mandelbaum was honored with a dinner by the society and influential lay citizens who are deeply interested in this project. Many physicians and citizens were speakers, among whom may be mentioned Dr. Robert T. Morris, of New York; Dr. Judson Daland, of Philadelphia; Dr. Ira S. Wile, of New York; Mr. Cleveland Moffett, the author; and the Hon. George Gordon Battle. The society is planning to establish in New York the first diagnostic hospital in this country, and nearly $100,000, about half the amount needed for buildings and site, has already been pledged.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-seventh Communication.

NEPHRITIS.

Concerning the several means and methods used in cases of nephritis, both acute and chronic, only a few words may be said explanatory of the pharmacodynamics involved. Whenever the eliminative function of Bowman's capsule is interfered with through the pressure of inflammation products there is retention in the blood stream of excess liquid approaching in quantity the amount of the diminution of the urine. Failing of excretion this liquid infiltrates the cellular tissues of the body as the osmotic pressure rises. There is considerable reason for believing that threatening eclampsia is due more to this accumulating liquid and pressure, than to the urea that may be retained: consequently anything that relieves this pressure, like free diaphoresis, alleviates the symptoms and wards off the danger. In these cases, diaphoresis is best induced by wrapping the patient in woolens, applying heat externally, and giving hot drinks, or enemas. Relief from the urgent symptoms is usually rapid, though extremely minute amounts of urinary solids are found in the perspiration thus induced. The principal drug available for the promotion of sweating is pilocarpine, which acts by stimulating the sweat glands at the nerve terminations: but this drug, because of the severity of its action on other glandular structures, is not recommended except in grave emergencies.

Diuretic drugs in acute nephritis are of little use, since the mechanism upon which the drug is supposed to act is rendered nearly functionless by the pressure from intercellular exudation products. In the parenchymatous type of chronic nephritis, there is a similar interference with function becoming increasingly marked in the later stages. If any diuretic is indicated, caffeine citrate is the most efficient to use judging from its effects on the normal kidneys; but there is ever present a doubt as to whether the epithelial irritation produced will ultimately prove beneficial or otherwise; especially since not a few of these chronic cases have their etiology in long continued, local irritations similar to that produced by caffeine. Probably in some few selected instances, however, caffeine will prove temporarily helpful: such cases are the comparatively rare ones manifesting a low arterial tension.

Where the blood pressure is high, and arterial elasticity is low a different course must be followed. Here the immediate danger is not from the "uremia" of heightened osmotic tension, but from an impending rupture of sclerosed arteries due to the high blood pressure. In these circumstances the best available drug is nitroglycerin, which has a detonizing action on arterial musculature thereby tending to a lowering of blood pressure through peripheral dilatation, especially in the splanchnic area. but since a tolerance for the drug is gradually acquired, the initial dose of 1/100 grain must be steadily increased to maintain the desired effect, the dose in later stages rising as high as one twentieth grain for eliciting the same fall in blood pressure as by the initial dose.

An interesting experiment by Dr. Crile involves the hypothesis that high blood pressure in chronic Bright's disease is due to augmented afferent impulses to the suprarenal glands. In a case reported, severing of these nerves was at once followed by a remarkable fall in blood pressure. Of course this operation probably has small effect on the progress of the disease, but it may easily prolong the life of the patient by protecting him from an apoplectic attack.

Medicines can have little curative influence in chronic Bright's disease, inasmuch as the main difficulty is the increasing fibrous change, and drugs have apparently no effect in reducing this condition.

Treatment of the Vomiting of Pregnancy by the Duodenal Tube.—B. H. Gray (*Virginia Medical Semi-Monthly*, October 27, 1916) asserts that, while in mild cases of this disorder medication and general hygienic measures suffice, in the pernicious cases the constant vomiting makes it difficult or impossible to medicate or cleanse the intestine. High colon irrigations will relieve the large bowel, but vomiting will continue unless the small bowel is also relieved of toxic products. He has been favorably impressed with the efficiency of the duodenal tube in these cases, and now uses the tube regularly. He employs a modification of the Jutte tube about the thickness of a No. 13 French catheter. The tube is marked at fifty-six cm. (the distance from mouth to pylorus), again at seventy and eighty cm. The tube is introduced into the empty stomach much as a stomach tube, the patient swallowing and breathing deeply as it is gently pushed in. When the first mark has been reached, the patient is placed semiprone on the right side and six to eight ounces of a hypertonic sodium sulphate solution are injected with a glass syringe. The pylorus is thereby relaxed, and after waiting one quarter to one hour the physician pushes in the tube to the second mark, the syringe being used frequently to aspirate during the interval. When none of the fluid introduced is being aspirated, or if bile stained fluid is obtained, the tube is supposed to have entered the bowel, and a litre of a solution of four to six drams of granular sodium sulphate is now slowly injected, with aspiration from time to time to make sure that the fluid is passing in. With a stethoscope over the abdomen active peristalsis can be heard. Within two or three hours copious watery stools, exceedingly offensive, are passed. The tube may be left in place and used for duodenal feeding, but Gray has found the latter superfluous, the patients being able to begin taking fluids a few hours after the treatment. It was never necessary to repeat the use of the tube when the patients carried out the hygienic treatment advised. The author does not consider that treatment with the duodenal tube will cure all pernicious cases, for in some hepatic degeneration is always such as to preclude regeneration. The procedure will, however, relieve many cases hitherto refractory. He also advises that abnormal pelvic conditions, such as retroversion, or incarcerated uterus, and ovarian or other tumors, be looked for and corrected, as many cases of mild toxemia occur in which a reflex element exists.

Epidemic Meningitis.—W. T. Connell (*Canadian Med. Assoc. Journal,* October 1916) says that as soon as the diagnosis has been confirmed by lumbar puncture, treatment with a polyvalent serum should be instituted. As much fluid as will flow away freely should be allowed to drain out through the puncture needle, the amount varying from thirty to sixty c.c. in adults, and then by gravity a smaller amount of the serum should be allowed to flow in, from twenty to thirty c.c. being sufficient for the first treatment. At once five to ten c.c. of the serum should be injected intravenously, and about ten c.c. intramuscularly. The intraspinous and intramuscular injections are repeated in twelve hours, and then every twenty-four hours till the fever falls and the symptoms abate.

Treatment of Entamœba histolytica Infection. Clifford Dobell (*Brit. Med. Jour.,* November 4, 1916) reports the effectiveness of treatment with injections of emetine hydrochloride compared with that of the oral administration of emetine bismuth iodide in a carefully controlled series of cases. All of the patients in the first series were given from eleven to fourteen daily injections of 0.065 gram each of emetine hydrochloride subcutaneously and their stools were examined frequently for fairly long periods after the completion of treatment. Of twenty-one patients thus treated only seven were apparently cured, the remaining fourteen all relapsing except five who were not even temporarily freed of amebas. In the relapsing cases the amebas were first found again at times varying from the first to the sixteenth day after the end of treatment. The second series of treatments was carried out in these fourteen uncured cases from the first series. Eleven of these patients were given 0.065 gram of emetine bismuth iodide three times daily, in cachets, for periods of twelve days. Every one of these patients was promptly and apparently permanently cured. The drug was well borne by most, although a few complained of some nausea after taking it. Two of the three control cases treated by a second course of emetine hydrochloride hypodermically in daily doses of 0.065 gram were unaffected by the treatment, while the third had his stools freed of parasites for three days, after which he again relapsed. Two of these same three patients were then treated with the emetine bismuth iodide, and both were promptly cured. Finally, a series of new cases of carriers were given emetine bismuth iodide with cure in all. It was noted in the course of this study that many of the patients were also infected with Entamœba coli, Lamblia and Chilomastix, and in no case were these parasites removed from the feces.

Treatment of Bacillus pyocyaneus Infection. Kenneth Taylor (*Journal A. M. A.,* November 25, 1916) recalls that much trouble in the healing of wounds has been encountered from their infection with the Bacillus pyocyaneus. This organism has proved very difficult of removal from infected wounds. Studies were undertaken to discover a means of ridding the tissues, and it was found that the organic acids seemed specifically inimical to its growth. Of these acetic was the most effective. On the strength of experiments with this and other disinfectants in vitro clinical use was made of a one per cent. solution of this acid in normal saline. Comparative observations were made of the effects of a number of other disinfectants in a large series of cases, but none was found which would remove Bacillus pyocyaneus from the wounds except the solution of acetic acid.

Simple Aseptic Vaccination.—Echlin S. Molyneux (*Brit. Med. Jour.,* November 4, 1916) states that it is possible to eliminate local infections by the following simple technic for vaccination. The skin is thoroughly disinfected by rubbing with methylated spirit; after breaking off one end from a tube of lymph, the end is sterilized in the flame for a moment, and the lymph driven out on the patient's arm by heating the sealed end of the tube with a match. The needle is next sterilized in the flame, the lymph spread, and the skin scarified through it. A piece of sterile gauze is then closely strapped to the patient's arm by wrapping adhesive plaster several times about the arm and pad. This dressing remains in place for five days, when the vaccination is inspected, and a fresh dry dressing of boric lint is applied. With a little practice the method is simple and rapid so that each vaccination requires less than two minutes.

Factors Influencing the Production of Immunity in Vaccination against Smallpox.—L. Camus (*Bulletin de l'Académie de médecine,* October 17, 1916) refers to the highly discordant views hitherto expressed as to the rapidity with which immunity is developed upon vaccination, the necessity for more than a single point of inoculation, etc., and reports illuminating results obtained in experimental intravenous vaccination in rabbits. Immunity appeared constantly on the fifth day in rabbits receiving one c.c. per kilogram of a one in 100 dilution of vaccine. Marked variations appeared, however, when the dose injected was changed. Upon injection of only 0.5 c.c. of a one in 10,000 dilution immunity was complete only on the tenth day, while upon injection of five to ten c.c. of a one to four per cent. dilution immunity was very pronounced by the fourth day, or even a little earlier. Immunization by the cutaneous route led to similar observations. Thus, activity and dose of vaccine are clearly more important factors in the rapidity of immunization than individual peculiarities. While a single pustule may confer immunity as well as six, the time required is much greater, especially if the vaccine is a feebly active one. During an epidemic the use of a strongly acting vaccine seems advisable.

A Successful Method for Correcting Fallen Arches.—C. E. Stephenson (*Indianapolis Medical Journal*, November, 1916) states that he takes an impression of the bottom of the foot with a modelling compound, such as is used in dental laboratories. From this impression a plaster cast is made, being trimmed down before hardening to the shape and length desired, according to the location of the trouble in the particular foot being treated; it is necessary for the arch support to be very much longer when the disorder is in the transverse arch. After the cast is sufficiently dry there is built over it the arch support, using for this purpose a hardening cement which is not affected by moisture, perspiration, or heat under 300 degrees. The amount of cement used is governed by the weight of the patient. After going through a curing process extending over several days' time the arch support has the proper flexibility where it is needed, and is very firm where it is desired to have it rigid. The skeleton of the arch support is then covered with thin leather, giving it a neat finish. This leather covered arch support is light in weight, it does not change in shape as do those made of leather and steel, it is comfortable, and can be remodeled by the aid of moist heat to suit the improved foot. The writer says that the results he has obtained with this method are most gratifying.

Intravenous Tartar Emetic in Kalaazar.—Leonard Rogers (*Lancet*, November 4, 1916) reports that antimony, in the form of tartar emetic, has proved a specific in this very fatal disease, but until recently it has been difficult to give enough of it to cure the disease in man. Rogers has been employing it in the form of a two per cent. solution injected intravenously, and has secured the most striking results. Of eighteen cases so treated thirteen have been cured, two greatly improved, two improved, and one ended fatally from tuberculosis after the parasites had disappeared from his spleen. Two of the patients who were not cured left the hospital before the treatment could be completed, and in the other two the treatment was still being given when the report was made. These results are compared with the usual mortality of seventy-eight to ninety-six per cent. The best results were secured by Rogers from doses of eight to ten mils every three days. Such doses were never given at first, but treatment was usually started with a dose of four mils and the dose increased at each succeeding injection until the patient's tolerance was determined, or until a dose of ten mils was reached. Treatment was continued for a mimimum of several weeks after the fever had disappeared. Great pains were taken in giving the injections to be sure that none of the drug escaped into the subcutaneous tissues, as that accident would cause abscess and retard treatment. The earliest toxic symptom of importance indicating the need for a reduction in dose was found to be vomiting. Under treatment the fever disappeared first, then the parasites could no longer be found in the spleen, and finally the blood picture began to return to normal, and the patient gained weight. In several cases which have been followed up for from four to twelve months since cessation of treatment, there has been no recurrence.

Treatment of Bladder Tumors.—Bernardino Maraini (*Revista de la Asociacion Medica Argentina*, August, 1916) considers that the high frequency current is the treatment of election in papillomata of the bladder. In malignant neoplasms extirpation of the tumor is preferable with high frequency applications to the peduncle. In infiltrated neoplasms which cannot be removed by operation these currents suppress hemorrhage and soothe pain, although they do little good in carcinoma or sarcoma. Advantages of the high frequency treatment are that no anesthetic is necessary; the operation is done in sight; there is produced neither pain, reaction, nor hemorrhage; there is no ulceration nor scar; the patient can continue his usual occupation; and the destruction of the tumor can be carefully watched through the cystoscope. Slight disadvantages are the length of time required, the possibility of increasing vesical irritability in cystitis, and the difficulty of the technic in certain locations of the tumor.

Method of Injecting the Facial Nerve for Spasm.—George M. Dorrance (*Journal A. M. A.*, November 25, 1916) writes that it is absolutely essential to differentiate carefully between true facial spasm and the tics, since the treatment by injection is contraindicated in the latter conditions. Spasms are limited to the motor mechanisms, cannot be imitated voluntarily, cannot be inhibited voluntarily or by strong emotions, involve the entire distribution of the facial nerve, are painful to the patient, and are often limited to parts of a muscle, depending upon its innervation and the extent of the development of the spasm. The most satisfactory treatment for facial spasm is the temporary paralysis of the entire facial nerve at its exit through the stylomastoid foramen. The usual technic for its injection is fraught with considerable risk of perforation of the jugular vein and is inaccurate, often requiring many punctures for success. On the strength of these facts the author has devised a simple, easy, and safe method of injection. A trocar and style needle ten centimetres long and four tenths centimetre in diameter is inserted at the angle of the jaw through an anesthetized area, novocaine being used for this purpose. The needle is directed upward and backward until the tip strikes the base of the mastoid, which can be determined by palpation with the finger. The handle of the needle is then elevated and its point made to pass backward, inward, and a little downward until it can be felt to enter the stylomastoid foramen. The style is then removed and if no blood flows a little over two mils of seventy per cent. alcohol is injected. If the needle is in the foramen there will be immediate paralysis of the entire facial nerve. Some discomfort is associated with this paralysis at first and it is necessary in the beginning to guard against the drying of the cornea on the paralyzed side owing to the loss of the wink reflex. All spasm and associated pain is at once relieved. The muscles of the face should be massaged to prevent their wasting, and in a few weeks to several months the function of the nerve returns completely. In some cases spasm returns some time after the restoration of function, and it is then necessary to repeat the injection.

Mouth Disinfection in the Prophylaxis and Treatment of Pneumonia.—Wadsworth (*Journal of Infectious Diseases,* October, 1916) reports an extensive study of the action of various mouth washes upon the pneumococci, the result being that the commercial solutions examined proved very unsatisfactory. The combination that proved most effective was one containing thirty per cent. of alcohol combined with glycerin in an isotonic solution of alkaline salts. After using this latter as a mouth wash, pneumococci were not found in the secretions under normal conditions.

Streptococci from Scarlatinal and Normal Throats.—Ruediger (*Journal of Infectious Diseases,* October, 1916) reports that he finds streptopyogenes constantly and in abundance on the tonsils of patients suffering from tonsillitis and scarlet fever, if examined before the inflammation of the throat has subsided. There is also present in all normal, and in nearly all diseased throats, a large group of organisms which lie between the typical streptopyogenes and the pneumococcus. This group can be differentiated from the latter, both morphologically and culturally. They have very little virulence for rabbits and appear to be normal inhabitants of the throat.

Treatment of Pneumonia.—B. S. Price (*American Journal of Electrotherapeutics and Radiology,* September, 1916) states that during the stages of engagement and of hepatization, thermopenetration, properly conducted, gives prompt relief, and decreases the mortality percentage. With the patient reclining, two uncovered metal electrodes are placed at opposite points over the involved area. They should be warm and dry. When the diseased tissue lies midway between them, they should be of equal size, viz., seven by eight inches. When the tissue lies much nearer one of the electrodes, that one should be larger. If both lungs are involved, the electrodes may be placed laterally. A hot wire metre reading of ten milliampères is comfortable to start with. After four or five minutes, or as soon as perspiration sufficient for good conduction has supervened, the milliamperage may be augmented to 1700 or 2000. to be continued for twenty to thirty minutes, in the stage of engorgement, and to 1400 in the stage of hepatization. The effects consist of diminution in dyspnea, cough, pain, distress, cyanosis, and nervous excitability, and a softening of the pulse and deepening of respiration. The patient usually sleeps comfortably after the treatment. In a moderately severe case the treatment should be repeated in six hours, and thereafter every eight hours till resolution is established—usually within forty-eight hours in consolidation cases. Still better results in cases associated with nephritis, arteriosclerosis, or intestinal toxemia, are obtained by administering an oven bath two hours after the first thermopenetration treatment. A temperature of 450° F. of the oven air should be quickly reached and maintained until the pulse slows and softens (if previously tense and full). The patient is then transferred without exposure or effort to water at 107° F., and finally placed in bed, where he sleeps several hours. He feels and is much better on awakening. The temperature, as a rule, drops several degrees in a few hours, and almost always resolution becomes established within twenty-four hours. When both thermopenetration and oven bath are applied daily, the former need be given only every twelve hours. Occasionally, in intense engorgement with arteriosclerosis, venesection is beneficial. Calomel should be given at the outset, followed by a saline, or castor oil if the stomach will tolerate it.

Penetrating Wounds of the Abdomen.—T. Crisp English (*Lancet,* October 28, 1916) concludes from an experience in seventy-one cases that operations for such wounds are undesirable unless they can be done under good surgical surroundings and by an experienced operator; for if these conditions are not fulfilled failures will be commoner than successes. It is most important to have the patient sent to a satisfactory operating station as soon as possible if the transportation can be made with reasonable safety. Patients with a pulse rate above 130 had better not be moved, but should be kept absolutely quiet, warm, and continually under the influence of morphine. They should also be given saline infusions, either by rectum or otherwise. Where the patient's condition is not favorable for operation the same plan should be adopted until improvement has taken place. No patient with a pulse rate above 140 should be subjected to operation. In giving morphine the indication for the size and frequency of the doses should be the degree of pain. The operation itself should be performed as expeditiously as possible and such steps should be taken as the individual case demands, but these will be chiefly intestinal suture and resections. Of the seventy-one patients operated upon only thirty-nine recovered.

Treatment of Wounds.—M. Winands (*Medizinische Klinik,* October 8, 1916) states that the general methods employed in the dressing of wounds, whether they are aseptic or suppurating, bring gauze or other similar material into direct contact with the surfaces and particularly with the edges of the wounds. The disadvantages of this are many, but the most important are that the dressings become adherent to the surface at the margins and their removal interferes with epithelialization and delays healing; the removal causes more or less pain; and, finally, the dressings become saturated with the discharges, which then dry and confine the remaining discharges so that the wound macerates in them. These unfavorable conditions can be overcome readily by treating the wound or ulcer with the desired remedy, applying to the edges and for some distance beyond them to the healthy skin some form of oily salve, such as zinc oxide, and covering the whole area with a sheet of gutta percha with extends beyond the margins of the wound. Over this is applied a sterile dry gauze dressing to absorb the secretions which escape between the gutta percha and the greased skin. Such a dressing can be left in situ for many days, only the outer layers of gauze being changed when they become soiled. Under such a dressing the wound becomes clean, healthy, and covered with bright red granulations over which the epithelium extends rapidly. This form of dressing has the further advantages of economy, of immobilizing the wound area, and of yielding pliable, soft scars.

Treatment of Gonorrheal Iritis by Polyvalent Vaccine.—S. G. Mansilla (*Revista de Medicina y Cirugia Practicas,* October 14, 1916) reports a case of iritis occurring in a man with an uncured gonorrheal urethritis of fourteen years' standing which was successfully treated with polyvalent gonococcus vaccine. The local reaction in the eye was violent following each injection, but the ultimate result was excellent.

Nitrous Oxide Analgesia and Anesthesia in Obstetrics. — Elmer L. Henderson (*American Journal of Surgery,* November, 1916) states that in nitrous oxide gas we have a safe and efficient analgesic which is worthy of general adoption in obstetrical practice, and one which clearly refuted the Biblical proclamation that "in sorrow thou shalt bring forth children," although the credit for painless labor has hitherto been claimed by Gauss and his *Dammerschlaf.*

Tuberculin in Ocular Tuberculosis.—R. B. Metz (*Cleveland Med. Jour.,* September, 1916) in a group of cases of ocular tuberculous manifestations records excellent therapeutic results, so far as the eyes were concerned, from the use of tuberculin in graded doses. The administration of tuberculin brought about apparent cure or marked improvement in five cases which were not benefited by the routine methods of treatment. The cases benefited or cured included two of phlyctenular conjunctivitis, one of phlyctenular conjunctivitis and scleritis, two of sclerosing keratitis, and one of sclerochroiditis.

Collosol argentum.—A. H. Boys (*Brit. Med. Jour.,* October 28, 1916) reports excellent results obtained from the use of this remedy in the following cases. A single subcutaneous dose of one mil cured a severe case of pyorrhea. Two drops placed in the conjunctival sac cured a case of acute ocular inflammation with corneal ulcer. Daily injections of 1.3 mil subcutaneously cured a case of postoperative suppuration and septic diarrhea. Oral doses of 0.6 mil cured suppurating tuberculous cervical glands in a child of three years. Finally, great improvement followed the subcutaneous administration of 1.6 mil of collosol argentum on alternate days in a case of pulmonary tuberculosis in an adult.

Treatment of Syphilis of the Central Nervous System.—I. C. Walker and D. A. Haller (*Archives of Internal Medicine,* September, 1916) report on seventy-five patients in whom three therapeutic methods—intravenous salvarsan alone, intraspinal salvarsanized serum alone, and the two procedures combined—were compared. The cases comprised forty-eight of tabes dorsalis, six of general paralysis, sixteen of cerebrospinal syphilis, and five of syphilitis meningitis. To them 450 intraspinal injections and 350 intravenous doses of salvarsan were given. The mode of preparation of the salvarsanized serum for intraspinal use was that of Swift and Ellis, save that larger doses of intravenous salvarsan—usually 0.5 and 0.6 gram—were given, the blood withdrawn one half instead of one hour later, and for the intraspinal injection from twenty to twenty-five c. c. of the whole serum instead of a diluted serum used. The results of the treatment showed that patients with recent syphilitic meningitis and cerebrospinal syphilis may be relieved symptomatically by intravenous salvarsan; the spinal fluid Wassermann reaction may become negative with one c. c. and the cell count normal. In patients with long standing cerebrospinal syphilis or tabes, however, though they may be benefited symptomatically by intravenous salvarsan, little or no change takes place in the spinal fluid. Patients with any of the syphilitic nervous diseases, recent or late, are much improved by combined intravenous salvarsan and intraspinal salvarsanized serum. Those in whom salvarsan alone fails, do improve both in symptoms and spinal fluid findings after the combined treatment. In many patients with negative serum reaction, but positive spinal fluid findings, the spinal fluid Wassermann and the globulin (Noguchi) test, become negative, and the cell count normal, following sufficient intraspinal treatment alone. In such patients the authors now dispense with intravenous salvarsan entirely. All patients with positive serum Wassermann are first treated with intravenous salvarsan alone.

Luargol, Dausz's New Antisyphilitic.—P. Pollio and C. Ruhl (*Riforma medica,* November 6, 1916) after the use of luargol in twenty-six cases conclude that its action is comparable to that of salvarsan and neosalvarsan, and that it is of service in all three stages of the disease. In addition to its antiluetic action it has a certain reconstructive efficacy which is of help in cases of syphilitic cachexia. Doses of 0.15 to 0.3 gram given every three to five days were well borne, but it is well to begin with small doses of 0.1 to 0.15 gram given in at least 100 to 150 c.c. of water.

Galyl in the Treatment of Syphilis.—Gordon Bates (*Canadian Journal of Medicine and Surgery,* December, 1916) states that he has used galyl for syphilis since salvarsan and neosalvarsan are not obtainable. It is a derivative of arsenobenzol, its full chemical name being tetraoxydiphosphoaminodiarsenobenzene. It contains 35.3 per cent. arsenic, and 7.2 per cent. phosphorus. It is a yellow powder and comes in ampoules of 0.4 gram each. It is insoluble in distilled water, but readily soluble after a small quantity of sodium carbonate has been added. It is administered in a similar manner as neosalvarsan, the contents of an ampoule being dissolved in distilled water (ten c.c.) and given intravenously by means of a ten c.c. syringe. The dose for an adult male is 0.3 gram; for a female, 0.25 gram. The contraindications include grave alterations in the heart and bloodvessels and serious disturbances of the central nervous system from e. g., far advanced general paresis, alcoholism, diabetes, or pulmonary tuberculosis. These contraindications are only relative, and usually small doses can be used. The author has used fifty-five tubes and concludes as a result of his experience: 1, clinical symptoms clear up rapidly; 2, the Wassermann reactions become negative as a rule in approximately the same time as with salvarsan or neosalvarsan; 3, that there is little reaction. Three cases showed nausea and in several cases there was a slight rise of temperature immediately after the treatment; 4, there is no evidence of thrombosis in veins following treatment. [We are informed that a small quantity of galyl has been imported recently.—Eds.]

Miscellany from Home and Foreign Journals

Further Studies on the Protein Poison.—Victor C. Vaughan (*Journal A. M. A.*, November 25, 1916) reports certain of the advances which have been made during the last year in the knowledge of the nature of the protein poison. It is pointed out that the peptone poison, proteoses, and the protein poison are closely related chemically, and that, probably, the active groups in all are identical or closely related. All proteins have been found to yield a poisonous group, which is the same or closely similar for all. The poison has been shown not to be betaiminoazolylethylamine, or a cholin derivative, but to be a derivative behaving much like the globulins. When proteins are fragmented to yield the poison the poisonous fragment gives the biuret test in much higher dilutions than do the residues; the same is true of its response to the xanthoproteic test, the Millon reaction, the Bardach test, and the ninhydrin test. The poisonous fragment fails to give the Molisch test, the Hopkins-Cole test, Benedict's modification of this test, and the benzaldehyde test. The results of these tests of the poisonous fragment show that it contains amide groups, benzin nuclei, and a high concentration of the monohydroxybenzin nuclei, but no carbohydrate groups. Finally it has recently been shown that substances in every way similar to the protein poison can be extracted from normal tissues such as brain, heart, lungs, spleen, liver, etc., and especially from the voluntary muscles. This latter finding suggests their occurrence as normal metabolic products, and their possible association with acidosis, eclampsia, uremia, etc., remains to be determined.

The Possibility of Lowering Gastric Acidity by Means of Diet.—P. I. Denisova-Suchevskaja (*Roussky Vratch*, July 9, 1916) cites a large number of authors to show a division of opinion with regard to the effect of diet on hyperacidity. While some gastroenterologists assert that a diet rich in meat and eggs diminishes hyperacidity by combining with the free hydrochloric acid, others maintain that such a diet stimulates gastric secretion and recommend a carbohydrate and hydrocarbon diet as the most suitable. Still others are of the opinion that diet has no effect one way or the other, the point of greater importance being the quantity of food given. His own conclusions are that a diet of vegetables and fats is of value in the treatment of hyperacidity because it remains in the stomach for a short time and does not stimulate gastric secretion, but brings about a permanent reduction of acidity. These conclusions are based on observations made in Professor Iarotzky's clinic The diet, as recommended by Professor Iarotzky, consists of the whites of three to four eggs in the morning and sixty to eighty grams of butter in the afternoon. In a day or two the whites of two eggs and forty grams of butter, unsalted, are given in addition, so that in about a week the patient receives the whites of eight eggs and 140 to 160 grams of butter daily. This diet contains about 1700 calories. In severe cases, and in gastric ulcer, the treatment is begun with the white of one egg and twenty grams of butter a day. Under this diet the patient neither asks for nor receives water. If thirst is excessive, enemas of sugar in water are given. In about ten days or two weeks, the whites are reduced to three or four, the butter to sixty or eighty grams and a limited amount of carbohydrates and fats added. These consist of puree of potatoes, rice, farina, and oatmeal, with butter. Later, vegetables well cooked and mashed, with the addition of butter but without salt are added. A number of cases are described in detail, showing that this dietetic regimen brought about a marked reduction of the hyperacidity and improvement of the symptoms.

Chronic Digestive Disorders in Children.—Charles Gilmore Kerley and Leon Theodore Le Wald (*Journal A. M. A.*, November 25, 1916) report that a study of a series of children with such chronic digestive disorders as repeated attacks of acute indigestion with vomiting, abdominal distention, repeated attacks of intestinal colic, habitually loose movements, extreme constipation, etc., showed that in a considerable proportion the disturbance was due to some anatomical abnormality in the alimentary canal which was discovered by means of the x ray. The conditions most frequently found were elongated sigmoid, colonic ptosis, pyloric obstruction, or combinations of these. Eighteen illustrative cases are reported. Treatment by relief of constipation, massage, gymnastics, suitable regulation of the diet, both as to amount at each feeding and as to composition, and the application of a modified Aaron band gave good results in most of the cases.

A Study of Diarrheas in Boston.—Joseph I. Grover (*Journal A. M. A.*, November 25, 1916) states that the records of the outpatient department of a children's hospital for one year were analyzed with respect to the diarrheas, a total of over 14,000 visits, about 3,500 new cases being included. Of this number there were 588 cases with diarrhea. There was nothing characteristic found in the topographical distribution of the homes of the patients. Males constituted fifty-six per cent. of the total. More than eighty per cent. of the cases occurred in children and infants who were below normal weight. The prognosis was found to be less favorable in infants born prematurely or much underweight than in others. Of the total of 588 cases, 347 occurred in children less than one year old, and 143 in those between one and two years old. The largest number of cases developed between the ages of two and four months. There was a close relation between the onset of the diarrhea and the time of weaning, showing that the more recent the weaning, the more likely was there to be diarrhea. The seasonal occurrence was greatest from July to September, inclusive. The occurrence of diarrhea seemed to be somewhat related to the height of the temperature, but much more closely to that of the humidity. This factor was the most constant single one encountered in the study of causes, especially that of the absolute humidity. The curves of this and of the incidence of diarrhea were almost parallel. In the diarrhea babies less than one year old only fourteen per cent. were wholly breast fed at the time of the illness, fifteen per cent. were on mixed breast and artificial feeding and seventy-one per cent. were wholly artificially fed. In the majority of the patients over one year of age the diet was faultless and could not be blamed for the diarrhea. In those below one year of age a large majority—excluding the breast fed—were being fed some fermenting food element in excess, and one third of all of the infants with diarrhea were receiving some form of proprietary food, excluding from such classification only lactose, Mead's dextrimaltose, Brooks's and Robinson's barleys, sucrose, and malt soups. Fifty-seven per cent. of all of the diarrheas in infants under one year of age on the bottle wholly or in part were due to carbohydrate fermentation.

Diagnosis of Abdominal Distention in Children.—Louis Fischer (*Medical Record,* November 25, 1916) remarks that abdominal distention is found in Hirschsprung's disease, in tuberculous peritonitis, in malignant new growths, especially sarcomata involving the kidney, and in cirrhosis of the liver. Enlarged spleen may cause distention, as may rickets, Potts's disease, hydronephrosis, typhoid and pneumonia. A marked leucopenia of 4000 to 6000 with distended abdomen should be suspected to be of typhoid origin even in the absence of the Widal and diazo reactions. In all cases of abdominal distention a rectal examination is imperative, while suspected pyloric obstruction calls for a bismuth meal and x ray examination. Colicky pains with tenesmus without expulsion of flatus or stool, but with jellylike blood tinged evacuations immediately point to intussusception. Great rapidity is characteristic of the course of acute abdominal inflammation in children and great care, therefore, is required in diagnosis with special attention given to the lungs, particularly the lower lobes.

Blood Pressure and Pulse Rate in Soldiers in the Trenches.—Pierre Menard (*Bulletin de l'Académie de médecine,* October 17, 1916) reports observations made for a period of eight months in twenty subjects, aged thirty-six to forty years. Irregularity was a feature in the curves obtained. The pulse pressure in a single subject varied under different circumstances from fifteen to fifty mm. of mercury. In the first line trench, 150 metres from the enemy both systolic and diastolic pressures were usually lessened, the pulse pressure itself diminishing slightly. Explosion of a large shell close at hand caused a distinct rise in the systolic, diastolic, and pulse pressures, which returned to normal within an hour. Fatigue and overwork always lessened the pulse pressure, and nearly always increased the diastolic. Blood pressure measurements are considered to afford the best criterion of fatigue requiring rest from active duty. Of ten subjects, seven showed regularly a higher pulse rate in the first than in the second or third line trenches. In one the pulse was unchanged and in the remaining two, slowed in the advanced trenches, in one instance to from forty-eight to sixty-four a minute. Fatigue usually slowed the pulse rate.

Acute Adrenal Inflammation in Pernicious Malaria.—G. Paisseau and H. Lemaire (*Bulletin de l'Académie de médecine,* October 17, 1916) report that in certain pernicious malarial paroxysms they noted signs suggestive of adrenal involvement, such as low blood pressure without disturbance of cardiac rhythm, vomiting, diarrhea, lumbar and abdominal pains, and the Sergent-Bernard white line phenomenon. In three autopsies marked adrenal changes were found, with only slight lesions in the kidneys, liver, and spleen. The authors divide the adrenal changes of malaria into three groups. There is, first of all, functional insufficiency, as shown by the absence of spongiocytes in the adrenal cortex. In addition, there may exist more or less diffuse cellular degeneration in the cortex, at times passing into complete cytolysis. Finally, there are noted hemorrhagic lesions, in conjunction with the preceding changes. The hemorrhagic foci may be microscopic, or may contribute the chief lesion, and are due to vascular thrombosis. The malarial plasmodium is found in the diseased adrenals, though it may disappear from quinine treatment, thus probably accounting for certain late deaths in algid malaria where the parasite is no longer found in the blood. Mild adrenal involvement may possibly occur in the ordinary type of paroxysm, and in some cases of chronic malaria. At all events, not only quinine, but also epinephrine is indicated in algid malarial cases.

Origin of Anaphylaxis.—L. C. Soula (*Presse médicale,* October 23, 1916) lays stress on nervous disturbances in the development of the anaphylactic state and in anaphylactic shock. Clinically the latter is essentially characterized by nervous phenomena, whether motor, respiratory, or digestive in their manifestations. Besredka has shown that the anaphylactic shock following the second injection of foreign albumin can be prevented by etherization. Soula, moreover, working with Abelous and Bardier found that section of a sciatic nerve or hemisection of the spinal cord in the rabbit markedly sensitizes the animal to subsequent injection of certain albumins. Chemical researches showed that in any animal that has received the first sensitizing injection of a foreign protein, definite chemical changes occur in the nervous tissues, without the least objective clinical sign of such a transformation. The proportion of free aminonitrogen and of polypeptid nitrogen in the brain and cord of such an animal increases progressively to the twentieth day, at which sensitization is greatest, and return to normal by the thirty-fifth day, when sensitization has likewise disappeared and can, moreover, not be reproduced by a further injection. The anaphylactic state thus apparently involves an autolysis of a certain number of neurones in the living organism. The associated excessive protein destruction can be traced in the urine. In addition, Soula finds that the amount of soaps in the nervous tissues in sensitized animals is increased; likewise, the elimination of calcium in the urine. The increased amount of nucleoalbumins detected leads to the view that, after the initial toxic attack by foreign protein, the nervous tissues react to the destruction of adult nerve cells by the formation of new neurones.

Carcinoma of the Superior Tarsal Cartilage.—S. G. Mansilla (*Revista de Medicina y Cirugia Practicas,* September 21, 1916) reports a case of this extremely rare condition in a woman fifty-two years of age. Excision of the mass with plastic repairs of the eyelid gave a good result except that there was a shortening of the upper lid which interfered with closure of the palpebral fissure.

Eclampsia.—Albert T. Griffiths (*Bulletin of the Department of Public Charities,* October, 1916) gives his opinion that early diagnosis on sound principles offers the keynote to success. In the treatment, five points should be borne in mind: 1, Regulate and limit the food of the patient; 2, stimulate all excretory functions; 3, keep the alkalinity of the blood plasma normal; 4, regulate the blood pressure; 5, do not delay the delivery.

Experimental Observations on the Pathogenesis of Gallbladder Infections in Typhoid, Cholera, and Dysentery.—Nichols (*Journal of Experimental Medicine,* November, 1916) shows by his experiments upon rabbits that the production of gallbladder lesions in typhoid by descending infection of the bile from the liver readily occurs. The same mechanism probably holds good in cholera and dysentery. He reports also that the rabbit bile was antiseptic in its action, and as this power appeared to be in direct proportion to its alkalinity it is suggested that alkaline therapy be used in the prevention and cure of chronic carriers.

Syphilis with Neurological Symptoms Simulating Other Conditions.—D. A. Haller and I. C. Walker (*Journal A. M. A.,* Nov. 18, 1916) emphasize the importance of doing a Wassermann test as a routine measure, and report three cases in which the correct diagnosis would not have been made without its aid. The first was that of a man with an old trifacial neuralgia and some facial palsy; the second was a similar case in a woman, the trigeminal neuralgia not, however, being accompanied with a palsy; the third was a case of what was apparently idiopathic epilepsy. In all three cases the syphilitic nature of the condition was discovered as the result of a routine Wassermann test, and confirmed by cure of the condition in each under antisyphilitic treatment.

X Ray Diagnosis of Gaseous Accumulations in the Tissues.—De Keating Hart (*Paris médical,* October 14, 1916) points out that gas in the tissues, as in gas gangrene, can, as a rule, be easily recognized with the x rays, even when not larger than a pea. In some instances the diagnosis of gas accumulation can thus be made earlier than the clinical diagnosis, though exceptionally, when the gas is diffused in small bubbles, it may be invisible in spite of manifest clinical signs. Gas accumulations are characterized in the plate by their white centre and darker periphery. A punched out loss of bony or soft tissue may be confusing, but can be differentiated by moving the affected part in various directions, when a gaseous aggregation will remain unchanged in appearance, whereas a loss of substance will assume more or less the aspect of a truncated cone, show its connection with a superficial wound, or become attenuated where involved bone is turned in certain directions. In the abdomen, deep breathing will differentiate a mobile gas inflated loop of bowel from a gaseous pocket in the abdominal parieties. In thoracic wounds a tangential direction of the rays over the affected surface will permit of a decision. Study of therapeutic oxygen injections in gas gangrene showed that the gas, as ordinarily used, tends to follow a single muscle sheath; greater efficacy can be secured by injecting separately each muscle sheath in the region under treatment. The extremely clear radioscopic images given by therapeutic intramuscular gas injections and by pathological gas accumulations along groups of vessels and nerves permit of using the x rays in the exact diagnosis of muscular, osseous, nervous, and vascular lesions.

Dental Diseases in Nursing Women.—Harold Waller (*Lancet,* November 4, 1916) states that the malign effects of dental disease are generally quite widely recognized, but their effects in nursing women are far too little appreciated. From an experience of nearly 200 nursing women with dental disease the author is convinced that this affection plays an important role in the health of both mother and child. He cites instances in which the removal of carious teeth, and the cure of root abscesses completely cured the complaints of both parent and child. The commonest effects observed were weakness, anemia, and deficient nutrition on the part of the mother, with a marked inability to continue nursing. The infant was affected by vomiting, restlessness, refusal to nurse, and failure to gain weight normally. The physical phenomena, chiefly the condition of weight, being capable of exact measurement, were studied in relation to oral sepsis, and it was found that many infants who were backward in development at once began to gain normally when the mother's mouth infection had been cleared up.

Possible Functions of the Cerebrospinal Fluid.—W. D. Halliburton (*Lancet,* November 4, 1916) states that this fluid differs only slightly in composition from Locke's solution, and represents an extremely simple physiological saline fluid which contains only those additional substances which are essential for the nutrition of the nervous tissues. It is secreted actively by the ependymal cells of the choroid plexus and its pressure is regulated by these cells and by the state of the circulation. It is removed by absorption into the venous sinuses through the microscopic arachnoid villi. The secretion of the fluid can be increased by three groups of substances, excess of carbon dioxide in the blood, or want of oxygen; by the volatile anesthetics; and by an extract of the choroidal tissue or of the brain. With certain limitations and differences the fluid may be regarded as the lymph of the brain, but it differs essentially in being secreted specifically, and not merely in response to osmotic changes. The cells which secrete it are very highly selective in the materials which they reject, on the one hand, and allow to pass, on the other. This is probably an expression of Nature's effort to protect the delicate nervous tissues from all harmful agents, and to surround them only with the most perfect physiological fluid possible.

Proceedings of National and Local Societies

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1916.

The President, Dr. HENRY SEWELL, of Denver, in the Chair.

(*Continued from page* 1121.)

Acidosis—(*Continued.*)—Dr. C. F. HOOVER, of Cleveland, said that one point bearing on the relation between acidosis and carbon dioxide tension of alveolar air needed to be emphasized: there seemed to be an impression that there was a definite relationship between carbon dioxide tension of alveolar air and the amplitude of ventilation. There was no such definite constant relationship.

Dr. H. A. HARE, of Philadelphia, naturally felt somewhat timid about speaking as a clinician after men so respected in the biochemical and physiological fields. Doctor Janeway had alluded to the attenuated atmosphere at the altitudes reached in the discussion; but he reflected that the navigator derived much useful information from the astronomer without seeking the astronomer's glory. He had hoped to learn how to apply what had been said to the treatment of acidosis of whatever type; but he confessed to disappointment, except in the matter of the use of alkalies. Thirty years ago he had learned in Ludwig's laboratory that the blood was the most carefully protected tissue of the body, and that they should be careful to do no harm by introducing strange substances into it. This warning should be heeded in view of what had been said about the harmful effect of too active alkali therapy in acidosis. This association has a grave responsibility to the practitioners of the country. While he had not been able to follow the Allen treatment entirely in the management of his diabetics, he had learned not to be alarmed at the appearance of acetonuria during the course of starvation.

Dr. LAWRENCE J. HENDERSON, of New Haven, said that the speakers had been too kind in their appreciation of his theoretical and *a priori* remarks. But more than one of these ideas had been proved true; therefore there must be something in the underlying theory. At any rate it was clear that in a great variety of diseases there was a loss of ability to protect the blood against acids; and this condition ought to be called acidosis. He wished to say further: 1. Because alkalies had been abused was no reason for refusing bicarbonates in small quantities and over long periods; for bicarbonate was the *third* constituent of the blood; 2, while acidosis could not be held to be the cause of disease, it could be held to be the cause of symptom complexes in disease; for one, he believed that acidosis was the cause of diabetic coma. It was possible to overcome the acidosis of diabetic coma without curing the condition, as had been pointed out. This might be due to the fact that the cells of the body were not so readily and quickly influenced by substances introduced into the blood in treatment; and evidence of acidosis might disappear from the blood while the condition persisted in the tissues.

Treatment of Typhoid Fever by Intravenous Injections of Sensitized Typhoid Vaccine Sediment.—Dr. FREDERICK P. GAY and Dr. H. T. CHICKERING, of the University of California, presented this report, which dealt with slight amplifications of cases already reported, a number of additional cases, and a continuation of laboratory studies. The series consisted of about seventy-five cases of typhoid fever verified by blood culture and Widal tests. The majority were treated with intravenous injections of polyvalent, sensitized vaccine sediment, already recommended by Gay and Claypole for prophylactic use. Routine treatment, apart from the specific treatment, varied, as the cases occurred in the practice of a number of physicians, and were treated both in hospitals and in private houses. The mortality was about the same as the best hospital normal, nine to ten per cent. Distinct benefit as seen in cutting short the disease followed the treatment. Over forty per cent. of the cases were abortively cured, normal temperature prevailing within a week after the first injection. In twenty-five per cent. more of the cases an early, induced lysis was observed. The nature of the reactions produced and the correlation of the severity of the disease, and the blood findings in relation to the results produced were considered. Suggestions for further perfecting the method were made.

Dr. LOUIS M. WARFIELD, of Milwaukee, said that through the kindness of Doctor Gay he had obtained the vaccine described in the paper for use in a recent typhoid epidemic in Milwaukee. The epidemic was virulent. The vaccine was obtained late in the epidemic and only twenty-one cases had been treated when the epidemic was over. Of these twenty-one cases, sixteen ended in recovery; two cases were cut short abortively, the patients being a man of forty years and a child; the man suffered a typical relapse, which was uninfluenced by the vaccine The five deaths were due: Two to pneumonia; two to hemorrhage; and one to long continued toxemia. The average duration of fever in this series was thirty-eight days, the same as in the prior series of unvaccinated cases. The shortest vaccinated case was seventeen days; the shortest unvaccinated case, sixteen days. The highest leucocytic crisis took the count to 42,000 and occurred five hours after vaccination. Two impressions were gained: 1. The general course of typhoid was milder after vaccination; 2, the subjective symptoms were ameliorated.

Dr. JOSEPH L. MILLER, of Chicago, said that nonspecificity of the reaction needed emphasis. Ludke had as good results from the use of albumose as from vaccine He himself had seen as good results from the use of proteose. Recently he had seen remarkable quick recoveries from acute infections follow the use of chicken serum. In acute arthritis he had been able to induce very striking crises with injections of typhoid vaccine.

The Physical Signs and Symptoms of Wounds of the Chest.—Dr. C. P. HOWARD, of Iowa City, presented a series of 107 cases, of which eighty-seven were thoroughly studied. The wounds were produced by rifle or machine gun bullets (forty-five) or by shell as shrapnel, high explosive, or hand grenade (forty-two). In one group of fifteen no signs could be found; in another group, either pneumonia (four) or simple serous effusion (two). In a third group, mediastinitis, one case. In a fourth group a hemothorax was found, which was either infected (nine cases) or noninfected (fifty-six cases). Infecting organisms varied. Symptoms were cough, pain, hemoptysis of varying degree, and dyspnea. There was usually fever. The physical signs suggested consolidation rather than fluid, owing to the great compression of the lung. Cardiac displacement was often striking. In eight cases there were unequivocal, and in five others suggestive signs of pneumothorax. In four cases pneumonia existed on the side opposite to the hemothorax. Secondary hemorrhage into the pleural cavity was rare (one case only). Simple fibrinous pericarditis occurred in three cases, and in one a pneumopericardium. Treatment consisted of free drainage in infected cases and of simple aspiration or of oxygen replacement. The mortality was only seven per cent. in the entire series.

Dr. David Riesman, of Philadelphia, said that the same physical signs described by Doctor Howard as occurring in hemothorax from gunshot wounds he had observed in traumatic hemothorax without penetration. As to the treatment, the patients were left alone and got well by absorption.

Anaphylatoxins.—Dr. F. G. Novy and Dr. P. H. DeKruif, of Ann Arbor, observed that the study of anaphylatoxins was made necessary because the study of immunity could go no farther until the problem of anaphylaxis was solved. An anaphylatoxin was a toxic substance developed in an organism as a result of the introduction into that organism of any one of various things. What were the conditions under which this substance was formed? To determine this, a number of antigens or inducers were used; agar was chosen as a good general reagent. It was now possible to make a constant anaphylactic poison which would kill a 250 gram guineapig immediately in dose of 0.25 c. c. If agar serum anaphylatoxin was centrifugated, it might be used without harm; after fifteen minutes it killed; and this might be repeated: it was a true colloidal periodicity. But it was found that normal serums were all deadly poisons if treated properly. Normal blood serum, which was harmless when freshly drawn into a syringe and for one or two minutes thereafter, after three minutes always killed. Rabbit's blood was divided into two portions; one part defibrinated by beads was harmless; another part defibrinated with a rod, always killed. If serum could be so influenced out of the body, why not in it? The answer was found in the production of a constant poison by the use of agar as antigen, but only when it was employed in a certain way.

The Food Problem in Dispensary Patients of Different Nationalities.—Dr. H. R. M. Landis and Dr. F. A. Craig, of Philadelphia, recalled that the diet of the populace was an important factor in social medicine. The proper utilization of food had an important bearing on the prevention of disease, notably tuberculosis. Were the people getting the right kind and amount of food for their money? Were foreign born dispensary patients adapting themselves well to American market conditions? A study was made of four groups of families: Three Italian, three Jewish, three negro, and three Polish. Daily inventories of their food supply were made for three weeks by a nurse, and the calories, waste, and cost estimated. Adopting a standard caloric value, including 340 calories represented by protein, it was found that all the groups approximated the desired caloric value in the food purchased, but there was much variation in the protein content. The cost per capita per diem was as follows: Italians, nineteen cents; Jews, 21.5 cents; negroes, twenty-four cents; Poles, thirty-four cents. Thus it cost the Poles nearly twice what it cost the Italians to obtain food of the same nutritive value. The solution of the problem for the sick lay with the visiting nurse and the social worker; for the community, it must be solved in community school centres with instruction in food values and costs, etc. The food habits of the poor were as important as were housing conditions.

Dr. S. Solis Cohen, of Philadelphia, would ask Doctor Landis to make one slight correction, viz., instead of the word Jews, to insert the word Russians. Those of the Jewish faith who had been in this country for two hundred and fifty years objected to being called aliens. He thought the caloric content by no means represented the true value of food, especially of its dietetic value in tuberculosis. He had long been convinced that the therapeutic value of food in tuberculosis depended upon its richness in nitrogen rather than the other ingredients.

The Etiology of Pellagra.—Dr. E. J. Wood, of Wilmington, N. C., viewed the subject from the standpoint of a deficiency, but this deficiency was regarded as more specific than had been generally thought. Corn was regarded as bearing the same relation to pellagra as did rice to beriberi. The correctness of this view was proved both by experiments on the pigeon and by evidence found in the literature of outbreaks of pellagra brought about by eating highly milled meal, which were promptly corrected by feeding whole meal. The fault lay in two factors. The first was the heating of the corn in kilns above 120° C., which was enough to destroy the vitamine. The second was the removal of the fat containing germ from the grain. The remedy consisted in feeding the victims the whole grain and this plan was also prophylactic.

Dr. Joseph Sailer, of Philadelphia, said that for a long time pellagra had been growing in importance in this country, and it now needed to be kept constantly in mind by physicians in the north as well as in the south. He had recently seen two cases in Philadelphia, one in a white woman, one in a negress; both had lived in the city for thirty years; neither had ever used corn meal as food. The etiological factors were difficult to explain: not all patients were subject to the same dietetic conditions, but all had some fundamental privation most probably. Bringing pellagra into the list of nutritional diseases, and Doctor Wood's careful work led in that direction, gave reason to hope for its control. How might the sudden irruption of pellagra in the United States be accounted for? Was it present, but unrecognized formerly? The disease was undoubtedly on the increase.

Dr. ALFRED F. HESS, of New York, was unable to discuss pellagra as a deficiency disease, but an observation in infantile scurvy might be of interest in this connection. Doctor Wood had found the corn germ curative for pellagra; he himself had found that the wheat germ alleviated scurvy; middlings had some, but less effect. Another experience indicated the diverse origins of deficiency diseases; beriberi and scurvy had some symptoms in common—tachycardia, nerve changes, etc. But yeast, which was specific for beriberi, had no effect in scurvy.

Dr. NATHAN E. BRILL, of New York, said his experience coincided with Doctor Sailer's. He had recently observed a man who had not been outside New York city in twelve years; he had a gastric ulcer for which a posterior gastroenterostomy was done. Later he contracted pellagra, but stated that he had never tasted corn meal in his life.

Dr. E. J. WOOD, of Wilmington, N. C., said he had seen many pellagrins who had never eaten corn meal in their lives, but who, nevertheless, were relieved by feeding them corn chips. Wheat germ probably acted in the same way. The very extensive use of baking powder and soda in the South might be a factor in the pellagra problem; these ingredients in bread might liberate enough sodium carbonate to destroy the vitamines in the best of grain. It was a fact that the sudden appearance of pellagra in the South was coincident with the disappearance of the old fashioned water power grist mill.

Leucemia, Lymphosarcoma, and Hodgkin's Disease.—Dr. C. H. BUNTING, of Madison, Wis., and Dr. J. L. YATES, of Milwaukee, had encountered difficulties in the differential diagnosis of leucemia, lymphosarcoma, and Hodgkin's disease since the report of the bacterial findings in Hodgkin's disease three years ago. They had in common: 1. A primary focus of infection; 2, progressive glandular enlargement; 3, a chronic course with late anemia and late fever; 4, eventual fatal termination; 5, early Hodgkin's blood picture or leucemic blood picture; 6, all yielded a diphtheroid organism. A new grouping of the types was suggested. The general drift was that the leucemic blood picture might appear in all the groups: Should they adhere to the classification of these diseases in three separate compartments; or should they be regarded as variations of one process associated with the diphtheroid organism? The speaker gave reasons for regarding this organism as etiological.

Dr. H. G. WELLS, of Chicago, said that in studying mice in the course of his tumor work, a lymphatic condition, indistinguishable from leucemia in man, had been repeatedly observed. Nothing like lymphogranulomatosis or Hodgkin's disease had been found. Mice in which leucemia developed did not have tumors.

Dr. THEODORE C. JANEWAY, of Baltimore, said that while they all recognized the value of Doctor Bunting's contributions to the blood pictures of the leucemias, he felt that their understanding of these conditions was not advanced by stating that a diphtheroid organism was always present, nor by explaining contradictory findings on the basis of technical errors. He cited studies made in Baltimore of all sorts of lymph nodes without finding diphtheroid organisms with any constancy.

Dr. FRANK BILLINGS, of Chicago, said that studies had also been made in Chicago of lymph nodes from Hodgkin's disease and other lymphatic diseases: in forty-odd cases the diphtheroid organism had been recovered from all except two. But the same organism had been found in goitres, in joints, in tuberculous glands, etc.; so that he was inclined to the belief that it was a parasitic organism accidentally present in pathological tissue. Animal experiments with the organism had not indicated specificity; and he did not believe it had any etiological relation to the lymphatic diseases.

Dr. C. H. BUNTING, of Madison, Wis., said the time at his disposal was too short to give all the evidence upon which he based his belief in the specificity of the diphtheroid organism; these evidences were fully set forth in the paper. With regard to Doctor Wells's interesting remarks, there had been reason to suspect that in his own animal work he had run into a tumor-producing strain of organism. The animal experiments had been very strongly suggestive to him and his coworkers. He hoped that in time he might be able to straighten the whole matter out.

Polycythemia Treated with Radium.—Dr. JOSEPH SAILER, of Philadelphia, gave the history of a case of polycythemia in a woman. After exhausting the usual therapeutic measures, radium was carefully employed. The spleen was greatly reduced in size; after four months, the red cell count dropped from 7,621,000 to 5,674,000. Lately the subjective symptoms had disappeared, and the patient had become a fairly active woman. When the treatments were suspended, symptoms recurred.

Dr. MAX EINHORN, of New York, said with regard to the therapeutics of polycythemia that he had seen a case of this condition a year ago in a man whose cells numbered 6,500,000; his principal symptom was dyspnea. He had sought to increase the fluids of the body and so dilute the blood by giving a quart and a half of milk daily. The symptoms were much improved by this simple measure.

Treatment of Pernicious Anemia by Transfusion and Splenectomy.—Dr. H. Z. GIFFIN, of Rochester, Minn., reviewed thirty-two cases of splenectomy for pernicious anemia. Nineteen of the patients were treated by transfusion and splenectomy, and thirteen by splenectomy alone. There were postoperative records from one month to three years, also statistics of definite postoperative occurrences, and the estimation of urobilinogen and urobilin in the duodenal contents (Schneider test) before and after splenectomy.

The Bile Content of the Blood in Pernicious Anemia.—Dr. M. A. BLANKENHORN, of Cleveland, while investigating the nature of jaundice in pernicious anemia, observed that many patients, although distinctly jaundiced, showed no bile in the urine. The blood plasma, however, in every such case showed a corresponding jaundice. These plasmas, when presenting a jaundice of a certain intensity, all gave a positive test for bilirubin. Urobilin was found in the plasma of none. There was often found a higher concentration of bilirubin in the plasma, coincident with the absence of bile in the urine, than was found in the plasma of patients with certain lesions of the liver which were always characterized by bile in the urine. Bile salts were found in the plasma in ten out of thirteen cases. The cases showing the highest concentration of bilirubin in the plasma were those with evidence of the most active blood destruction. The cases showing the highest concentration of salts were those in which nerve lesions predominated.

Dissociate Jaundice.—Dr. C. F. HOOVER and Dr. M. A. BLANKENHORN, of Cleveland, said that dissociated cholemia and dissociate choluria might be correlative in many cases, and not the consequence of dissociative biliary retention. Pigmental jaundice without bile salts was invariably hematogenous and never originated from dissociate hepatic retention of the bile pigments. Pigmental cholemia without bile salts was frequently a survival of complete biliary retention. Pigmental choluria without bile salts occurred only in hematogenous jaundice. Bile salts were not present in hematogenous cholemia. Bile salts unaccompanied by bile pigment might occur in the blood of primary anemia and lead poisoning. Bile salts unaccompanied by bile pigment might occur in the urine as a consequence of dissociated retention of bile salts in primary anemia and lead poisoning. Bile salts in the urine without bile pigment (with primary anemia and lead poisoning excepted) was always due to renal dissociation of complete cholemia on account of the absorption of bile pigment in the plasma and the escape of bile salts through the renal filter. The maximum cholemia (pigmental) without choluria, occurred in the jaundice of infections in which the pigment might be both hematogenic and hepatogenic. Obstructive jaundice yielded only moderate cholemia without choluria; choluria appeared when the cholemia became considerable. In hemolytic and infectious jaundice there might be pronounced cholemia without choluria.

Dr. L. G. ROWNTREE, of Minneapolis, emphasized the great value of Schneider's work. Bile in pernicious anemia was ordinarily very dark; it differed from the bile in other forms of anemia. Schneider was now finding the biliary changes typical of pernicious anemia in cases of atrophic cirrhosis of the liver. He would ask, Did Doctor Giffin's work include any cases of acute aplastic anemia?

Dr. G. H. WHIPPLE, of San Francisco, inquired if Doctor Blankenhorn had tested the blood plasma with Hilpert's test? This was a much more delicate test than those mentioned in the paper. In his own work he had found that the blood often yielded "half baked" pigments which might easily be mistaken for urobilogen. The observations of bile in the plasma with no bile in the urine had to be very carefully checked. If Doctor Blankenhorn had found a really satisfactory test for bile pigments, he was to be congratulated.

Dr. R. C. CABOT, of Boston, said that the age of splenectomized pernicious anemia patients had a potent influence on the outcome. Transfusion after splenectomy had a more lasting good effect than when done with spleen still in place. Had Doctor Giffin noticed any great tendency to thrombosis following splenectomy? So far as the usefulness of splenectomy in pernicious anemia was concerned, he expected to have his spleen removed whenever he acquired pernicious anemia.

Dr. M. A. BLANKENHORN, of Cleveland, said that there was no more delicate test for bile pigments than Gmelin's: all the others had been thoroughly tried and compared. He accepted Doctor Whipple's congratulations on the finding of a satisfactory test for bile pigments with the same reserve with which the congratulations were offered: those employed were the best that had been devised up to the present time.

Dr. C. F. HOOVER, of Cleveland, said that Doctor Blankenhorn had spoken of the use of Pettenkofer's test. This test was controlled by use of the spectroscope: in the presence of bile pigments there was a characteristic movement of absorption bands; no tests in the work reported had been accepted unless this movement of the absorption bands was noted.

(*To be continued.*)

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Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

A Textbook of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and Their Employment Upon a Rational Basis. By HOBART AMORY HARE, M.D., B.Sc., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital; One Time Clinical Professor of Diseases of Children in the University of Pennsylvania. Sixteenth Edition, Enlarged, Thoroughly Revised, and Largely Rewritten. Illustrated with 149 Engravings and 7 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. vi-1009. (Price, $4.75 net.)

No clinician can afford to neglect therapeutics. With the great advances in scientific progress the tendency has been to concentrate attention upon diagnosis and laboratory investigation, and to neglect and disparage therapeutics. No physician, however, is doing his best for the patient unless he is constantly endeavoring to perfect his therapeutical knowledge and skill. A good understanding of therapeutical pinciples, and a thorough familiarity with the use of drugs should always be desired and cultivated. Such attributes characterize Hare's *Textbook of Practical Therapeutics*. The subject matter is admirably arranged, with a clear and concise exposition that enhances its value as a ready reference book on general therapeutics. By way of introduction there is a brief discussion of general therapeutical considerations, the preparation and administration of drugs, and prescription writing. In the pharmaceutical section each drug is described in detail, together with its physiological action, its therapeutical uses, and its incompatibilities and administration. The latter part of the book gives brief considerations of remedial measures other than drugs, including transfusion, vaccines, and foods suitable for the sick. At the end the author describes and discusses the treatment of the various common diseases. There is an excellent index of drugs, and of diseases with the remedies. We regret that no mention is made of psychotherapeutics, and wish that the modern methods of treating syphilis had been given in more detail. For a practical reference book, we can confidently recommend it with the assurance that the student or practitioner will find in it many practical suggestions for everyday use.

Studies in Blood Pressure. Physiological and Clinical. By George Oliver, M. D. (Lond.), F. R. C. P. Edited by W. D. Halliburton, M. D., F. R. S. Third Edition. New York: Paul B. Hoeber, 1916. Pp. xxiii-240. (Price, $3.)

The appearance of the third edition of Oliver's *Studies in Blood Pressure* suggests the thought that it would be a good thing if more medical men who have opportunities would combine clinical and experimental study. Oliver was able to do this during the latter part of his career by a season spent at Harrogate with clinical opportunities in cardiovascular disease among well to do people in whom it is more frequent, except in its cruder forms, than among the poor. The remainder of the year he spent in the university in laboratory investigation. This combination of cure resort practice with university work has produced some of the best authorities in medicine and may be an answer to the problem of coordinating the laboratory worker and the practitioner. The book, as its name implies, is a series of studies which have been printed together rather than a systematic treatise. In it have been assembled by quotation the opinions of a great many authors. It will prove most suggestive to those who seek to solve the problems of blood pressure.

Lectures on Dietetics. By Max Einhorn, Professor of Medicine at the New York Post-Graduate Medical School and Hospital, and Visiting Physician to the German Hospital, New York. New York: Paul B. Hoeber, 1914. Pp. 156. (Price, $1.)

This little book, which includes eight of the author's lectures at the New York Post-Graduate Medical School, has the merit of conveying to the average medical reader precisely what he wants without fatiguing him with technicalities which befog the intelligence and prevent the retention of essential facts. After reviewing the general principles of diet and nutrition in a manner most lucid for so abstruse a subject, the author outlines the principles of food digestibility in health, and in acute, prolonged, and chronic diseases. Special attention is given to the dietetics of chronic affections of the digestive tract, chronic diarrhea, and diabetes mellitus, in all of which diseases dietetic treatment plays the leading role. The various diet régimes, superalimentation, Banting's, vegetarian, Bulkley's, and others are described succinctly, though sufficiently for practical purposes. On the whole, this little volume is entitled to commendation.

Modern Medicine. Its Theory and Practice in Original Contributions by American and Foreign Authors. Edited by Sir William Osler, Bart., M. D., F. R. S., Regius Professor of Medicine in Oxford University, England; Honorary Professor of Medicine in the Johns Hopkins University, Baltimore, etc., and Thomas McCrae, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia; Fellow of the Royal College of Physicians, London; Formerly Associate Professor of Medicine, The John Hopkins University. Volume V. Diseases of the Nervous System—Diseases of the Locomotor System. Second Edition, Thoroughly Revised. Illustrated. Philadelphia and New York: Lea & Febiger, 1915. Pp. ix-1002. (Price, $5.)

If any comparison between the various volumes of this excellent work is warranted, the last should be considered the best of the series, although it perpetuates a deficiency for which the previous volumes have been notable, that of affording but meagre assistance in the therapeutics of the many diseases reviewed. The various collaborators would seem in this particular, to have become imbued with Osler's therapeutic pessimism and deemed it necessary to assume his attitude on the subject. Indeed, hardly three per cent. of the eight hundred and odd pages on nervous diseases are devoted to treatment. Of course, in calling attention to this defect, a serious one from the viewpoint of the practitioner, who needs carefully prepared ammunition in his strife against disease, we are reminded of a paper published some years ago, in which a neurologist expressed the view that it was hardly necessary to diagnosticate nervous diseases, since their treatment was of no avail! Yet there are many details in the treatment of neurological conditions which increase greatly the value of professional efforts, and it is hoped that the next edition will show a marked improvement in this direction.

In every other respect the work is of inestimable value. The field covered is most comprehensive, and each article is replete with clinical data calculated to convey a correct interpretation of the disease from the standpoints mainly of diagnosis and pathology. The diseases of the osseous and muscular systems close the work. Worthy of special note is the article on arthritis deformans, which includes all forms of arthritis, by one of the editors, Doctor McCrea. It is a model in completeness and is so written as to be within the reach of all.

Nouvelles Méthodes de Séro-Diagnostic. Syphilis, réaction de Wassermann, méthodes de simplifications, valeur pratique de la méthode, luétine, réaction de l'or colloïdal, réfractométrie, sérodiagnostic de la grossesse, réaction d'Abderhalden, mycoses, kyste hydatique, lèpre, mycosis fongoïde, maladies infectieuses. Par Ed. Joltrain Ancien interne des Hôpitaux. Préface du Professeur Gaucher. Quatrième Edition revue et augmentée. Avec 7 planches hors texte. Paris: A. Maloine et Fils, 1916. Pp. viii-413.

In this excellent manual are taken up in detail, after a preliminary section on the theory of immunity, agglutination, hemolytic serums, the reactions of fixation, and complement deviation, etc., the methods of serum diagnosis of syphilis, mycoses (including sporotrichosis and actinomycosis), hydatid cyst, leprosy, and mycosis fungoides, the reaction of fixation in various infectious diseases, the newer conceptions of immunity as illustrated in hemoclastic paroxysms, and the Abderhalden reaction, and some secondary methods of serum diagnosis, such as opsonin estimation, estimation of antitryptic power, and the miostagmin reaction. The Wassermann reaction is explained with special care, and several colored plates showing the color changes in the several test tubes employed in the test are presented. Gaucher, in an introduction to the book, directs special attention to the modified Wassermann reaction worked out by Desmoulière in his laboratory. By using a special antigen, prepared by adding cholesterin to an alcoholic maceration of powdered liver tissue extracted with ether, a precise and sensitive test is obtained. The present is the fourth edition of the book, and was finished in an ambulance at the front. A copious bibliography concludes the work.

Interclinical Notes

The *Survey* for November 11th tells of a sickness census taken on October 26th in Milwaukee, in order to ascertain what proportion of the people in the city are sick at a given time, whether or not they have proper medical care, the number of sick who are wage earners, and the extent to which these sick wage earners receive some sort of sick benefit or insurance.

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The explanation of the recent Presidential election, which did not come out at all as arranged by Mr. George Harvey, is given in the December *North American Review;* it closes with some challenging italics: "Clearly, what the whole country needs, from Maine to California, from the lakes to the gulf, is a course in patriotism." L. Ames Brown discusses prohibition as a Federal political issue in this number of the *Review;* it seems to us that if prohibition becomes a national law, we shall be in the last abyss of humbug, unless, indeed, what seems improbable, the present scientific view of alcohol becomes the popular one.

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The Relation of Malaria to Crop Production, by D. L. Van Dine, is the first title to strike the eye on taking up the *Scientific Monthly* for November; the physician's eye, we mean. Another attractive title is Stephen Hales, the Pioneer in the Hygiene of Ventilation, by Dr. D. Fraser Harris. Eugenics, by Professor Franz Boas, is provocative of curiosity, and the Psychology of Wish Fulfilment, by Professor John B. Watson, will introduce to some of our chaste friends the theories of that dreadful person, Freud. We do not think there is a single naughty word in this paper. The writer makes the interesting suggestion that men high up in the business world, the diplomatic service, and in government positions generally, who often have enormous responsibilities placed upon them, should be relatively free from strong inward conflicts and repressions, and therefore should be selected only after careful psychanalysis.

Meetings of Local Medical Societies

MONDAY, *December 11th.*—New York Ophthalmological Society; Society of Medical Jurisprudence, New York (annual); Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn (annual); New Rochelle Medical Society.

TUESDAY, *December 12th.*—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Schenectady (annual); Medical Society of the County of Rensselaer (annual); Buffalo Academy of Medicine; New York Obstetrical Society; Onondaga Medical Society (annual); Medical Society of the County of Chautauqua (annual).

WEDNESDAY, *December 13th.*—New York Pathological Society; New York Surgical Society; Alumni Association of the Norwegian Hospital, Brooklyn (annual); Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County Medical Society (annual); Rochester Academy of Medicine; Medical Society of the County of Montgomery (annual); Brooklyn Medical Association.

THURSDAY, *December 14th.*—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side, New York, Clinical Society (annual); Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Society, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua.

FRIDAY, *December 15th.*—New York Academy of Medicine (Section in Orthopedic Surgery); Clinical Society of the New York Post-Graduate Medical School and Hospital (annual); New York Microscopical Society; Mount Vernon Medical Society; Saratoga Springs Medical Society.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending November 29, 1916:

APPLEWHITE, C. C., Assistant Epidemiologist. Directed to proceed to Hillsboro, Texas, for duty in studies of rural sanitation in Hills County.

BOTE, G. S., Field Investigator. Directed to proceed to Hillsboro, Texas, for duty in studies of rural sanitation in Hills County.

IRWIN, F., Senior Surgeon. Directed to proceed to Reedy Island, Del., Quarantine Station on business relative to the construction of barracks.

LAVINDER, C. H., Surgeon. Detailed to attend a meeting of the Philadelphia College of Physicians, December 6, 1916, to participate in a symposium on poliomyelitis.

MCDEVITT, C. J., Assistant Surgeon. Detached from Coast Guard cutter *Manning* and ordered to proceed to San Francisco, Cal., Quarantine for duty.

SAUNDERS, SAMUEL, Field Investigator. Directed to proceed to Hillsboro, Texas, for duty in studies of rural sanitation in Hill County.

SCHERESCHEWSKY, J. W., Surgeon. Detailed to attend a conference on social insurance at the U. S. Department of Labor ,Washington, D. C., December 5th to 9th.

SCOTT, E. W., Assistant Surgeon. Granted one month's leave of absence from December 12, 1916.

SHARP, W. K., Jr., Field Investigator. Directed to proceed to Hillsboro, Texas, for duty in studies of rural sanitation in Hill County.

STILES, C. W., Professor. Directed to stop en route under Bureau orders of November 7th, at Greensboro, N. C., to deliver an address at a meeting of the Eighth District Medical Society, December 5th.

SYDENSTRICKER, E. L., Public Health Statistician. Detailed to attend a conference at the U. S. Department of Labor, Washington, D. C., December 5th to 9th, and participate in discussions on health insurance.

WITTE, W. C., Assistant Surgeon. Directed to proceed to Hillsboro, Texas, for the purpose of conducting studies of rural sanitation in Hill County.

Boards Convened.

Board of which Assistant Surgeon General W. G. Stimpson is chairman, convened by Bureau letter dated September 9, 1916, reconvened to prepare questions and conduct the examination of applicants for appointment as assistant surgeon at the Bureau, Washington, D. C., Monday, December 4, 1916.

Boards of commissioned officers convened for the examination of applicants for appointment as assistant surgeon, Monday, December 4, 1916, as follows: Seattle, Wash., Surgeon B. J. Lloyd, chairman; Passed Assistant Surgeon E. Krulish, recorder; Cincinnati, Ohio, Passed Assistant Surgeon W. H. Frost, chairman; Passed Assistant Surgeon Paul Preble, recorder.

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Births, Marriages, and Deaths

Married.

HAUSER-BODINE.—In Danville, Pa., on Friday, September 15th, Dr. Raymond Jack Hauser and Miss Ethel Bodine.

Died.

BENJAMIN.—In Riverhead, N. Y., on Sunday, November 26th, Dr. John Halsey Benjamin, aged sixty-two years.

COVERT.—In Perrysville, Ohio, on Wednesday, November 8th, Dr. Samuel J. Covert, aged sixty-six years.

CLARK.—In Cleveland, Ohio, on Thursday, November 23d, Dr. Frank S. Clark, aged fifty-two years.

GARRETT.—In Hope, Ark., on Friday, November 17th, Dr. Hosea J. F. Garrett, aged fifty-five years.

GREEN.—In Long Branch, N. J., on Friday, November 24th, Dr. James O. Green, aged seventy-six years.

HORSLEY.—In West Point, Ga., on Friday, November 17th, Dr. Joseph Stafford Horsley, Sr., aged seventy-four years.

JONES.—In San Francisco, Cal., on Monday, November 27th, Dr. Philip Mills Jones, aged forty-five years.

KANE.—In Minooka, Pa., on Monday, November 20th, Dr. John Frank Kane, aged thirty-two years.

KEANY.—In Boston, Mass., on Thursday, November 23rd, Dr. Francis Joseph Keany, aged fifty years.

LYNDE.—In Buffalo, N. Y., on Tuesday, November 21st, Dr. Uri Colvin Lynde, aged eighty-three years.

MCGRANAHAN.—In Youngstown, Ohio, on Saturday, November 18th, Dr. William H. McGranahan, aged sixty-two years.

MASON.—In New York, on Tuesday, November 21st, Dr. John James Mason, of Newport, R. I.

O'HARE.—In Rochester, N. Y., on Tuesday, November 21st, Dr. Thomas Augustine O'Hare, aged sixty-eight years.

PARRISH.—In Memphis, Mo., on Wednesday, November 22nd, Dr. John E. Parrish, aged seventy-six years.

PENN.—In Omaha, Neb., on Saturday, November 11th, Dr. John H. Penn, of Ravenna, aged fifty-five years.

PETERS.—In Walden, N. Y., on Thursday, November 23d, Dr. Jacob Brill Peters, aged sixty-three years.

PITCHER.—In Detroit, Mich., on Sunday, November 19th, Dr. Sheldon Pitcher, aged fifty-four years.

RAMSAY.—In Newport, R. I., on Monday, November 27th, Dr. M. George Douglas Ramsay, aged forty-seven years.

ROBBINS.—In Trenton, N. J., on Thursday, November 30th, Dr George R. Robbins, aged seventy years.

SANBORN.—In Spencer, Mass., on Tuesday, November 21st, Dr. Frederick James Sanborn, aged fifty-five years.

SHEPARDSON.—In Springfield, Mass., on Thursday, November 23rd, Dr. Oscar Jerome Shepardson, of Chester, aged sixty-four years.

WALKER.—In Thomaston, Me., on Wednesday, November 22d, Dr. John E. Walker, aged fifty-eight years.

WHITTLETON.—In Webster, N. Y., on Monday, November 20th, Dr. Ellery J. Whittleton, aged fifty-seven years.

WOODS—In Brookline, Mass., on Thursday, November 16th, Dr. Jonathan Henry Woods, aged sixty-six years.

YOUNG.—In Johnstown, N. Y., on Sunday, November 26th, Dr. James Kilbourne Young, aged sixty-eight years.

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Original Communications

MEDICAL FEES AMONG PRIMITIVE MAN.

Their Collection by Physicians,

By Jonathan Wright, M. D.,
Pleasantville, N. Y.

The question of what is due the doctor comes up every day, at least the first day of every month, and it often gives rise in the grave judicial councils of innumerable medical societies, to many wrathful or tearful remarks. I cannot see why this matter should not be investigated in the light which the history of the evolution of medicine can cast upon it. I have selected from a pile of manuscript certain indications of the way the primitive physician treats the problem, which I hope will not be devoid of interest to his cultured brother. Such information may be vastly extended, but, at the cost of its quite fragmentary nature, I am compelled here to economize space. In what follows there will be found illustrated about all the ways in which physicians are or have been, in historical time, paid for their services, not forgetting the imponderables of life. At least, all the ways that occur to me at the moment of writing, I have sought to illustrate in the accounts of medical practice observed among primitive men. Doubtless, if any principle of recompense has been neglected by an oversight, its exemplification also could be found among the records. It will be noted that, through contingent fees, the principle of accountability for mistakes was much more prominent in primitive tribes than in the cultured state, but scarcely more so than appears in the Assyrian code of Hammurabi. Indeed, this is a very vital point today, not only in practical ethics, but in the administration of justice concerned with the modern relations of physicians to the public. It excited the virulent invectives of Pliny the elder and of Petrarch and the witty thrusts of Molière's rapier. *Soit qu'on fasse bien, ou soit qu'on fasse mal, on est toujours payé de même sorte,* exclaims Sganarelle. A shoemaker has to pay for the leather he spoils, but the doctor's slips, says our critic, are unpunished—ascribed to the will of God. We are still attempting to meet this criticism, which for thousands of years has rolled down the ages, by raising the standard of medical education in the foolish hope that man can be brought to that point of perfection by virtue of which he can escape error. We are liable to remain the butts for mocking wits and the victims of vicious legislation, if nothing but that is to be done. Much more efficacious is it to lay aside the arrogance of pedantry, and the bluffing tactics with which attempts are made to patch out the robe which covers our own ignorance. This is what we may lay to our own hearts before we can hope that the better educated public, recognizing that the doctor is made, like themselves, of common clay, and liable to err even in the tragic circumstances of life and death, will be more disposed to cast the mantle of charity over the manifold sins and shortcomings of their medical brothers. Not only contingent fees, but fees in advance, State subvention, that is, tribal support for the doctor, special fees for special work, mock modesty in exacting payment for that which God has brought about—these and many other aspects of the returns the doctor expects from the social organization for his services are to be seen in embryo or in full bloom among the wild tribes of men.

The rewards a man reaps from the practice of his profession, we all acknowledge, are not to be measured in dollars and cents; the interest we feel in it as a science, the joy of work, the avoidance of idleness, but above all things which figure in the platform inducements held out to the young student, is that of ministering to the Lord's poor. This, it is true, has rather an antiquated look. It did very well, perhaps still does, for those intending to go into missionary medicine, but perhaps it is just as well to alter the phrase a little in order to give it a quite modern turn and say: It is a noble altruistic calling to benefit our fellowmen. We remember Miss Kingsley's frank avowal that the savage in his wilds knows not these things. So perhaps a little analysis of what we ourselves mean is desirable. Indeed, it has seemed to me the chief difficulty in getting at the back of the mind of primitive man lies in our not getting first to the back of that of his civilized offspring. Every age has its ideals, and he who clings the closest to those of his own day is apt to rank in the opinions of his fellowmen where his ambition would place him—not always first in peace, not always first in war, but always first in the hearts of his countrymen. The social tie that binds man to man is at first weak. It may seem strong as between small units, the family or the clan, but the periphery of altruistic devotion is small and enlarges slowly. It does not fire the enthusiasm of the savage to see his doctor staunching the wounds of a strange man, much less of an enemy. In a state of society where a man feels it absurd not to sell his

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sister's children when he is hungry, we cannot expect much enthusiasm for altruism. So these rewards are not apparently to any marked degree valued by those members of our profession who practised among the cave men. Safety first—sought through fear—then admiration by the weak for the power secured through fear, the favor of the gods, or in any other way by the sorcerer—it is quite a long way we have traveled up to the 1916 ideals of our "noble profession"—and at each mile post, be sure the imponderable fees, those not beneath the cow's skin nor in the cowskin pouch, were always at hand, but always a little different—thank Heaven. So in speaking of fees, let us not forget those imponderables for which man has fought and cheated and killed and drugged all the way along the road. Unless we keep these in mind we shall understand the motives of primitive man as little as our own. Safety first, and then the admiring glances of men and women, acquired by poison if practicable, but when that is crowded out owing to increasing prejudice—by altruism. After this somewhat disagreeable discourse it will not be necessary to obtrude the instincts of vanity, ambition, pride, or the "pride which apes humility"—or altruism. Man's passions, instincts, emotions have remained the same from his home in the cave to his house in the choicest of modern situations.

We do not know exactly how prehistoric man collected his fees, but from the study of modern primitive races we may draw inferences in regard to him which we have every reason to believe are warranted. In Northwest America the Ten'a medicine man is rich because his services, when he is summoned or when they are accepted, though uncalled for, are generously remunerated, for he is listened to on account of the superior knowledge imparted to him by the spirits. He is feared on account of his power to do evil—to cause the death of a person, to render him unsuccessful in the hunt by driving away the game from his path, to cause the loss of his property, of his strength, of his health, of his faculties (1). We see the scope of the doctor's power was wide and we readily understand the source of his wealth, but even in the narrower fields of legitimate medicine he had an entrenched position; we soon perceive, however, that he had his troubles. Among them contingent fees were by no means the most serious.

Primitive man had occasionally to bid high for the favor of a diagnosis or a cure. Among the Minnesota Indians Mr. Nicollet (2) heard the voice of the turtle speaking through the medicine man, "Well, old miser, you should have sugar, too, only speak!" begging the spirit for a diagnosis, and "when the case is grave the father or the mother, in consulting about a child, or a relation, will go so far in their offerings as to say, 'if you cure him or her, I will give you my daughter.' " With the California Indians (3) "if a patient dies, then the medicine man is forced to return his fee; and if he refuses to attend any one and the person dies, then he is forced to pay to the relatives a sum equal to that which was tendered to him as a fee in the beginning of the affair." With the Koniagas, "if the patient recovers, the physician is paid, otherwise he receives nothing." In British North America the doctor of the Carriers "before commencing his operations in the sick room, must receive a fee, which, if his efforts prove unsuccessful, he is obliged to restore." This was very largely true of the North American Indians generally. The modern surgeon's advance fee is no innovation in America. With the Nootkas he is not paid if he fails, "but if successful, does not fail to make a large demand." Among the Haida (4), "in cases of serious illness chief reliance was . . . . placed upon . . . the medicine men, who were paid liberally, if the patient lived, or if he died, were compelled to restore the goods they had previously received on account." In India, among the Naga tribes of Manipur (5) when they are sick "all their goods and chattels may be expended unavailingly, and when nothing is left for the inexorable gods, I have seen their wives and children sold as slaves to provide the means of propitiating them. In sickness, therefore, the speedy recovery or the speedy death of the patient is desirable."

The Zulu medicine man's *ipsissima verba* (translated), are, when invoking the spirits: " 'Here is a bullock I may gain, ye people of ours. I dig up this medicine, trusting in you, that you will give it power to take away the disease from the sick man, that I may become celebrated among the nations, as a great doctor, by your power, ye people of ours.' He digs up the medicine, then, with a pure heart, expecting the man to get well. He obtained many cattle from people for doctoring their cattle. He became a celebrated doctor. If the cattle got well he had one given him" (6).

The poor in our dispensaries we do not expect to give us as much trouble, nor do we sugar coat their pills quite so thick as we do those for our office patients. In North America, "among the Ohyahts, a few years ago there was a young woman, deformed and of diminutive stature, who had a high medical reputation. A native presented his leg to her, which she grasped at the knee, and rubbed, as would a Malvern doctor. On its being remarked that she did not cry nor groan, as usual with native practitioners, the patient explained aside that she was quite skillful in her work, but that if in his case she cried or groaned during the operation of rubbing, her charge would be a blanket, instead of a fathom of small beads, and he could not at that time afford the blanket (7). This sort of privilege for the rich is much more marked in Thibet. Contract medicine, with regular days for salaries, though these apparently varied in kind, is a feature among some African tribes, and we see its faults—tips. "Celebrating the victory over disease, the day of *hondlola* is considered as a fête day. Beer is prepared as a mark of gratitude to the doctor and 'to rejoice his heart.' It is also the day of reckoning: the physician must be paid: this personage has not, however, waited until now to ask for a 'refresher.' From the commencement of the case, it has been necessary to *pfula hwama*, that is to say, to lift the cover of the medicine wallet by means of a sixpence or a shilling. At times he has been very anxious to change the medicine, in order to produce a greater effect; on such occasions he has been presented with a chicken as an encouragement; but on the day of the *hondlola*, when his skill is joyfully attested, and the cure an accomplished fact, accounts must be definitely settled with the *nanga,* who will henceforth discontinue his visits"(8). Still more primitive, but practically the same custom, is found in Australia(9). "It goes without saying that the wizards and doctors in all these tribes did not exercise their power gratis. Presents were given them by people who had benefited by their art, and also by people who feared lest they should suffer from it. They received presents of weapons, rugs, implements—in fact, of all those things which are of value to the aborigines, not forgetting a share of the game caught. Especially did they reap a harvest at the great gatherings. The Bunan gatherings of the Coast Murring may be taken as an example. Before the people separated to return home, a sort of fair or market was held, to which people brought the weapons, rugs, implements, etc., which they had brought with them for the purpose. From these 'fairs' the gommeras went away loaded with gifts."

As an example of doctors paid by the State, Bartels (10) says that among these Australians there seem to be no fees from the patients, but the doctors are supported by the contributions in services and food, by the other members. Among the Australians they may also receive in addition gifts from the patients, which for the most part are paid only when there is a successful issue to the illness. In Central America(11), it seems, the natives are not only more altruistic but more tolerant. It is well to note these variations, for did they not occur social evolution would have no material for selection. "No reward of any kind is given, or expected, nor is any blame attached in case of nonsuccess, the latter being attributed to the malignant action of superior magic on the part of some hostile spirit or individual." In Malaysia the doctor's superior freedom from the consequences of his ignorance or maladroitness does not interfere with his fees, though success increases them. Among the Dyaks of Borneo, "whether the patient lives or dies, the *manang* is rewarded for his trouble. He makes sure of this before he undertakes a case, as he is put to a considerable inconvenience by being fetched away from his home and his own work. He takes up his abode with the patient, and has his meals with the family, and in other ways makes himself at home. If a cure be effected, he receives a present in addition to his regular fee (12).

In some places in West Africa (13) the doctor takes the matter into his own hands as to whether the patient is benefited or not, though if he dies I suppose there are ways of explaining it at least. "'If it should be a case of undissembled sickness, and the patient becomes worse by this unnatural treatment, the witch doctor is removed, and the ceremonies are suspended, and it is concluded that it was not a real possession, but something else. The priests have certain tests by which it is known when the patient is healed, and the whole transaction is wound up when the fees are paid. In all cases of this kind it is impossible to say whether the devil has really been cast out or merely a better understanding arrived at between him and the person he has been tormenting. The individual is required to build a little house or temple for the spirit near his own, to take occasional offerings to him, and pay all due respect to his character, or to be subject to renewed assaults at any time.'" Abbé Proyart, with that broadmindedness which has always distinguished the French, even ecclesiastics, speaks with respect of the natives of Loango, at the early date at which he lived among them. He described nothing approaching the contingent fee. "As soon as the patient is dead or when he is cured, his relatives take up a collection for the benefit of the physician who has treated him through his illness. When they go to the missionaries for contributions, they ask them ordinarily for European brandy, telling them that that is the thing which is most pleasing to the doctor." Contingent fees we often note, but in the following quotation a new item is added to the bill, which is a compliment to the audacity and the resourcefulness of the primitive medicine man. It far surpasses adding a cipher because a man is rich. In the Aaru Islands (14) the evil results are sometimes excused by the attending physician with the assertion that the patient's ancestors were in debt to the doctor's ancestors. This debt is collected by the doctor three or fourfold.

For deprecating modesty, yet with an eye to the main chance, the following may be commended: "Having now described the general principles and manner of treatment employed by the African practitioners, it is proper in the next place to say something of the fees which they receive for their services. Being generally very modest, they do not take all of the credit to themselves, as doctors elsewhere do, for their wonderful works. They frankly admit that they are aided by certain powerful spirits that reveal valuable secrets. In many cases the practitioners make no charge at all for their own services, requiring only that the patient pay a fee to the cooperating spirit. For example, in the Cape Coast district, a certain doctor, in case of sickness, orders his patients to bury in the ground a few bottles of rum as a suitable recognition of the services of the spirit that has been brought into consultation" (15). This reminds us of the nonmercenary nature of practice in some countries where the gold piece is to be put carelessly on the mantel or table without the absorbed scientist seeing it. The doctress in the wilds of the Argentine (16) wished some cocoa buried in the ground for the spirit of disease she was contending with. "If I had done so," says the author, probably acquainted with disinterested physicians across the water, "I am quite sure that Petrona would have returned to the spring upon the following day, in order to take possession of the cocoa which we were to bury there." In Sinaugolo (17), where there is also a prejudice against abortionists, the lady who mutters incantations, with other procedures more practical, to drive the fetus from the uterus, is shy about fees. The patient "in paying, passes the fee behind her own back to the operator without looking around, and she is asked not to mention her name or see her again."

In the island of Nias, to keep off a dreaded epidemic, we find a practice of paying the doctors, somewhat akin to burying the rum in a place familiar to the African doctor who loves it. Money is collected and tied "in a bundle, and the priest holds the bundle up toward the sky and down toward the earth to satisfy the god of the upper and the god of the nether world that justice has now been done.

After that he either flings the bag of money into the river or buries it in the ground beside the idol. In the latter case the money naturally disappears, and the people explain its disappearance by saying that the evil spirit has come and fetched it" (18).

In relating with admiration the story of the conquest of Mexico, an old Spanish chronicler becomes reminiscent of practices at home which he has perhaps heard charged against our maligned "noble profession." The surgeons who were placed over the Aztecs in the civilization which the Spaniard destroyed "were so far better than those in Europe that they did not protract the cure in order to increase the pay" (19). We have an example among the modern Egyptians (20) which I relate here, but whose "civilized" origin I suspect, which shows how a bloated capitalist increases his hoards by exploiting secret remedies. "A rich man will sometimes buy a powerful fetish as a speculation, and make a good profit by hiring it out for a fee, and the poorer man will pay the fee, hoping to reap good results to his bodily health or to his prosperity by having the undivided interest of the fetish at his service." Something of the kind is related of some of the North American Indians, who retain as private capital in the family the secrets of medicine handed down to them by a celebrated medical ancestor.

In Tonquin (21), "when a rich man is ill, it is customary to propose a reward to whoever cures him; doctors and surgeons crowd around him; each in his turn gives him medicines, which are immediately paid for; and the reward is given to him whose medicine has been found to have operated a considerable alteration in the patient. They often succeed. What is most surprising is, that these multiplied medicines do not increase or fix the disorder; they cannot be dangerous, and their composition must be very simple. The doctor to whom they attribute the cure acquires great reputation; and yet those of the same profession who have been consulted . . . entertain no jealousy, . . ." which is more surprising still. In another one of the accounts in Pinkerton's *Voyages* (22), Bosman, describing the customs of the coast of Guinea, speaks of a method of charges scarcely more consonant with the most approved modern system of fees, and he does it with much uncharitable reviling customary to observers in the early days of sociological investigation, and "civilized" sects do not escape his criticism. "In sickness (in which they agree with all the rest of the world), they first have recourse to remedies; however, not thinking them sufficient alone to preserve life and restore health, they apply their false and superstitious religious worship, as more effectual to those ends; and what contributes to the promotion of this custom, is, that he who here acts the part of a doctor, is also a feticheer or priest, who consequently does not find it very difficult to persuade the patient's relations that he cannot be recovered without some offerings made to the false god in order to appease him; and they being strongly bent to superstition, and immediately ready to follow the priest's advice, accordingly desire him to inquire of their god what he would please to have. The priest, to be sure, is not negligent in this affair, where the profit accrues to him, but as soon as possible puts his cheats in practice; and after his pretended inquiry, he informs them that they must offer a sheep, hog, cock, dog, cat, or whatever he likes best; which sometimes may be gold, cloth, drink, and other such like good things beside, which are always proportioned to the ability of the person to be served; for that alters the measure of these cheats, who always consider whether the man be in condition to bear this charge; and herein they are indeed to be preferred to some Romish priests, whose undistinguishing exorbitant price of soul masses ruins several families."

As to the connection here intimated between the reward of the doctor and the fee of the priest, we may cite a remark from another author (23) of the same period which illustrates the blending of sacrifice to the gods and the doctor's fee. "In the kingdom of Achem, the priests called Raulins, are called in to the sick. They blow at them, at the same time pronouncing some mysterious words. They offer up to the god of the four winds a sacrifice of fowls, hogs, and the fattest animals, which must be repeated four times, unless the patient dies or recovers before that time. The Raulins feast on the food thus offered to their gods." It may be thought difficult to find a counterpart to this sort of remuneration in modern life. The same principles are brought into play when the "grateful patient" is invited to donate to the winning doctor's hospital, with which much of his material interests are associated.

It will be noted in the account of the way the Zulu collects bad debts that he depends on his standing well with a Higher Power for doing so. It being gods or demons who send as well as cure disease, their minister among mortals takes advantage of the disease producing powers of his master to get his pay for having exercised the disease curing powers which have been delegated to him by virtue of his ministry. In the absence of a legal collecting agency whose advertisements reach us through the mails this is not a bad substitute. In Africa, it is reported, the Zulu doctor needs a helper to detect the dishonest practices of his patients, preparing to cheat him of his contingent fees. In the words of a native, "When he has applied his medicines, the people try to eat him up by craft, and say, 'Let us tell him that I took his medicine, but gained no relief. It was as though I had taken nothing but corn.' For it is common among black men to conceal the power of medicines; they are but few who praise them. In consequence of this craft there came to be appointed secret spies. The doctor says to a man, 'So-and-So, do you go and listen for me. There is my medicine. I know that the people will conceal its efficacy, and say it was useless, for they are slow in giving me a bullock. I therefore appoint you to look out for me.' So then, when he has treated the patient, he waits to hear what happens, that he may know how he is. And then he hears him say, 'O, Son of So-and-So, I am still ill: as yet I am in pain all over; and as to that medicine of yours, it was as if I had only eaten corn.' So the owner of the medicine wonders, who understands its action in the human body, when he hears the man denying that it ever brought anything away, saying, 'No, there came away nothing but water.'

But his spy tells him that his medicine worked well in the man; that the people deceive him, and the man now goes to wedding dances and to beer drinkings; that he is quite well. But it is hard for him to give a bullock; he makes more of the disease which remains than of the health which has been restored." The sequel reads: "At length the doctor says, 'So-and-So, since you refuse to give me a bullock, I shall now remember the holes where I dug up the medicine which has cured you; and cry there. Something will happen to you, if you eat my bullock deceitfully. Do not say I am a sorcerer. Keep the bullock. I no longer wish to have it.' If he is really deceiving him, he refuses, saying, 'O, Son of So-and-So, for my part I do not say the disease has beaten you; I say you are my doctor, although I took your medicine without feeling any effects from it; yet it feels as if my body was about to be that of a man, if you persevere in getting medicines for me. I am your bullock. How do you think, if I get well, I can hide myself? Do not talk about crying at the holes where you dug up the medicines. You will kill me if you do so. Just doctor me. Your bullock is ready for you.' If he does not agree with him, the doctor awakes in the morning with his heart much pained because he hears from witnesses that he has really helped the man; but he will not allow that he has been helped. So he goes to the holes where he dug up the medicines, and scrapes away the earth and sheds tears, and tells the Amatongo (the spirit of medicine to whom the bullock is supposed really to belong) of his trouble, saying, 'Why are you eaten up by a man that I have cured? Let the truth appear. Let not my bullock be eaten by a living man; let the power of my medicines be evident, and not be a mere vain thing. I tell you the medicines were yours.' I cured him by your power. Is it pleasant to have your cattle eaten? He says this weeping. For it is said if the holes where the medicines were dug up are opened, and the doctor weeps there, the man will be ill and die, if he has really concealed the power of the medicines. Thus it is. With us it is a fearful thing that the doctor should go to the holes to cry; and it is said if he does so he calls down death on the patient. This, then, is what is meant by crying at the holes."

We may know more of etiology and pathology and therapeutics, but down in Zululand and in many another heathen land the natives could give the wisest of us much useful information about human nature. They may be given to fleshly lusts and they may go around naked, but these so called children of nature seem not infrequently to be clothed in guile.

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ANORECTAL INJURIES.*

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Minor injuries are frequently observed at the anus and lower rectum, but extensive, dangerous, contused, lacerated, and perforated intestinal wounds most frequently involve the abdomen, small intestine, and colon. The rectum and anus are less often subjected to trauma, because of their position within the buttocks, and protection of the surrounding bony structures (symphysis pubis, sacrum, coccyx, iliac bones, and their tuberosities). The rectum may be injured from above through contusion, bullet or knife wounds, or from below, particularly when the subject is bent forward when the injury is received.

Types of wounds and injuries. Wounds of the anorectal region may be classified as contused, lacerated (ruptured), incised, perforating, pneumatic, and miscellaneous.

Contused wounds are encountered less often about the rectum than the colon, and are usually induced by being run over, kicks, blows, falling from a height upon the buttocks, divulsion of the sphincter, evacuation of hardened feces, careless instrumentation, and pessaries.

Laceration and rupture of the rectum and anal canal are common, and may be slight or very extensive. Most often laceration results from the discharge of impacted fecal matter, or careless introduction of the finger, hand, or speculum, proctoscope, bougie, or other instrument.

The author has treated many diminutive, moderated, and extensive lacerations of the mucosa, and other rectal coats, caused by enema tubes that were rough, sharp, pointed, or which had been forced into the bowel tunics, or broken, following which hemorrhage, abscess, or peritonitis was a complication. He has treated other patients where injury was induced by a kick or blow on the anus, pederasty, divulsion of the sphincter, or strictures caused by dilators or bougies, tearing of the gut during operations on the bladder, prostate, or pelvic or abdominal organs, evacuation through the rectum of a large vesical calculus, or of foreign bodies, viz., fish and chicken bones, enteroliths, safety pins, nails, fish hooks, fragments of glass, and triangular pieces of metal.

Cases have also been reported where the patient had been run over, or run into by a wagon tongue, had fallen from a height, sat down on or had been thrown against a blunt or ragged object, viz., a stone, stump, paling, scissors, door knob, pitchfork, or dashboard of a wagon, had been crushed by machinery or hit by flying missiles.

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The rectum has been ruptured in several patients, where bougies were forced through strictures above the peritoneal attachment, and similar injuries have been caused by the careless or forcible introduction of the sigmoidoscope, and passage of instruments or bougies by experienced surgeons, where the bowel was strictured, extensively ulcerated, or involved in a cancer. Ruptures have also followed distention of the bowel by air or gas for diagnostic purposes, stretching and massaging the gut with inflatable rubber bags (for constipation), and the introduction of compressed air in a spirit of fun. Similar injuries have followed introduction of the hand during examination, and employment of large operating specula, and where the subject had been squeezed by machinery, caught between colliding cars, or injured by shrapnel.

Incised wounds. Accidental, clean cut wounds of the rectum and anus are usually made by the knife or bayonet, but may be the result of sitting or falling upon a pointed or edged instrument or object, evacuating bones, pieces of glass, nails, tacks, burglar files, or other foreign bodies having an angulated or sharp edge. The rectum is also frequently injured during operation upon the bowel and adjacent organs.

Rectal tears are occasionally induced by the head during labor, escape of skull bones through the anus, bursting of abdominal, pelvic, and spinal abscesses, encroachment of a displaced coccyx, introduction of sounds and catheters, and crushing operations for vesical calculi.

Perforating wounds, by penetration or puncture Perforation of the small intestine and colon are more frequently caused by typhoid ulcer and infectious types of colitis, than by accidental injuries.

Perforations of the rectum may be induced by a bullet, knife, or bayonet thrust, or pointed or sharp edged foreign body (pin, needle, knife, piece of glass, etc.), swallowed or introduced through the anus. Occasionally prisoners and insane persons swallow or conceal foreign bodies in the rectum, and the author has treated two men who swallowed nails, glass, needles, pins, and open knives for a living, that died from perforation and peritonitis. Frequently the surgeon's knife, needle, or scissors accidentally punctures the bowel during rectal, pelvic, vesical, prostatic, or urethral operations, and occasionally scissors, knives, forceps, needles, gauze, ligatures, and other foreign objects or substances, left in the abdomen, perforate and are evacuated through the rectum. One of the most frequent and unnecessary causes of perforation is the careless introduction of imperfect or glass enema tubes, which readily break when force is used.

The author has treated four patients for complete bowel laceration, made by careless surgeons who used unsuitable instruments while packing wounds, and has seen another case where injury was caused by distending the rectum with gauze, during an attempt to control hemorrhage.

Ischial abscesses nearly always point in the rectum, but pus from pelvic, spinal, and coccygeal abscesses occasionally discharge into the bowel.

Pneumatic wounds. Distention of the rectum and colon with air or gas is a diagnostic aid in certain cases, but when carelessly practised, rupture may ensue from overdistention. Several times, perforation has followed employment of the pneumatic sigmoidoscope, owing to high air pressure or to forcing the instrument through the bowel. Lacerations and rupture of the rectum have also followed dilatation, massage, and stretching the rectum with air filled rubber bags, in the treatment of chronic constipation and stricture. Pneumatic rupture of the rectum most frequently happens as a result of joking, and recently several cases have been reported.

Many factories employ compressed aid to blow away filings, shavings, and dust, cleaning flues, motor power, and riveting bolts, and employees often use it to clean their clothes; the air being permitted to escape through a narrow nozzle at a pressure of from forty to 125 pounds. When a new employee enters the factory, he is sometimes initiated by having the air turned upon him, which causes a sharp stinging sensation. In ninety-five per cent. of rectal and colonic ruptures from this source, the victim is bent over, and the tube is placed at or near the anus, and the air turned on in a spirit of fun; in nearly every instance the air penetrated the clothing, entered the anus, and ruptured the small intestine, colon, sigmoid flexure, or rectum, which was immediately followed by an outcry, and fainting or collapse of the victim. The rupture usually occurs in the sigmoid flexure, but in some instances the bowel tears at several points, or throughout its entire length, and the blowout is complete; but sometimes the peritoneal and muscular tunics give way and the mucosa extrudes through them.

Other wounds and injuries. Injury to the rectum and submucous and subcutaneous tissues is frequently caused by the injection of carbolic acid in the treatment of hemorrhoids. The author has handled cases where ignorant employment of this agent led to violent inflammation of the anorectal region, abscess, fistula, terrific sloughing, embolism, and pneumonia. Several times he has treated extensive burns, resulting from the improper use of acids, turpentine, zinc paste, silver nitrate, and electric or Paquelin cautery, and has frequently been consulted by patients who suffered from painful injury, induced by the snapping of the blades of a speculum, or a sharp edged proctoscope. Finally cases were encountered where the buttocks and anal canal had been slightly or extensively lacerated by the patient's finger nails, while scratching to relieve pruritus ani.

SYMPTOMS.

The manifestation of anorectal injuries varies with the extent, character, and site of the wound, time elapsed between occurrence and operation, and whether or not the wound drains freely.

Traumatic lesions of the upper rectum and sigmoid flexure are more serious than lower rectal, because they are often complicated by peritonitis. Contused and lacerated injuries induce dangerous manifestations less frequently than punctured wounds, because they are larger, frequently superficial, and drain freely.

Blow outs or pneumatic ruptures of the rectum or colon are the most serious of intestinal accidents, since the gut is torn through, and blood, gas, feces, and pathogenic organisms escape into the abdominal cavity, to cause peritonitis, abscess, or fecal fistula.

Superficial injuries and foreign bodies in the anal canal, through irritation, induce pain, tenderness, soreness, tenesmus, and spasmodic contraction of the sphincter and levator ani, and occasionally incontinence of urine or frequent micturition. Deeper wounds similarly situated cause the same symptoms. When they do not drain freely, infection ensues, then the patient has a chill, high temperature, fast pulse, throbbing pain, furred tongue, and the usual symptoms of abscess.

Extensive ruptures and tears below the peritoneal attachment cause little suffering, after the initial pain subsides, because they drain freely, and the sphincter muscle is often severed. Exceptionally, infection takes place or sloughing ensues from injury to the vessels or tissues, and septicemia or toxemia is troublesome, and continues until drainage is perfected or necrotic tissue has been removed.

Shock. Minor and major injuries of the rectum below the peritoneal attachment cause little or no shock, except when considerable blood has been lost, but contused, lacerated, and pneumatic wounds, affecting the abdomen, upper rectum, or colon, are usually accompanied by profound shock, and the patient remains in a state of collapse until the injury has been repaired.

Hemorrhage. Bleeding often complicates intestinal wounds, and is slight, moderate, or profuse, depending upon the size of the vessel injured. Clotted blood in the abdomen evidences extravasation, and favors peritonitis when it is not removed. Occasionally, alarming secondary hemorrhage from sloughing occurs where vessels have been severely traumatized.

Sepsis. Primary union is obtained in clean cut wounds, but infection resulting in peritonitis, abscess, or fistula is a frequent complication of injuries involving the peritoneum, and penetrating, ragged, and uneven wounds that are not drained properly.

Abdominal distention and tympanites quickly follow perforation, laceration, or rupture of the small or large intestine or rectum, above the peritoneal attachment.

Urinary incontinence or difficult micturition is observed where the bowel and the external sphincter and levator ani have been severely traumatized. Abdominal pain and tenderness complicate complete tears in the large bowel, and intense colic is characteristic of pneumatic rupture of the gut. The pulse and temperature remain normal when the lower rectum has been injured and properly drained, but are disturbed when the wound is infected, or involves the colon or sigmoid.

Complications. The following are the chief complications of anorectal wounds: Abscess, rectovaginal, rectovesical, or rectourethral fistula, fecal incontinence, stricture, hernia, fecal fistula, urinary or fecal extravasation, sloughing of the mesentery, peritonitis, phlebitis, pneumonia, and necrosis of the sacrum, coccyx, or pelvic bones.

DIAGNOSIS.

Anorectal injuries are comparatively easy to diagnose when a history has been taken, the manner in which the accident occurred is learned, external evidences of trauma are observed, symptoms are studied, and the degree of bruising, ecchymosis, swelling, edema, and laceration of the perianal skin and abdomen are noted. Following inspection of the lesion, digital and proctoscopic examination is practised, where the rectum is involved, so that the tear or perforation can be seen or felt, to determine its extent. Promiscuous probing is dangerous and unsatisfactory.

When the upper rectum, sigmoid flexure, or colon is apparently injured, the abdomen is opened, and the intestine examined, until the wound is located. Perforations and tears in the rectum or lower sigmoid are also diagnosed through the sigmoidoscope and by infiltrating the gut with air, which escapes into the abdomen when it is lacerated.

TREATMENT.

The treatment of anorectal injuries is simple or complicated, but under all circumstances the wound is immediately cleansed and bleeding arrested, so that the character of the wound may be determined. Incised or clean cut injuries are closed with deep and superficial catgut stitches, the suture line is protected by collodion or gauze, and a drain is inserted in the dependent extremity of the injury to prevent infection. Contused, lacerated, and pneumatic wounds in the lower rectum are drained at one or more points after hemorrhage has been arrested, ragged edges have been removed, and the wound irrigated. Dressings are not applied until the wound has been levelled, so that cuplike depressions are not left to catch infective agents. In extensive injuries sections of the wound are sutured with catgut before the drain is inserted, in order to shorten convalescence.

During postoperative treatment the patient suffers less, and the wound heals more quickly when the patient eats full meals, and the evacuations are kept normal or semisolid, for fluid stools cause pain and favor infection, and nodular feces traumatize the wound.

Where the bladder or urethra is perforated or ruptured, in suitable cases the tear is immediately repaired, and the rectal injury treated according to the plan outlined above, but when this is not feasible, the bladder is drained, and the urethral or vesical wound heals by granulation.

Abdominal rectovesical wounds are difficult to close, but when this has been successfully accomplished, with through and through Lembert sutures, results are good, except in delayed infected cases.

Diminutive and large rents in the colon and sigmoid are repaired by a purse string, or by double infolding sutures; but where the mesenteric vessels are injured, or the rectum, sigmoid, or colon is extensively damaged, the bowel is resected, excluded or sutured, or an artificial anus is established by suturing the gut in the abdominal incision.

In rectovaginal perforations and tears, better results are obtained when closure of the vaginal opening precedes approximation of the rectal edges of the rent. Sutures employed in closing deep wounds are severed when signs of infection appear, and the necrotic tissue is excised or dusted with calomel.

In abdominal injuries, where blood, feces, or urine is found in the abdomen, it is wiped out, the cavity irrigated with saline solution before the rent is repaired, and drained to lessen the danger of infection and peritonitis. Following repair of rectoabdominal injuries, patients do better when they are kept in Fowler's position, and on fluid diet for a few days. Continuous cold antiseptic applications are agreeable, prevent infection, minimize the danger from infection, and facilitate the healing of contused skin and abdominal wounds, associated with anorectal and colonic injuries.

Miscellaneous injuries. When the rectum and skin are burned with acid, zinc, silver nitrate, or turpentine, antidotal agents are immediately applied to the injured area, followed by a bland ointment containing morphine or cocaine, to relieve pain, diminish sphincteralgia, and prevent contractions of the levator ani. Later, when the patient is comfortable, mild stimulating applications to the wound facilitate healing.

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AURAL COMPLICATIONS OF GRIPPE.*

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In considering the aural complications of epidemic influenza, the first point which I wish to emphasize is, that the aural manifestations do not differ essentially from the aural manifestations which we find occur when this constitutional disease is absent. Much has been said in recent years about the unusual prevalence of middle ear suppuration complicating epidemic influenza. This is undoubtedly true. At the same time, I doubt whether any other epidemic disease of equal severity, and involving the upper respiratory tract, would not be followed by aural complications quite as frequently as aural complications occur in epidemic influenza. In other words, influenza otitis presents few characteristic points peculiar to itself. It presents general characteristics depending upon the lowering of body resistance due to a severe constitutional disease. Given this lowered body resistance, the aural condition, in my opinion, would be exactly the same whether the constitutional disease was epidemic influenza or some other constitutional condition of equal severity.

The most simple aural complication which we have in epidemic influenza is a mild congestion of the tympanic cavity and of the Eustachian tube. The only way that this differs from a similar condition following an acute coryza, is in the rather sudden appearance of the aural symptoms and the rapidity with which they advance. Seen early and treated properly, these symptoms disappear as readily as if they were complications of a simple cold in the head.

When we come to the acute inflammations of the middle ear complicating epidemic influenza, they may be divided into two classes.

First, those which are characterized by a sudden accession of the symptoms, such as severe pain, abrupt rise in temperature, and rapid changes in the tympanic mucous membrane, these changes occurring very rapidly—much more rapidly than they would occur as a complication of a simple cold in the head. These cases are easily recognized, and prompt local measures for their relief are usually followed by satisfactory results. There is one type which is rather characteristic of influenza otitis. I here refer to what we may call the hemorrhagic type of acute otitis. In acute inflammation of the middle ear characterized by a sudden onset of the constitutional symptoms, we frequently find on speculum examination a hemorrhagic condition in the external auditory canal, involving, not only the walls of the canal, but also the superficial layer of the drum membrane. In other words, an acute otitis externa hæmorrhagica is a frequent complication of acute otitis media complicating influenza.

There is, second, another type of influenza otitis far more dangerous than this presenting the acute symptoms, and that is, the so called latent otitis media. We have a history of an acute influenza with moderate constitutional symptoms. There is also some pain in the ear, and speculum examination may show a simple congestion of the tympanic membrane, in other words, a mild middle ear inflammation. The aural symptoms may continue mild in character for a few days, and then suddenly there may be an abrupt rise in temperature and all the symptoms of constitutional infection due to absorption from the local focus of suppuration in the middle ear. In one case of this kind which I saw this winter, an otitis of only five days' duration was followed by a sinus thrombosis necessitating excision of the internal jugular; the blood culture, five days after the inception of the otitis, showed streptococci.

Mastoid complications following an influenza otitis are, perhaps, not more common than mastoid complications following an otitis of equal severity and depending upon other causes. In mastoid involvement following influenza, however, a hemorrhagic type is not infrequent. Hemorrhagic mastoiditis is characterized by severe mastoid pain from the onset of the acute attack, also by more temperature elevation than we ordinarily find in a simple aural mastoiditis. On opening the mastoid we find the cells filled with dark blood or black clotted blood. The septums dividing the pneumatic spaces are ordinarily intact, but the hemorrhagic condition extends throughout the entire mastoid process. Most cases require early operation. In the majority, convalescence is prolonged, and in only a very few cases is any treatment other than the open method admissible. In other words, given a case of hemorrhagic mastoiditis, the infection is usually so widely spread throughout the mastoid, while at the same time no limiting membrane has been developed, that suture of the superficial structures means simply secondary wound infection. If these wounds are treated by the open method and are simply packed, convalescence is rapid. If nearly complete closure of the wound is employed, convalescence will be very much prolonged. The hemorrhagic type of mastoiditis is perhaps more common as a complication of influenza than of any other constitutional disease. Where the mastoiditis is of the ordinary variety, as characterized by a breaking down of the intercellular substance of the mastoid and the formation of pus, the influenza cases do not differ from the cases of ordinary suppurative mastoiditis, except that the progress of the disease is apt to be more rapid owing to the lowered resistance of the patient.

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The points that I should like to bring out, therefore, are as follows:

1. Aural complications of influenza are severe chiefly from the fact that the constitutional infection lowers the general bodily resistance.
2. The hemorrhagic type of inflammation, both in the middle ear and in the mastoid process, occurs probably more frequently as a complication of influenza than other constitutional diseases.
3. Operative interference in these cases must depend upon the otoscopic appearances and the local symptoms. In other words, the actual local lesion determines the character of the surgical interference.

To be certain that the aural complications of influenza are not confined to this particular constitutional disease, we have only to look at our large general hospitals, where a comparatively large number of cases of epidemic influenza are treated each year, and to note the relatively small number in which severe aural complications occur. Also, in special hospitals the occurrence of an epidemic of influenza does not increase the demand for attention, as would be the case were the aural complications so exceedingly common in this disease as many give us to understand. In other words, epidemic influenza, when it occurs, is exceedingly widespread. Naturally, a certain number of these cases will suffer from aural complications, but that a very large proportion will suffer from aural complications cannot certainly be proved by statistics.

That this view regarding the nonspecific character of the otitic complications is correct, is borne out by the bacteriological findings. In cases of so called influenza otitis, the infecting organism is almost always a streptococcus. This organism, as we know, is the organism most frequently found in severe middle ear inflammation. I have yet to see a single case of mastoiditis and, as I remember it, a single case of middle ear infection, due to the specific organism of influenza.

The mild cases of middle ear inflammation which complicate epidemic influenza are most frequently seen by the general practitioner, and many times by him alone. It is important that every general practitioner should be able to recognize a beginning acute inflammation of the middle ear and should understand what measures he may safely take for its relief. He should also recognize his limitations; and where the condition demands it, or where he is in doubt, he should remember that prompt measures in the early stages may do much to prevent serious complications later. I am inclined to think that a large proportion of the medical profession temporizes with beginning acute inflammation of the middle ear; at least, I know that not infrequently I am called in consultation and receive a history somewhat as follows: The patient had a mild attack of influenza. There was some discomfort in the ear, not amounting to severe pain. The temperature elevation was only slight, and otoscopic examination revealed but slight changes in the drum membrane—probably slight congestion along the long process of the malleus. This condition may mean much, or little. Not infrequently, the general practitioner commits the blunder of ordering the ear irrigated with a warm solution to relieve the slight pain, or I am afraid this irrigation is ordered because he feels that something must be done. It should be remembered that while irrigating an ear with warm water is practically harmless, the mere introduction of water into the external auditory canal will cause a temporary congestion along the long process of the malleus and about the periphery of the membrane. If such irrigation is ordered frequently, and then the symptoms increase, the otoscopic appearance will be somewhat masked by the irrigation. Particularly, I think, the general practitioner should remember that no water is to be introduced into the external auditory meatus for the relief of pain, unless there is a discharge from the ear. If the case is one of acute otitis in its early stages and is going to resolve spontaneously, the application of moist heat will not aid the process of resolution, while its use has the disadvantage of masking the otoscopic picture. If spontaneous resolution is not going to take place, then free incision of the drum membrane is demanded. It is this temporizing in the early stages—delaying incision of the drum membrane unnecessarily, and trusting to the supposed advantages of moist heat—that I think is responsible for many of the more serious complications which follow acute otitis media.

Coming now to the operative treatment of the aural complications of influenza, I have stated that operative interference in these cases will depend upon the otoscopic appearances and the local symptoms. Much misunderstanding has occurred among the laity by the indiscriminate use of the word, mastoiditis, and the limitation of this term to cases where the aural complications are of great severity and where operative interference has been undertaken sometimes as a last resort. The general practitioner should aim to make his patients understand this fact—that the mastoid is a part of the middle ear and that every acute inflammation of the middle ear is undoubtedly accompanied by certain changes in the mastoid process. In other words, every acute otitis media is an acute mastoiditis. In the milder cases, an external operation upon the mastoid is unnecessary. The pathological condition within the mastoid process is relieved by free drainage of the middle ear through an incision of the drum membrane. In certain cases, either due to the severity of the infection, or to the fact that some remote portion of the mastoid becomes infected—either at the same time that middle ear infection occurs or at a subsequent period—middle ear drainage is not sufficient to relieve the condition resulting from invasion of the mastoid. In such cases it is necessary to drain the focus of inflammation posteriorly; in other words, to perform the mastoid operation. It is not so many years ago that the laity were extremely timorous regarding incision of the drum membrane and looked upon this procedure as one of great gravity. They have been educated gradually to understand that a free myringotomy is not only often a life saving measure, but that it is almost always a measure of the utmost value in preserving the function of the auditory apparatus. In the same way they should be taught that where tympanic drainage is not sufficient to relieve a pathological condition within the mastoid, an early mastoid operation is devoid of danger and offers the best opportunity for conserving the function of the organ of hearing.

15 East Fifty-third Street.

NOSE AND THROAT COMPLICATIONS AND SEQUELÆ OF GRIPPE.*

With Suggestions for Preventive Treatment.

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Each succeeding year brings its own particular type of infectious troubles, usually classified as grippe; but as a matter of fact even a cursory review of the literature for the last fifteen years shows that there is nothing especially new in the manifestations of the disease. Moreover, it is probable that the specific organism produces a specific effect, modified by the resistance of the victim and the point selected for attack.

Atypical and unusual cases are probably due to a more or less mixed infection. The *Weekly Bulletin* of the board of health, issue for February 26th, states that of fifty cases diagnosed as grippe, and diagnosed by Doctor Williams, both microscopically and culturally, the influenza bacillus was found in only nine, while the streptococcus was found in twenty-six, and the pneumococcus in nineteen. In many of the cases a number of different organisms were noted; that is to say, in the majority of cases we were dealing with a mixed infection.

To enumerate the complications and sequelæ of grippe and allied conditions in the upper respiratory tract, would involve the naming of practically all the anatomical structures of this region with their inflammatory affections, both acute and chronic. It is not necessary to attempt to draw a fine distinction between the manifestations of the disease proper and of its complications. For practical purposes, we may consider that the ordinary cases of grippe are manifested at first only as severe acute rhinitis, with extensive involvement of some or all of the accessory sinuses; but when the process extends, for example, into the lacrymal duct, the Eustachian tubes, the tonsils, or the deeper part of the respiratory tract, it may properly be considered as a complication or sequel.

Stated simply, influenza bacilli generally obtain their first foothold in the nasal mucous membrane, giving rise to the manifestations of an ordinary acute coryza, with consequent swelling of the membrane, interfering with drainage from the nasal cavity itself, and the small ducts which drain and ventilate the nasal accessory sinuses, any or all of which may be attacked. With such an involvement, the constitutional symptoms may be very pronounced—rise of temperature, aches and pains in the head, back, and limbs—with local symptoms of a blocked up nose, more or less pain, and profuse serous secretion.

The process may remain simply catarrhal in its nature until the disease is checked or runs its course; but when the organisms are unduly retained in the cavities by abnormal anatomical structure of the nose, they develop rapidly, and the symptoms are more or less severe, depending upon the virulence of the organism and the resistance of the victim.

The ethmoid, with its inadequately drained cells, called by the older anatomists the ethmoidal labyrinth, forms a peculiarly favorable site for the reception and propagation of these bacilli. Loss of smell is usually one of the first results of ethmoidal infection. Sometimes the pus in the posterior ethmoidal cells invades the optic nerve, and causes scotoma, thereby producing partial or total blindness. The proximity of the ethmoid to the brain cavity and its connections therewith by numerous small foramina transmitting bloodvessels and lymphatics, accounts for the not infrequent cases of meningitis that develop as a sequel of this affection.

The first attack of grippe usually subsides under ordinary treatment, but in cases where there have been repeated attacks, followed by ethmoidal disease with the formation of polypi, the most severe complications generally develop.

Case I. Some time since I was asked to see a young man who had had several attacks of grippe, and was then suffering from another severe attack. He had a temperature of 104.5° F., severe frontal headache, and his left eye was protruding. Examination showed pus in the left nostril and nasopharynx, with intense congestion of the mucous membrane and turbinate bodies. A diagnosis of suppurative ethmoiditis perforating the orbit, complicating grippe, was made. The patient was removed to the hospital, and skiagraphs were made which showed a pansinusitis on the left side. All attempts at treatment failing to drain the sinuses or relieve the pain, a radical Killian operation was performed. Pus was found in the frontal and sphenoidal sinuses, pus and polypi in the ethmoid and antrum. After opening the orbit, pus and gangrenous fatty tissue were removed. For a time it was doubtful if the sight of the left eye could be preserved, but a good constitution enabled the patient to recover normal vision and health.

The drainage from all the inflamed area of mucous membrane naturally follows the line of least resistance, and usually flows into the nasopharynx, irritating and swelling the mucous membrane of the pharynx, and causing more or less cough, often persistent and aggravating; or, reaching the tonsils, it may infect them and through them produce an acute cervical adenitis; or localizing itself around the tonsils, may form a peritonsillar abscess; or it may even burrow through the mucous membrane of the posterior pharyngeal wall and cause a retropharyngeal abscess. This later complication is more common in children than in adults.

From the buccal cavity the bacillus may gain access to Stenson's duct and thus set up an inflammation of the parotid gland. This complication is not more common in influenza than in other infectious diseases, but it is a point to be remembered with parotiditis coming on during or after grippe, particularly in adults. The writer had a case in which the sublingual gland was attacked through its ducts in the floor of the mouth. Doctor Bane, of Denver, has reported a case of Ludwig's angina due to Bacillus influenzæ, in which a pure culture was obtained from the pus escaping from a spontaneous evacuation, from which an autogenous vaccine was made and administered. The patient recovered. (*Trans. Am. Lar. Rhi. and Otol. Soc.*, 1914, p. 338.) When the discharge is profuse, often consisting largely of pus, the patients not infrequently are unaware of it as it passes into the pharynx, and it may flow either into the larynx and set up an irritation or infection there, or into the esophagus and so cause stomach or digestive troubles.

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We must not be misled into thinking, however, that the grippe organism must of necessity manifest itself first through nasal symptoms. It may localize itself and attack other portions of the respiratory tract primarily, with marked virulence.

Case II. For example, a patient was first seen by his family physician on a Saturday morning, at which time he complained simply of a slight cold and sore throat. The doctor could see nothing special in the throat. The next morning, he was called in early to see the patient, who then had marked stridulous breathing. The writer was called in consultation and found the margin of the glottis very edematous, the sharp outlines of the arytenoids and adjacent structures being almost obliterated. Remedial measures failed, and within twenty-four hours it was necessary to do a hasty tracheotomy, as the patient was cyanosed and the glottis entirely closed. Six hours later, a pneumonic patch was found in the right lung; the next day the lung was entirely solid. The sudden appearance of this pneumonia could not have been due to the tracheotomy. The third day, the kidneys ceased action, and the patient died. A blood culture taken on the second day showed a severe pneumococcus bacteriemia. This case is cited to illustrate an acute clinical grippe infection, with the selective point of attack in the mucous membrane at the entrance to the larynx, developing into a general pneumonic process.

For a considerable time after attacks of grippe, patients frequently complain of difficulty in breathing, and examination of the nares reveals a hyperemic condition. Kyle, of Philadelphia, has shown that the occlusion is not an edematous swelling, but a true thickening of the membrane, due to an albuminous exudate in the perivascular spaces, which exudate, he believes, is formed in the blood by the action of the specific toxins of the bacilli. This possibly explains the persistence of grippe infections in the sinuses, and their tendency to become chronic or to recur, especially when they are not treated effectively after the initial attack.

In the preventive treatment of infectious grippe, three main points must be considered: 1, The condition of the mucous membrane and the anatomical structure of the nose; 2, the resistance of the subject; 3, the environment, which in our crowded cities is a most important factor.

As is well known, the nose has three main functions to perform in regard to respiration: moistening, warming, and filtering the inspired air. It is therefore of the first importance that this natural filter be kept clean and unobstructed, in order to prevent the development of germs within its confines or their further penetration into the respiratory tract. Deviated septums or enlarged and unhealthy turbinated bodies, especially with points of contact, should receive proper attention. The main point, however, consists in the education of the patient. Children, especially, can be readily taught how to blow the nose properly, and keep it clean. Grease in some form—plain petrolatum, perhaps as well as anything—may be instilled into the nose at stated intervals, to soften secretions and render cleansing easier. Furthermore, it seems reasonable, especially in children, that breathing exercises persistently carried out, would develop and improve the function of the nose.

The systemic resistance of the body must be maintained and improved by attention to diet, exercise, and general hygiene, avoiding overfatigue, exposure, or undue strain. Where repeated attacks of grippe have occurred and the system is greatly debilitated, the mixed vaccines may in some instances aid in restoring normal balance.

A healthy out of door life is, of course, the ideal, and is rarely attainable. When grippe is epidemic, patients should be instructed to avoid crowded assemblages, and to protect themselves as much as possible from known sources of infection.

16 East Fifty-fourth Street.

THE FAUCIAL TONSILS IN SINGERS.

Should We Remove Them?

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In the entire realm of surgery no other operation is so frequently performed as that for total or partial removal of the faucial tonsils. Removal is universally regarded as an extremely simple procedure, and the public has come gradually to the belief that any one holding a degree in medicine is perfectly capable of "doing tonsils." Nevertheless, those of us who see a large number of postoperative cases are frequently brought face to face with ineffectual and untoward results. In many instances the operator never learns of the final outcome, and acquires the belief that all of *h*is patients obtain one hundred per cent. cures whatever results his neighbor may be willing to confess. Recently we have been surprised to learn that at least five children operated upon by qualified tonsil surgeons at a recognized nose and throat hospital during the past six months have languished for some weeks in a large general hospital with foreign body pneumonia or empyema or both. One of these, a girl of seventeen years, came to my office for another condition, and the fact that she had had a resection of some ribs for empyema came out in the course of taking a history. She said that while having her tonsils removed she had "caught cold" and had almost lost her life, but was saved by a skillful thorax operation at the hands of the general surgeon who referred her to me. At the special hospital no knowledge of this complication had ever reached the ears of any of those who would be most interested to know about it.

However, considering the thousands of patients who go through tonsil procedures, the number who suffer from any complication worthy of mention is surprisingly small. This fact does not absolve us as specialists, however, from keeping an ever watchful eye on our technic. On the contrary, it should make us cautious about advising operation when it might be avoided. In no class of patients is this more to be borne in mind than in our dealings with singers, whose requirements are so very special that the slightest relaxation in our vigilance might spell disaster. Disorders of the nose and throat which in other persons mean little or nothing in the daily round of existence, are in singers fraught with consequences that are sometimes surprising considering the paucity of discoverable symptoms. Therefore, when we advise removal of the tonsils in singers we must weigh carefully all the known factors making for a successful result, and must not forget that unknown factors can bring about a failure.

Whatever may be said for or against tonsillectomy in other persons, in singers it is a matter of vital importance. During the past few years the laryngologist has been confronted daily by the eternal question, Doctor, if I have my tonsils removed, do you think there is any danger of my losing my singing voice? The patient who frames this interrogation usually has a long story to tell of some one who knew some one who had the tonsils removed and was never able to sing thereafter. It is nearly always a hearsay story. Seldom indeed do we find any one who has seen a "before and after" demonstration of this disability. Many singers, when questioned, acknowledge that they can recall no specific instance of lost singing voice following tonsil removal. Nevertheless, feeling that this subject is worth sifting out, and in order to get first hand information, a questionnaire was sent out to 500 physicians and to 500 singing teachers. A surprisingly large number of answers were received, and it was gratifying to note the interest that the matter seemed to inspire. Many of the busiest and best known men not only answered the questions, but took the trouble to write a personal letter as well. This personal element has added greatly to the interest of compiling and classifying the necessarily varying opinions. I shall present the evidence adduced seriatim:

TO PHYSICIANS.

Question 1. How many singers approximately have you tonsillectomized? One hundred and eight men reported 3,427 tonsillectomies. Of these some could not spare the time to look up records, others kept no records, and five were against operating on singers at all.

Question 2. Did cicatricial contraction of the pillars and soft palate result in any case? Out of 341 cases only forty-six showed cicatricial contractions, which is truly an excellent operative record. On the other hand, one gentleman said he had "observed" two hundred cases, operated in by other surgeons, "many" of which showed such contractions. Another surgeon had "treated" 100 postoperative cases, in twenty-two of which (twenty-two per cent.) he found cicatricial contractions in the fauces. It is fairly impossible to form any accurate judgment of this matter owing to the guesswork with which many physicians seem to be laboring. The words "many," "few," "several dozen," "great number," etc., show the mental haziness which descends on our horizon when we try to collate facts for scientific purposes. However, in order to strike the average, we may say that cicatricial contractions seem to be present in about one sixth of the total number of cases reported.

Question 3. What were the effects of tonsil operations on the singing voice? A, good, B, bad, C, no change. This is the salient question in the inquiry, and yet it was frequently answered in slipshod fashion or overlooked entirely. One hundred men reported good results in approximately 2,849 cases; while twenty-nine men reported no change. Four physicians declared absolutely bad effects, but did not go into particulars as they were especially requested to do; therefore, we are in the dark as to what these bad effects were. Two of these four men had never operated and the other two had done "very few" operations. Both declared their observations to be based on a "large" number of postoperative cases sent to them for inspection.

Question 4. Were these effects temporary or permanent after one year? In all cases the *good* effects were permanent. In cases where untoward or bad effects were noted, they disappeared within from one to three months after operation. No bad effects seem to have persisted after the third month A great many men expressed dissatisfaction in not being able to follow up their cases in a proper manner, since pupil singers migrate to the larger towns and to Europe. In general, singers as a class are fond of consulting many different specialists in the cities where they visit.

Questions 5 and 6. What bad effect, if any, was complained of, and what do you think was the cause of this bad effect? Ninety-five men reported no bad effects in a total of 2,904 cases. One holds the proud record of 300 tonsillectomies without a single bad effect of any kind. Thirty-eight men reported bad results in 172 cases. These were in outline about as follows:

Vocal stiffness for a few weeks. Decreased volume and impaired quality.

Difficulty with the flexibility of the top voice.

Voice lowered and range limited.

Difficulty in placement or loss of placement.

Loss of purity and sweetness of tone.

Metallic quality.

Vocal fatigue after vocalization.

Dryness of throat and sensation of a feather tickling the throat.

"Catch" in the voice.

The causes of these untoward symptoms as viewed by the specialist, were: Faulty technic whereby the pillars and soft palate were injured, changes in the faucial contour due to cicatricial contractions, involvement of fibres of the glossopharyngeal nerve, temporary incoordination of vocal musculature, lost lubricating function of the tonsils, relaxed pillars, necessitating a rearrangement of the resonating influence of the pharynx and nasopharynx, using the voice too soon after operation.

One surgeon reports 3,500 tonsillectomies. Of the subjects about fifty were singers, and in none was there any difficulty except "stiffness of the throat" for a few weeks.

Question 7. What type of tonsil (buried, small, hypertrophied, pedunculated, etc.) in your opinion gives the best chance of voice improvement after removal? All are practically agreed that the hypertrophic tonsil offers the best hope of improvement. The best answer probably is that any diseased tonsil, whether large or small, should be removed if such disease and resulting symptoms have been established beyond a peradventure. Some years ago, Professor O. Chiari, of Vienna, showed that greatly hypertrophied tonsils may be removed with impunity only if we calculate beforehand how to prevent relaxation of the palatoglossus and palatopharyngeus. Removal of such a mass of lymphoid tissue leaves a large fossa which must be filled in by granulation tissue and a subsequent cicatrix. I have always felt it wiser in such a case to do a tonsillotomy and to treat the cryptic stumps with chromic acid or the electrocautery after healing is fairly established. This brings us to the crucial question.

Question 8. Do you know of any case in which the singing voice was apparently destroyed by a tonsil operation? Only fifteen men out of 133 confessed a knowledge of any case in which the singing voice had been destroyed by operation. The inquiry was intended to apply to patients who had been obliged to give up all effort to sing after tonsillectomy. One man replied, "Lots of them, as a result of injuring the pillars during radical extirpation. I consider enucleation *with the capsule injurious* to the voice because of resulting prolapse of the pillars, and I apply the old rule, to remove only diseased or hypertrophied tissue." In one case "harm was done to the voice by a bungling operation."

Doctor ——— reports two patients "who stated that they were never able to sing after tonsillectomy," but adds naïvely that he doubts whether they could sing before the operation either!

Sifting down the "evidence" of these fifteen laryngologists who align themselves against tonsil operations in singers, such evidence is intensely vague, uncertain, and seems, after all, to be based mainly on hearsay.

Question 9. To what circumstance or technical fault do you attribute this destruction? There seems to be a unanimity of opinion that faulty technic is at the bottom of any postoperative difficulty. The phrase, faulty technic, occurs again and again, while injury to the pillars, laceration of the uvula and soft palate, too extensive cutting or tearing of parts adjacent to the tonsil, and ignorance of anatomy and function of the tonsils are other ways the reporters have of describing the causes of vocal impairment as they view it. A certain physician complains of those "who operate without anesthetics in sensitive throats which patients cannot control during operation." Surely any one who attempts, without anesthesia, any kind of operation on the highly strung, supersensitive singer is guilty of a serious offense.

Thus far we have considered only the reports coming out of the experience of the laryngologist. Let us now take up the replies to the questionnaire set for singing teachers only. There was a great deal of difficulty in reaching the teachers, because their national organization has few members and there is no roster of the States such as the *American Medical Directory* affords. A large number of those addressed replied, but the writer regrets that he was unable to secure a longer list.

Question 1. How do diseased or enlarged tonsils affect the singing voice? The general opinion among singing teachers is that the tonsils muffle or deaden the voice, take up space needed for perfect vocalization, interfere decidedly with the amplification of tone, make the voice thick and throaty and limit its compass, diminish the pharyngeal and nasopharyngeal (head) resonance, affect the general health, cause liability to colds and weak throat, and prevent the expansion of the throat necessary for high voice.

Question 2. How many of your pupils approximately have had their tonsils removed? About ten to twenty per cent. of vocal students some time in their career undergo tonsil operations. One teacher says that a large percentage of so called throat trouble is caused by diseased tonsils, and recommends all such persons to undergo the operation before beginning vocal work.

Question 3. Was the removal total or partial? The consensus is that total removal is preferable; for after partial removal "the tonsils grew again" and the pupil went through the same series of "sore throats every few days" as before. One teacher says that the question of total or partial removal depended, in his experience, on the skill of the operator.

Question 4. Was there any bad effect on the singing voice? If so, how manifested? Nearly all of the reporters say that no bad effect was noted. One teacher found it "hard to bring into the voice any softness or color." Another thinks the operation does not benefit "since it makes the focusing of tone impossible." "Natural conditions are changed," says one, "and the fine adjustment of the pharynx is interfered with. In some cases the voice was lowered; in others heightened from a half to a full tone. In at least one case lack of resonance was complained of, and in another the voice was weak and there was difficulty in focusing and holding the pitch.

Question 5. Do you know of any case in which the singing voice was apparently destroyed by tonsil operation? (If so, a detailed report would be most acceptable.) The majority of reporters answered *no* emphatically. One voice was damaged (not lost) "by cutting a pillar of the fauces." Another teacher complains of "careless cutting of ligaments," but does not say what was the result to the voice. Still another teacher finds that "in all cases emptiness of tone was the result, and in many cases the tonsils grew again, causing more operations." One reporter calls attention to the alleged fact that Campanini never sang after removal of his tonsils.

Question 6. What percentage of good results have you found? Fourteen teachers have seen 100 per cent. of good results; a few, only fifty per cent. Some found no effect, good or bad, and one thinks the operation "helpful in some cases, harmful in others." At least one is enthusiastic about the results, and would have every pupil operated upon regardless of the indications.

Everywhere throughout the long list of answers there is evidence of an ignorance which ought not to exist. The vocal teacher is often out of sympathy with the laryngologist, and the laryngologist quite as surely fails to understand what the teacher is driving at.

For example: "In all of my work as a teacher, I have never had to send a student to a throat specialist. The tonsils, if there has been any difficulty, have, through correct use of the throat, voice, and breathing with the aid of proper systematic remedies, gone back to a natural, normal size, etc."

By contrast, a Chicago teacher writes: "If more singers would consult a skilled throat specialist, we should have more real singers. No matter how perfect the method, it does not count unless throat and nose conditions are normal."

Another teacher thinks that "bad tonsils can be corrected by proper habits as applied to food, air, breathing exercises, and sleep. They are an indication of a poisoned system. Removal does not touch the cause." In a personal letter a physician writes his opinion that "much tonsil trouble is caused by bad teaching."

In my own experience twenty-five singers have been tonsillectomized with uniformly good results. That is, the range has been improved a half to a full tone, and there has been no difficulty in adjusting voice placement to the new conditions. Vocal power and resonance have both been increased. In one case, that of a very large man, hemorrhage occurred four hours after operation. This was controlled by grasping the bleeding point with a special kind of artery clamp, and recovery was uneventful. There was no contraction of the fauces in this case, and his teacher declared that the improvement in vocal work was very noticeable. However, in one baritone whose course of healing was complicated by an infection of unknown origin, there seemed to be a greater tendency to attacks of acute bronchitis. Whether this was really so I cannot say, as it was necessary to rely on the testimony of an extremely introspective patient who magnified his ills whenever possible. Nevertheless, in spite of this apparently untoward result, he was glad that he had gone through the operation, and his vocal range and power were undoubtedly increased thereby.

In certain selected cases it is undoubtedly better to temporize than to operate. Every specialist of experience will know and recognize the special considerations which afford a basis for this judgment. Occasionally it is better to do a tonsillotomy (partial removal) and follow the procedure at a later date by treatment of the cryptic stumps by applying a bead of chromic acid deep into the interior, or using the electrocautery point as already mentioned. Undoubtedly, the small, cheesy tonsil should be removed *en masse*, as nothing is to be gained by simply puttering with it. The sooner it is out the better.

Dr. G. Hudson Makuen, of Philadelphia, whose work on voice and speech defects is known the world over, writes me that "it is safe to say that no tonsillectomy has ever injured the voice when the operation was really indicated and properly performed, but that many voices have been injured by ill advised and careless operations I have no doubt whatsoever."

Dr. J. Solis Cohen, of Philadelphia, thinks that "where hypertrophied tonsils impair the singing voice, improvement should follow operation. Where the contour of the tonsil is essential to the timbre of the voice, interference will impair it."

Finally, Dr. Justus Matthews, of the Mayo clinic, Rochester, Minnesota, who has performed an enormous number of tonsil operations, answered the questionnaire and added the following opinion: "I believe that most of the cases (of loss of singing voice following tonsil removal) are purely imaginary and are due to some other cause. However, I have seen several cases and feel certain that the cause is to be found in the cutting of the nerves."

CONCLUSIONS.

1. An analysis of 5,000 tonsil operations in singers shows that in the hands of skilled operators there need be no special fear of bad results.
2. It is the consensus that bad results are most often due to cicatricial contractions occurring from careless dissection or from neglected aftertreatment.
3. Pain in the tonsillar region, neck, and larynx, is probably due to section of some of the larger branches of the glossopharyngeal nerve (Justus Matthews).
4. Loss of singing voice after tonsillectomy might be due to a nerve lesion, but is probably due to adhesions and cicatricial formations in the fauces.
5. Loss of singing voice occurs very rarely after tonsillectomy. Impaired voice is possible, but most cases show an increased range of from one half to a full tone.
6. The singer's problem is a very special one, and no laryngologist should undertake to operate on these patients unless he has some knowledge of the art of singing.
7. At operation the greatest care and skill must be exercised in securing a clean, free dissection. Injury to the tissues surrounding the tonsil may prove disastrous.
8. Postoperative care is of special importance. The patient should be seen daily until full healing occurs.

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THE EXPERIMENTAL PATHOLOGY OF GOITRE.*

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A review of the literature on the etiological causes of goitre reveals a great variety of influences which according to the different authors are important. Owing to the short time available for discussion, only the most important can be briefly mentioned. According to Heydenreich, we must consider, 1, exogenous, and, 2, endogenous causes.

Among the exogenous factors, conditions of the *atmospheric air*, lack of sunshine, humidity, lack of oxygen or excess of oxygen; astronomical influences, such as the different phases of the moon, changes in the distribution of electricity and of heat have been mentioned; although formerly the social and economic position and the hygienic surroundings of the patient have been emphasized. Many exceptions to this rule could be named which tend to show that goitre is encountered all over the world, and is not restricted to a certain race nor to certain social and hygienic surroundings.

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Among the many theories advanced and disputed there are four which are accepted as possible: 1. The soil; 2, the water supply; 3, microbic infection; 4, toxins. A considerable amount of literature has been accumulating; the majority of the contributions have been made by European authors; a small percentage by American writers.

1. I allude briefly to the geological strata to which a goitrogenous influence is ascribed. It may not be necessary to cite a long list of contributors who, basing their assertions upon a comparison of geological formations with statistics and personal investigation, are in favor of the soil theory. Views which admitted the influences of altitude, humidity, amount of sunshine, on the frequency of goitre, can no longer be accepted.

To McClelland's first and thorough study (1835) several contributions from France, Spain, Italy, Germany, Switzerland, and Norway have been added; they all confirm the opinion that goitre is to be encountered on soil composed of marine sediments, particularly from those formed during the paleozoic, the triassic, and tertiary periods. Free from goitre is the soil formed by the eruptive rocks, the crystalline rocks of the archaic period, the sediment of the cretaceous and the quaternary sea, as well as all deposits from sweet water.

Since Hirsch, in 1881, called attention to the influence of geological strata upon goitre formation, H. Bircher in Switzerland, Johanessen in Norway, Höfler in Bavaria, Sormani Tommasi Crudeli in Italy, Mayer in France, Kocher and Lorenz in Switzerland, and many others have added further proof of the relationship.

In the United States different epidemics of goitre have been described by Munson among the Indians; by Springle in Montreal; by Morris in Hambleden; by Dock in Michigan; by Ashmead in Pennsylvania; by Holder in Montana; in Dakota, along the Mississippi River; in the Rocky Mountains by Marine; in the region of the great lakes; in Montreal, Buffalo, Detroit, Cleveland, Lake Erie, Portland, Oregon, and in Seattle, but so far little attention has been paid to the geological formation of the soil upon which these epidemics occurred. The possibility cannot be denied that further inquiry concerning these factors would furnish interesting information.

2. The second theory, which renders the water supply responsible for the production of goitre, has been admitted by many authors. Different facts were adduced in support of such an argument; for instance, that a change in the water supply reduced the number of goitres, that by the use of goitrous water a goitre could be produced in formerly normal human beings as well as in animals; that rain water does not produce the disease. Such an influence being admitted, the experimental reproduction of goitre by furnishing water to animals and human beings was required, as suggested by the following experiments:

Klebs obtained goitre by giving a dog goitrogenous water and injecting it into the thyroid gland. Lustig and Carle in their report to the Tenth International Congress, in Berlin, referred to positive results in a horse and three dogs supplied with goitrogenous water. The direct implantation of goitre into a healthy thyroid gland, the injection of goitre extract, the feeding of feces from goitrous animals to healthy animals, however, were all negative as observed by Grassi and Munaron and Kolle. The human experiments of MacCarreson (1911) in Gilgit on thirty-three patients are of interest. He found that the fresh sediment of goitrogenous water produced goitre in six cases out of the thirty-three; no enlargement was obtained with the boiled sediment in twenty-three instances and in seven who were kept on filtered water alone. E. Bircher's observations on white rats at the clinic in Basel are of interest. After six to nine months of feeding with goitrogenous water, not only macroscopically but histologically goitre was produced. In the course of further experiments it was found that the fresher the water and the shorter the distance of the spring, more certainly were the animals exposed to goitre. Conversely, a long transportation, boiling, and filtration of the goitrogenous water reduced the positive results.

Confirmatory facts were obtained by Wilms in Heidelberg, Lobenhofer, Eiselsberg, Breitner, Schlagenhaufer, Wagner van Jauregg in Austria, Répin and Roussy in Maurienne, France. In all instances of macroscopic enlargement the characteristic histological changes were encountered. In such experimental tests it must be remembered that not only individual susceptibility according to the species of animal chosen is a deciding factor, but also that the water should be fresh, since transportation results in speedy loss of its goitrogenous properties.

These experimental results, however, were not generally accepted. In a careful canvass of the goitre problem in Switzerland, Dieterle, Hirschfeld, Klinger, and Montigel, reached the conclusion that goitre does not necessarily depend upon the water supply, nor upon the geological nature of the soil in the region in which the disease is encountered.

3. The microbic origin of the disease was suspected by several authors, among whom Virchow and Lücke are mentioned. First, Klebs found Diatomea navicula and Monades in the goitrogenous waters. H. Bircher, later Maggi, confirmed the statements of Klebs, a further species, Encyonema auerwaldi being added to the list of organisms found in such waters, while Tavel could not report any definite results by the infection of dogs and rabbits with such organisms. Jaboulay's findings of staphylococci in freshly extirpated goitres, and his later assertions of Sporozoon myxosporidium as the cause of metastatic and malignant forms of goitres are of interest. Such findings were confirmed by Rivière. Different cultures inoculated into mules and dogs, even by injection into the thyroid gland itself, however, remained absolutely negative. Bérard and Thévenat found staphylococci in six cases

out of ten goitres, four being sterile; a mere hyperplasia, but no goitre was obtained. Whether fluorescent bacteria can produce goitre, an opinion advanced by Proca, remains doubtful. Kolbe's search for protozoa, bacteria, and antigens was negative. No immunity was obtained by injecting goitrous tissues, goitre extract, blood, and fecal extract obtained from goitrous patients into animals.

Feeding goitre tissue, intravenous injection, direct transplantation gave negative results. Goitrogenous water injected intravenously for months into rabbits produced no specific rabbit serum. Complement fixation with rabbit blood and goitrogenous water as antigen, however, was positive, also Weichhardt's epiphanin reaction (Schittenhelm and Weichhardt). The discovery of Chagas in Miuas-Geraes, of trypanosomata in goitrous patients as the cause of goitre symptoms is of interest. The parasitic origin of goitre is far from being generally accepted and the argument is still pending.

MacCameron encountered amebas in the feces of his goitre patients; he was successful in the cultivation of a bacterium akin to the colon group, and resorted to the use of an autogenous vaccine leading to a reduction in the size of thirty-three goitres. This author's hypothesis of a neutralizing action of the thyroid gland upon intestinal toxins may be mentioned. Such a possibility is admitted by Kutschera von Aichbergen, McGarrison, and R. Farrant. Sazuki succeeded in the experimental reproduction of goitres in rats by feeding and injecting them with feces from goitrous rats.

4. As already mentioned, in the toxin theory of goitre the following subdivision must be remembered:

A. Inorganic toxins caused (*a*), by lack of certain substances; (*b*), by an excess of certain substances.

B. Organic toxins represented by (*a*), an organic ferment; (*b*), by colloid substances.

A. (*a*). The lack of oxygen as advanced by Boussingault; the lack of sodium chloride (Demartin, Eulenberg, Schwalbe), lack of phosphate (Ackermann), lack of iodine, and of bromine (Chatin, Marchand, Fourcault, Maffoni, Provost) are theories of historical interest. So many exceptions were found, that this explanation fails to be satisfactory.

A. (*b*). The excess of the following substances: Lime, plaster of Paris, magnesia, soluble chlorides, dissolved carbon, sulphide of iron and copper, of the fluorine compounds (Mauméné), of the silicates, and of the mercury compounds can no longer be held responsible for goitre.

B. (*a*). Kocher, investigating organic ferments as causes of goitre, had already reached the conclusion that the disease must have a certain etiological relation to certain admixtures and impurities in the soil, which must be of an organic or organized nature of short life, since the disease increased only as long as the suspected water was used.

Wilms advanced the following theory, based upon the experiments of Bircher: He admitted as cause of goitre a toxic substance, not of parasitic nature, but containing the dried animal residues found in the geological layers characteristic of the periods of marine submersion. The water passing through the layers becomes polluted by these substances and goitrogenous. The following reason for such a theory may be mentioned. Goitrogenous toxin passes the Berkefeld filters; it is inactivated by heating to 70° C. (158° F.), just as the albumins lose their effect. The goitrogenous toxin does not survive concentration by the vacuum method, while marked deposits of sodium chloride are formed. It is possible that the lime compounds favor the precipitation of the toxin and so explain the contention that in certain lime districts, formed in the Jurassic and Cretaceous periods, goitre is not found. Sazuki's animal experiments were made with the following substances:

TABLE I.

	Animals	Administered	Result
Boiled rice contaminated with feces from goitrous rats	Rats	Feeding subcutaneous	Diffuse moderate enlargement of thyroid gland
Fish deteriorated		Feeding	Negative, quick fatal results, general abnormal development
Deteriorated meat		Feeding	Negative
Sweetbread of veal		Feeding	Negative
Cadaverin		Subcutaneous	Negative
Tyrosin		Subcutaneous	Negative
Acetonitril		Subcutaneous	Negative
Pot. iodide + rat feces		Feeding	Negative
Iodothyrin + rat feces powdered		Feeding	Negative

Such experiments show that organic poisons are not responsible for goitre, while feeding and injection of feces produce goitrous changes (already mentioned by MacCameron). Iodine compounds have an inhibiting influence upon goitre.

B. (*b*). The goitrogenous substance is supposed to be a colloid; this is the theory of Bircher. He demonstrated that the goitrogenous qualities of water are unchanged by filtration through paper and the Berkefeld filter, and that the filter residue fed to animals is innocuous. He gives the table of his experiments. (Table II, page 1189.)

Space unfortunately forbids me either to enter into the complex theories of Bircher about the goitre toxin which he describes as emulsoid and lyophil hydrosol, or to discuss the colloid nature, the crystallized appearance, or the possible absorption of toxin, by certain geological layers. Bircher does not discard entirely the possibility of a microorganism retained in certain layers, furnishing the toxin. Histologically Bircher's experimental goitres are represented by two types, namely, nodular adenomatous forms and parenchymatous hyperplastic processes, with desquamation and degeneration of the follicular elements also encountered in human species. It must be remembered that the feeding of the dialyzing membrane itself, and of the residue led to most pronounced degeneration of the epithelial cells and their nuclei.

The radioactive quality of goitrogenous waters is discussed by Répin. The complex process, how water becomes goitrogenous, is a problem of great scientific interest, but cannot be discussed here. Répin confirms the opinions of Bircher showing how quickly a goitrogenous water can lose its pathogenic qualities by long transportation, careless handling, etc.

Vicard's theory of the importance of the calcium ions in the cellular metabolism by their action as an excitant upon the thyroid gland, leading to goitrous degeneration and hypothyroidism, to changes in the metabolism of nitrogen must be followed with interest, although more time and experiments will be required before this theory can replace other theories of the etiology of goitre.

In addition to the preceding opinions, we must also mention contact infection as a possible cause of goitre. Such an hypothesis has been brought forward by Grassi and Munaron; Kutschera von Aichbergen also maintains a similar standpoint.

TABLE II.

Spring		Treated	Animals	Results
Rupperswil water	Old spring	Genuine	Rats fed during 18 months	Strong positive
Rupperswil water	Old spring	Filtered Berkefeld		Strong positive
Aarau water	Old spring	Genuine		Strong positive
Rupperswil water		Genuine		Disturbance of growth (epiphyseal line) moderate enlargement of thyroid gland
Muschel Kalk water				Strong positive
Asp water				Strong positive
Hundwil water		After long transportation		Negative
Auenstein water goitre free		Allowed to pass through gravel of Rupperswil water		Negative Experiments not lasting long enough
Goitrogenous water		Allowed to pass through Jurassic-Malm	Given 5-8 months after 10-14 months filter became permeable	No goitre Slow goitre formation
Goitrogenous water Goitrogenous water		Dialyzed Inner cell Outer cell		No goitre Positive goitre

Taussig, after his observations in Bosnia, concluded that immigrants affected with goitre transmitted the disease to others. Since Flinker's studies of that problem, refuting the theories of Kutschera and Taussig, it must be conceded that in his instances an intimate relation to cretins was observed without immediate contact infection.

Endogenous causes of goitre. Heredity and disposition play no doubt a role in endemic cases of goitre, while changes in the internal secretion must be thought of, particularly in sporadic, to a lesser extent in endemic goitre. The suprarenal bodies, ovaries, pancreas, etc., no doubt influence one another in their functions, and a diseased condition of these organs must have a disturbing influence upon the general functional equilibrium. As regards the influence of heredity, opinions differ considerably. Italian authors, Cerletti and Perusini, for example, consider heredity the most important factor, while Bircher admits heredity to be a predisposing influence. Weichhardt and Schittenhelm, in a careful study of families with goitre, have refuted the general opinion that people immigrating from goitre immune countries into districts where goitre prevails will not be affected by the disease. Beside hereditary influences, individual predisposition must be considered; also age, since we know that at the age of puberty goitre is most frequent, suggesting the influence of an internal secretion through the activity of the sex glands. It is a well known fact that females are more frequently affected by goitre than males; frequent menstruation, conception, and parturition have undoubtedly an influence upon the size and function of the thyroid gland.

Among the laity other views are expressed about the endogenous causes of goitre, such as repeated congestion of the head and vessels of the neck in carrying heavy loads; direct or indirect pressure upon the vessels of the neck, from cardiovascular and respiratory disturbances, or violent physical exercise. Whether these factors aid directly or indirectly in the production of goitre remains still open for further investigation. Although the presence of a goitre heart is closely connected with goitre etiology, I must refrain from further discussion of this important point, as space will permit only a short review of the past and present ideas accepted and refuted as to goitre etiology.

The general impression gained from the present knowledge of the goitre problem is that we have not yet reached a satisfactory understanding of it. At a time when American investigation has contributed so much to medical science, a nationwide investigation into goitre etiology would certainly be desirable. Further contributions on the possible influence of geological strata, of colloid substances, of the water supply, of altered internal secretion, and of other possibilities would certainly help our understanding of this complex problem.

LATROBE APARTMENTS.

The White Blood Cells after the Removal of the Thymus.—A. E. Selinow (*Roussky Vratch*, July 9, 1916) states that he determined experimentally the effect of the removal of the thymus on the leucocytes. His experiments on guineapigs showed a slight and temporary increase in number.

INFANTILE PARALYSIS TREATED WITH IMMUNE SERUM.

By ORLANDO H. PETTY, M. D.,
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In estimating the therapeutic value of immune serum in poliomyelitis, certain facts must be considered. There is in all cases of disease an indeterminate and unmeasurable force, *Vis medicatrix naturæ*. This force must be acknowledged as an aid in all therapeutic measures, and it must be recognized in connection with the administration of immune serum in poliomyelitis, whether the serum is administered intravenously, intramuscularly, or by the subdural route. It is only through this force, in many of the practically untreated cases of poliomyelitis, that the maintenance of life and the restoration of power can be explained.

When the serum is administered by the subdural route, we must not lose sight of the fact that the simple withdrawal of spinal fluid in meningeal inflammation is followed by an amelioration of some of the most prominent symptoms; the temperature drops temporarily, the respiratory rate is lowered, irritability or sopor is lessened, and not infrequently, as in Case III of this series, lost function is to a great degree restored.

From a study of eleven cases of poliomyelitis treated in private homes with immune human serum administered by the subdural route since August, 1916, and in which no unfavorable symptoms were noted, I would draw the following conclusions:

Immune serum, to be of curative or prophylactic value, must be administered early, preferably in the preparalytic stage, preferably by the subdural route.

Subdural administration should always be by gravity, less serum in amount being introduced than the total amount of fluid withdrawn, except in rare instances where the pressure is so low that not more than one or two c. c. will flow through the needle. It must be remembered that the withdrawal of ten to twenty c. c. of spinal fluid will reduce the pressure in children from ten to fifteen mm. Hg. The dose in children probably should not exceed ten c. c.

Many adults have a cellular immunity, and it is probable that the immune qualities of adults, who have had an attack of poliomyelitis during infancy, is of this type. A serum, not inactivated, from those who had an attack not over ten years previously, would be the one of choice.

CASE I. M. M., aged three years, serum administration twenty-six hours after parents noticed child to be sick. There was at this time slight ocular and evident respiratory disturbance. Within a few hours there was loss of power in right deltoid, but the respiratory disturbance cleared up only to reappear about twenty hours after injection of serum. Second dose of serum, six c. c., was then given, followed within a few hours by a drop of two degrees in temperature, regular respirations, and finally recovery with slight ocular and right deltoid paralysis.

CASE II. D. M., age three and a half years. Serum administered within forty-eight hours of beginning of attack. Patient had marked weakness of left leg, which disappeared six hours after receiving serum. The temperature fell from 103° to 99.2° F., and child became bright and cheerful. Fourteen hours after first dose of serum, child had a marked irregularity of respiration, and died just seventeen hours after first dose.

CASE III. M. S., aged two years, spinal puncture fourth day of disease. Both arms and legs paralyzed; breathing irregular: within twenty minutes of the withdrawal of thirty-five c. c. of spinal fluid, the child could use its arms and move the legs. Paralysis returned within a few hours, so five c. c. of immune serum were administered, and were followed by so much improvement that the patient was considered out of danger for two and a half days, when it suddenly manifested respiratory failure and died.

CASE IV. L. M., aged five years, sick eighteen hours when five c. c. of serum were administered in the preparalytic stage; this was followed by a reduction of temperature and the lessening of irritability and pain. Ten hours later, there was difficulty in deglutition, ocular and facial paralysis, followed later by respiratory disturbance and left leg involvement. This increased involvement indicated the introduction of more serum, which was followed within four hours by a disappearance of all paralysis, except in eyes and left leg. Patient recovered with no evident paralysis, except after overexertion, when the left leg dragged and one eye turned inward.

CASE V. N. O., aged nine years, sick thirty hours. Both legs involved and marked meningeal symptoms, when five c. c. of serum were administered. Six hours after serum was given, the temperature had dropped from 103.6° to 100° F., the child could move its legs and was much brighter. A second dose of serum was given, followed by no marked improvement. Eight weeks later, child could walk unaided, but there was a noticeable loss of power.

CASE VI. O. P., aged four months, sick six days, temperature 104° F., paralysis of arms and legs and left rectus, and respiratory disturbance. Five hours after the administration of serum, temperature was 99.4° F., and the patient could use arms. The second dose within twenty-four hours showed no improvement. The child recovered with both legs paralyzed.

CASE VII. P. R., aged three months, sick thirty-eight hours, respiratory disturbance, both legs and abdominal muscles involved. Infant was cyanotic, but parents insisted upon the use of serum, the child dying just six hours afterward.

CASE VIII. R. S., aged three and a half years; ten c. c. of serum administered thirty-six hours after initial symptoms, the respiratory centre showing the only involvement, followed by slight improvement. The second dose of fifteen c. c. did not seem to change conditions, there being a gradual increase of symptoms, the child dying in the fourth day of the disease.

CASE IX. S. T., aged seventeen years. Thirty hours after the beginning of the attack there was ocular and facial paralysis, when six c. c. of serum were administered. Within five hours paralysis had disappeared, temperature lowered, all of these symptoms returning in twenty hours. Twelve c. c. of serum were administered, the temperature soon reaching normal and the paralysis disappearing permanently.

CASE X. T. V., aged five years, sick thirty-four hours with paralysis of both legs, and unconscious, when five c. c. of serum were administered, followed by slight improvement. Second dose, within twenty-four hours, when temperature of 102.2° F. fell to 99° F., child making slow, but almost complete recovery.

CASE XI. W. A., aged five years, serum administered in the preparalytic stage, sixteen hours after beginning of disease. Temperature and respiration improved for a few hours only, when both legs were attacked and there was some respiratory involvement. More serum was given, and the respiratory trouble disappeared; the temperature fell 2.5° F., there being a slow, yet steady increase of power in the legs.

In all the foregoing cases, serum was administered subdurally, and the spinal fluid carefully studied.

6215 RIDGE AVENUE.

Three New Signs in Sciatica.—D. de Sandro (*Revista Critica di Clinica Medica*, October 21, 1916) names three new diagnostic signs in sciatica, gluteal pain over the suprapopliteal point, external rotation of the leg, and dorsal flexion of the toes.

COMPULSORY HEALTH INSURANCE.*

From the Point of View of the General Practitioner,

By Eden V. Delphey, M. D.,
New York.

The subject of compulsory health insurance is one of the most important which has ever come before the medical profession. Its adoption will revolutionize the general practice of medicine so that instead of being an individualist, the physician will be merely a cog in a great medical machine. Are we ready thus to lose our professional identity? Will it not be better to make haste slowly, and approach the matter with a due consideration of the difficulty of the problem? Injudicious interference with the body politic is as likely to cause damage as undue interference with the body physical, and the result is much more likely to be a distortion than a development. More social movements have been wrecked on the reef of undue haste than in any other way. Great and desirable social reforms are the result, not of the will of this or that person, but of a gradual system of sane and natural evolution; and thus, and thus only, do we get that careful adjustment to conditions which results in a permanent, stable, and healthy progressive system. All evolution proves this. The development of the highest specimen of the animal kingdom, man, was not completed in a day. What we may decide today to be best, we will know three months from now to be very imperfect; and the same result will obtain in six months and a year later. Therefore it will be much better to delay action on this matter until we have had sufficient time to study the subject thoroughly, and to come to certain definite conclusions as to just what kind of a health insurance law will be best for all concerned: the employee, the employer, the physician, and the State. Although all these four parties are concerned, the physician is the one who is most vitally interested, and in a position to lose the most unless a proper law is enacted.

In order to learn whether, and to what extent the physicians in this country have studied compulsory health insurance, I sent the following letter to the secretaries of all of the State medical societies in the United States.

New York, *November 2, 1916.*

My Dear Doctor:

I am preparing a paper on the subject of Health Insurance to be read at a mass meeting of the combined County Medical Societies of the lower part of this state and will be very grateful to you if you will kindly furnish me with the following information:

1. Has the matter of compulsory, or any other kind of health insurance ever been formally brought before your State Society?
2. Has your State Society ever taken any action, either pro or con, regarding it?
3. Did your State Society instruct its delegates to the American Medical Association—annual meeting held at Detroit, June 12-16, 1916—either pro or con, regarding health insurance?
4. Do you know what is the sentiment of the medical profession in your state regarding health insurance?
5. Do you consider the second "tentative draft" issued by the A. A. L. L. to be just and fair to the medical profession?
6. What do you consider to be the best form of health insurance, providing some form of health insurance is inevitable?
7. Do you think that inasmuch as the State must pay the expense eventually, that it would be better to have the State take over the matter of health insurance, and insure every man, woman, and child, earning under a specified sum per annum, whether they paid any assessments or not, on the same principle that the State furnishes common school education? Would this plan be better, simpler, and cheaper than the various plans so far promulgated?

Very sincerely yours,
Eden V. Delphey, M.D.

The replies may be summed up as follows:

1.	Yes	9
	No	23
2.	Favorable	2
	Committees	6
	No	24
3.	No	32
4.	Favorable	2
	Unfavorable	4
	Doubtful	1
	Subjudice	1
	Don't know	24
5.	Yes	3
	No	5
	Doubtful	1
	Don't know	23
6.	By employer, employee and State.	2
	Like compensation insurance	1
	Free choice, good compensation	1
	Don't know	28
7.	Yes	4
	No	3
	Probably	2
	Don't know	23

The foregoing indicates that the physicians all over this country with few exceptions have not studied the subject sufficiently to be able to come to any just and proper conclusions regarding the various plans and provisions for incorporation into a health insurance law. We are not yet ready to say just what is the best law to enact, and we believe that we should study the subject carefully for some time to come before we arrive at a proper solution of the problem.

The great mass of the general practitioners of medicine are in severe straits, as indicated in an editorial article in the *New York State Journal of Medicine* for August, 1915, as follows: "Fifty per cent. of the general practitioners of medicine of New York city at present find it difficult to meet their current expenses, economize as they will." The truth of this statement may be questioned, but fifteen months have elapsed since its publication and so far I have seen no contradiction of its verity in any of the medical or lay journals. But will the establishment of a compulsory health insurance law improve this condition? Will it not be jumping out of the frying pan into the fire? In my humble opinion, it certainly will be unless the medical profession awakes to the danger which is besetting it, and takes proper and adequate measures to protect itself. Since our professional financial life is assailed, we must fight for our rights just as our English brethren did when they were compelled to do so. We must disprove the idea quoted by A. S. Comyns Carr in his work on *National Insurance* (Health Insurance): "The community has been accustomed to regard medical men as amiable weaklings in business matters, easily gulled by piteous tales, or flattering remarks about the magnanimity of the profession."

This question is *not* an altruistic one. It is not a question of medically looking after the poor unfortunate and needy sick; because according to the provisions of the health insurance bills so far proposed it is a serious question whether the very poor are not entirely or almost entirely left out of consideration, since there are a large number of persons who will not be able to pay their assessments in order to be entitled to the benefits of the insurance, and the extension for nonpayment is but one week for four weeks of paid up assessments. Every health insurance plan so far advocated includes within its scope only wage earners who make less than a specified sum a year and who are able to pay their share of the cost of the insurance. Such plans include the steady workers, a picked group, and not those who most need the insurance. The lot of the casual laborer is grievously hard. Many cannot spare the amount necessary to pay the premiums continuously in order to deserve the benefits, because a large number of workingmen's families live upon a very narrow margin. It is an axiom that the less a man earns a day the fewer days he works. Therefore those who are unable to pay the assessments on account of previous illness, general incompetency, shiftlessness, alcoholism, or from any other disabling condition, will be left to the tender charity of the general practitioners as heretofore.

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*Read before the Committee on Medical Economics of the Medical Society of the State of New York, at a meeting held at the New York Academy of Medicine, November 23, 1916.

If we must have health insurance, to get the best results the State or Federal Government should insure every man, woman, and child whether they pay any part of the cost or not on the same ground and for the same purpose that the State furnishes free schooling, free water and free fire, and police protection. This obviously does not include a monetary sick benefit. If that is desired, it can easily be arranged that only those who pay assessments shall be entitled to share therein, but not the others; or the monetary benefits can be left to the benefit societies now in existence. Universal health insurance is the only way to reach those who are most in need of it. In any case, the best results will be obtained by having the sick insurance plan instituted, operated, and managed by the State and from a State fund. Under the Compensation Law the State fund is insuring the employers for twenty per cent. less than do the casualty insurance companies, and there is no reason why a State fund cannot insure under a health insurance law quite as economically. If necessary, the machinery proposed for some of these various schemes might be used in part.

All the proposed plans for compulsory health insurance institute a middle man between the patient and the physician, and the experience of many competent observers is that such an arrangement tends to debase the quality of the medical service as well as the remuneration of the physician who does the work. Unless there is provision for *collective bargaining by the physician as well as by the patient,* the insurance carrier will try to grind down the panel physician to the lowest possible pecuniary point, as is now done in "lodge practice," with the result that the medical service will be very inefficient. The farmer finds it is to his advantage to take good care of his horses and implements, the mechanic of his tools, the manufacturer of his machinery, and nowadays the employer of his employees, in order to get the best results and to make the most money. Therefore, under any scheme of health insurance whatever, and under any condition of medical service, unless the physician is sufficiently compensated so that he can be well housed, well clothed, and well fed, he cannot do his best work, and the sick insured person will suffer.

Whether we are in favor of compulsory health insurance, whether we are opposed to it, or whether we insist that we have more time to study the subject carefully in order to determine what is best, not only for ourselves but for the wage earner also, there are certain fundamental propositions which we should insist that the promoters and promulgators insert in every health insurance bill which they introduce into the legislatures, as follows:

1. Adequate and proper representation on the commission, councils, and on all other boards having to do with medical matters.
2. The formation of lists or panels of physicians, on which list or panel every legally qualified medical practitioner shall have the right to have his name recorded.
3. The sick insured wage earner shall have the right to choose any panel physician on any panel to attend and treat him, subject only to the acceptance of the patient by the physician.
4. The insurance carriers shall make all contracts for medical attendance and treatment only with organizations composed of the physicians of one or more panels in an insurance district, to which organization every panel physician must belong.
5. Impartial referees—medical officers—appointed by the Commission and paid by the State, who shall decide when an insured wage earner is incapacitated by illness, when he has recovered and can return to his work, whether he shall go to a hospital or remain at home. Also to determine the character and efficiency of the medical service, and act as experts to the commission and councils.

There are other matters which will come up for determination, among which are:

1. The maximum number of patients which any one physician can properly attend and treat.
2. The method of compensation to the physician, whether it shall be by a "capitation fee," a "visitation fee," or a "capitation fee" plus a small "visitation fee," to prevent trivial and unnecessary calls.
3. The arrangement for treatment of the sick wage earners by specialists, consultants, attendance by nurses, and for laboratory service.
4. The determination of the status and relation of the panel physician to the hospital caring for the sick wage earners, whether these hospitals now exist or are to be created.

The method of remuneration by "capitation, etc.," will be determined in the contract with each panel, but the others can well be left to the direction of the commission, as they are largely matters of administration; but the five fundamental propositions must be included in the law. The one which we must especially insist on, for it is the crux of the whole situation, is:

Collective bargaining by the physician as well as by the patient.

The following plan is suggested for the organization of commissions, councils, etc., to apply the compulsory health insurance law so far as it affects medical men:

1. Temporary Commission (4 members) appointed by the Governor of the State
   - Chairman, representing the State.
   - Member, representing the Employer.
   - Member, representing the Employee.
   - Member representing the Physicians from nominations made by the Medical Society of the State of New York; also must be a physician in general practice at the time that the law was enacted.

2. Permanent Commission (5 members) appointed by the Governor of the State.
    - Chairman, representing the State.
    - Member, representing the Employer from nominations made by them.
    - Member, representing the Employee from nominations made by them.
    - Member, representing the Physicians from nominations made by panels.
    - The State Commissioner of Health ex officio, who shall have a voice and vote in matters of sanitation and public health only.
3. Supreme Council, appointed by the Commission (7 members).
    - Chairman, representing the State.
    - 2 Members representing the Employers, from nominations, etc.
    - 2 Members representing the Employees, from nominations, etc.
    - 2 Members representing the Physicians, from nominations, etc.
4. Superior Councils (7 members each), (3 to 10 in the State) appointed by the Commission.
    - Chairman representing the State.
    - 2 Members representing the Employers, from nominations, etc.
    - 2 Members representing the Employees, from nominations, etc.
    - 2 Members representing the Physicians, from nominations, etc.
5. Panels of physicians in each insurance district.

The panel physicians shall organize and may, with the consent of the commission, perfect a complete State organization in order to weld themselves together for the purpose of better carrying out the purposes of the law.

All purely medical questions decided by the referees may be appealed to the panel, the superior council, the supreme council in succession, and when and if the decisions of the supreme council are approved by the commission, the result shall be final.

In all disputes between the panel physicians and the insurance carriers, appealed to the councils and the commission, the physician in the councils and commission shall each have two votes in order to equalize the voting power of the disputants.

The councils shall have the consideration of the disputes appealed to them; the approval of regulations suggested by the insurance carriers or the panel physicians.

The members of the commission shall have general administrative control and direction of the entire enforcement of the law; they shall be appointed for varying lengths of service so that the term of no two of them shall expire at the same time.

362 West Fifty-seventh Street.

GASTRIC AND DUODENAL ULCERS.

Diagnosis and Treatment,

By Samuel Weiss, M. D.,
New York.

It is now well known that the symptoms of gastric and duodenal ulcer are so nearly alike that only exceptionally can they be differentiated. It is evident that all medical men, surgeons as well as physicians, until within the last five or six years, were ignorant of much that is now known concerning peptic ulcers, especially duodenal ulcers.

The most striking feature in the great mass of statistics concerning peptic ulcers which has accumulated within the last six years, is the diversity of the figures showing the relative proportions of all such cases in the two sexes, and the ratio of duodenal to gastric ulcers. Reports of many thousands of cases seem to indicate that until within a recent date gastric ulcer was most common in women, and duodenal ulcer comparatively rare in both sexes. In the large series of cases recently reported in this country, so far as I have seen, a decided majority of peptic ulcers have been in men.

Kehr, of Germany, between 1904 and 1912 operated in 954 cases for cholelithiasis and found duodenal ulcer twenty-nine times in ninety-four operations that involved the duodenum. Only three of the twenty-nine were in women, while only one of sixteen operations for gastric ulcer was in a male.

A somewhat comprehensive study of the recent literature of gastric ulcer was begun by me while I was under the impression that the duodenal variety was more serious and dangerous, as well as more prevalent than the gastric, and that, therefore, it was highly important to make the differential diagnosis between the two varieties in order that when the presence of duodenal ulcer was made reasonably certain, there might be an earlier resort to surgery. But Mayo (*Annals of Surgery,* September, 1911) says: "A differential diagnosis between duodenal and gastric ulcer can be usually made without difficulty, but it is not essential." Moynihan, in his book, *Duodenal Ulcer,* is still more emphatic in asserting that this diagnosis is easy, and insists that it can be made from the history alone.

American and English statistics have proved that duodenal ulcer is certainly more prevalent than gastric ulcer, and more careful investigation leads to the conclusion that it is only in advanced stages of the unrecognized and neglected cases that duodenal ulcer is the more dangerous. In fact, 1,725 cases of peptic ulcer, from the report of Smithies, shows 1,225 cases of duodenal ulcer and 500 of gastric ulcer, or a proportion of about two and a half to one in favor of the duodenal ulcer, which is contrary to our previous impression.

The authorities now, with few exceptions, agree that in peptic ulcer, wherever situated, the antecedent, often associated, and probably causative hyperchlorhydria is generally curable at first by rest and medical treatment with the help of appropriate diet. Hence, the importance of an early diagnosis.

SYMPTOMS OF PEPTIC ULCER.

The peptic ulcer is usually single. Kemp states that the proportion is about eighty per cent. It is usually round or oval and funnel shaped and is of variable depth. The acute ulcer is usually small, punched out, with clean cut edges and a smooth floor, with no thickening of the peritoneal coat. The chronic ulcer is usually of large size, with calloused margins, and is often so indurated that if situated at the pylorus, it may, on palpation, feel like a tumor. Some cases present typical symptoms, when diagnosis is easy, other patients suffer apparently from a simple hyperchlorhydria, with no special symptoms pointing to ulcer, while in others the condition may be latent.

The most frequent symptoms are pain and a sensitive area in the epigastrium, hyperchlorhydria, the vomiting of food, gastric juice, blood, or altered blood. In the typical case, the patient complains of actual pain in the epigastrium, which is cramplike, cutting, or boring in character. It usually begins anteriorly and radiates along the sternum or around both sides of the body, as low as the sacrum or as high as the left shoulder. The pain seldom occurs after swallowing food, but comes on usually from one half hour to four hours after eating.

The most striking clinical feature of the disease is comprised in the term, periodicity. By this is meant that discomfort occurs in spells or attacks and between such periods there is usually fairly good gastric health.

This epigastralgia occurring at a definite time after eating is the most positive sign of gastric ulcer. Gastric hemorrhage is even less diagnostic, as it may occur also in diseases of the liver, in passive congestion, and in disturbances of the greater circulatory system. The intensity of the pain may bear some relation to the food eaten. The coarser the food, the greater the pain. After liquid foods there may be no pain. Even without gross hemorrhage, anemia not uncommonly goes hand in hand with intermittent decrease in weight.

Hemorrhage may occur very suddenly. It is present in from one third to one half of the cases. There may be no vomiting of blood, but the symptoms of hemorrhage may be present, corroborated either by tarry stools or the finding of occult blood in the stool.

Less frequent symptoms seen in the later stages, especially of duodenal ulcer, are pylorospasm, hourglass stomach, and stenosis of the pylorus or duodenum.

As regards x ray findings of gastric ulcer, much prominence is given to the help afforded by the x ray examination after bismuth meals, when interpreted by experts. The bismuth lodges in the ulcers, forming shadows over them, and they are thus rendered visible, in the stomach especially. Hourglass stomach, which is most frequently a result of ulcer, is easily seen, and in both gastric and duodenal ulcer pylorospasm; also stenosis of the duodenum or pylorus in many cases. Several writers, Moynihan and the x ray experts especially, describe the striking picture made by the abnormally rapid passage of the bismuth meal through the stomach and duodenum in the earlier course of duodenal ulcer.

In the active stage of peptic ulcer, the patient usually has a hearty appetite, often an exceptionally sharp, canine hunger, accompanied and caused by the large excess of hydrochloric acid, which produces excessive appetite and thus leads to overeating, the latter having doubtless originally been the cause of excessive secretion.

DIAGNOSIS.

The diagnosis in uncomplicated and typical cases is usually easy, and it can often be made by a careful anamnesis. If, in addition to pain we have hematemesis, melena, and hyperacidity, it is practically certain.

Gastric ulcer must be differentiated from cholelithiasis, chronic gastritis, nervous gastralgia, appendicitis, gastric or intestinal cancer, from diseases of the pancreas, from hyperchlorhydria, and lastly the duodenal from the gastric variety.

From cholelithiasis. Jaundice, which is frequently present in gallstone attacks, is rare in ulcer, except when the disease involves the duodenal papilla. Epigastralgia is paroxysmal and sporadic. It comes on suddenly after errors in diet or nervous excitement. There is no periodicty. In ulcer the pain bears a definite relation to the meals. Vomiting of food or gastric juice is common in both affections. A tense right rectus may be present in both, and the pains in cholelithiasis radiate toward the back of the right shoulder more often than in ulcer, though pain in either condition may radiate in those directions. The x ray findings are totally different in the two diseases. The most important difference, however, is in the time and manner of the appearance of the pain with relation to the meals, and this is so marked that it often suffices by itself to settle the diagnosis.

In chronic gastritis, with hematemesis, the condition of the acidity of the stomach will do much to clear up the diagnosis; the pain is usually more continuous and there is no periodicity. In nervous gastralgia there is a history of neurasthenia or hysteria, and it occurs most frequently near the menopause; the paroxysms are more frequent when the stomach is empty. There is no tenderness on pressure; in fact, the pain is usually relieved by pressure; there is no hematemesis and the health is not so much impaired.

From appendicitis. The right rectus is usually tense in appendicitis, although it is sometimes rather tense in peptic ulcer situated near the pylorus where the stomach is prolapsed, especially during the pain from ulcer in the duodenum. Except for vomiting and pain and tenderness, the symptoms of ulcer are generally absent, but in appendicitis the two latter are usually felt lower down near McBurney's point, where there is often a plainly palpable tumor, and the pain may be referred to the region around the navel.

In acute and subacute attacks there is also fever, which is absent in ulcer. The picture given by the x ray is entirely different.

From cancer. In cancer of the stomach or intestine the pain is usually constant without regard to meals, though it is slight or absent in the beginning, and when the growth is in a position where it is not exposed to much pressure or irritation, it often gives little trouble for a long time. But there are rarely any notable remissions, and no relief follows vomiting, belching, or the administration of alkalies. Even when hydrochloric acid is present, the percentage steadily decreases, and the anemia, debility, emaciation, and cachexia are progressive. in gastric ulcer the nutrition is usually fairly good; while in duodenal ulcer there may be spells of emaciation there are usually marked remissions with often long periods of decided improvement in flesh, health, and strength, and free hydrochloric acid in both kinds of ulcer is nearly always excessive during the active stage, in marked contrast to its entire absence during the last year of cancer.

William J. Stone (*American Journal of the Medical Sciences*, October, 1907) emphasizes the fact that the leucocytes are moderately increased in carcinoma, averaging from 10,000 to 15,000, a very important point in the diagnosis, the leucocytosis being of the polymorphonuclear variety.

From diseases of the pancreas. In the acute forms of pancreatitis, the violent pain, vomiting, and rapid collapse may be mistaken for the perforation of an ulcer or the rupture of an abscess elsewhere, but in either case the only hope is usually in a prompt laparotomy. In chronic pancreatitis there are often no marked symptoms, and when palpable the long transverse swelling in the epigastric region is distinctive. Diagnostic also is the absence of acute pain at definite intervals after meals, and the results of examinations of stools, which in pancreatic disease show an excess of fat, and also the undigested nuclei of meat after a Schmidt meal, while in most cases of ulcer there is only the normal amount of fat and completely digested meat. High acidity in the stomach contents during active stages of the disease would be in favor of ulcer. A positive Cammidge reaction would exclude gastric ulcer, though in the opinion of Brinton (*American Journal Gastroenterology*, June, 1911) not duodenal ulcer.

From hyperchlorhydria. Pain felt regularly two to five hours after meals, and relieved by an alkali or more food is the most urgent and frequent symptom of both hyperchlorhydria and duodenal ulcer. Though exceptionally, it may sometimes appear very soon after a meal in the latter and very late in the former. If the pain is not severe, nor accompanied by sensitive points in either the epigastrium or lower spine, by occasional bleeding, occult blood, or frequent vomiting, it is probably merely the result of an excessive secretion of hydrochloric acid, but it should be regarded as threatening ulcer and treated accordingly if it does not yield promptly to diet and alkalies. As for the severe and persistently painful cases, I am inclined to agree with Moynihan that "recurrent severe hyperchlorhydria is duodenal ulcer," but to differ very positively with him in the opinion that the knife is the only hopeful remedy.

Differential diagnosis of duodenal from gastric ulcer. Duodenal ulcer is characterized by the usually much longer period of comfort after meals, and the marked periodicity of the attacks, which often come on during periods of apparent health and are of irregular duration, from a few hours to sometimes weeks or months, during which periods the pains recur ordinarily at certain regular intervals after meals, varying from one hour to five hours, or as soon as the patient becomes hungry, often awakening him from sleep in the night. These are relieved by more food, drink, or alkalies, while in gastric ulcer the pain is relieved also by vomiting or copious belching. Bleeding is common in both varieties, but hematemesis is more frequent in gastric and melena in duodenal ulcers. Painful pressure points in duodenal ulcer are generally a little to the right of the middle line in the epigastrium as well as in the lower spine, and the pains more frequently radiate toward the right.

Some authors hold that duodenal ulcer is aggravated more than gastric ulcer by cold, damp weather. The history carefully elicited is more often significant than the symptoms and signs, and there are unquestionably cases in which only an exploratory incision will decide the diagnosis. In all such doubtful cases, however, rest and dietetic treatment should be immediately instituted unless dangerous complications are present.

PROGNOSIS.

As regards prognosis, many gastric erosions and single ulcers have a natural tendency toward healing. It is also a commonly observed fact that a given ulcer will tend to chronicity and recurrence in spite of all known methods of therapy. Pyloric stenosis, with gastric dilatation, hourglass contraction, perforation, adhesions involving other viscera, or malignant degeneration, may occur without regard to treatment. In many cases of chronic ulcer the ulcer heals, but in healing leaves complications which require surgical treatment. It is generally realized, however, that chronic ulcers, owing to their frequent recurrence, not uncommonly degenerate into malignancy.

TREATMENT.

The treatment of gastric ulcer is principally dietetic and hygienic. Post mortem examinations show that a large number of ulcers heal completely, but the process is slow and tedious, often requiring months, and in severe cases years. In the medical treatment the following are the important points:

1. Absolute rest in bed for three or four weeks.

2. A carefully and systematically regulated diet. Absolute functional rest of the stomach and upper bowel for a week or ten days, the patient being meanwhile nourished exclusively by rectal feeding, or when the patients are fairly strong I have found a complete fast for some days at first to be still more effective. Theoretically, it is better to give the stomach an entire rest, but practically this cannot be done. When stomach feeding is resumed the diet should be limited for the first week to milk given in quantities of from four to twelve or even sixteen ounces, every two to three hours, with one sixth part of lime water or vichy water. Then, by the end of two weeks, it is safe to add to the daily ration one or two raw eggs, beaten thoroughly, instead of the alkaline water. Leube's ulcer diet is at the present time highly esteemed. Later the blander preparations of beef, mutton, etc., in the form of finely chopped meat rather than broths may be substituted for part of the eggs, and prunes and vegetables may be added. Still later, mashed or baked white potatoes and the other more digestible vegetables, better chopped at first, may be allowed. But all meats are very stimulating to the gastric glands, and the amount of such foods allowed should be strictly limited.

No ulcer patient should ever be dismissed without an emphatic warning that he cannot afford to risk relapse by again eating injudiciously, including pepper, mustard, and other condiments in his fare.

3. Medicinal measures are of little value. Bismuth and nitrate of silver may be given. From ten days to two weeks bismuth subcarbonate may be given in doses of from twenty to thirty grains three or four times a day in an emulsion with water and milk. If pain should persist in spite of these measures, sufficient bicarbonate of soda should be given to neutralize the hyperacidity. Opiates should not be given, since they all stimulate the secretion of hydrochloric acid, and thus tend to aggravate peptic

ulcer. Locally, either dry heat or hot poultices should be kept over the abdomen, except in hemorrhage, and then the patient should quickly be brought under the influence of morphine. This puts the parts at rest. Ice may be applied to the epigastrium and horse serum administered.

Practically, all internists and all except a few of the more radical surgeons, now concur that rest and dietetic treatment, with the help of bismuth and alkalies as required, should certainly first be given a trial, especially in simple cases which have not been neglected for many years.

There are many cases in which a cure is not possible, although they may have received the most careful dietetic, hygienic and medicinal treatment, and whenever there is uncontrollable vomiting or hemorrhage, or evidences of perforation, stenosis, or obstruction from any cause, there should be an immediate resort to surgery.

616 Madison Avenue.

Lectures and Addresses.

ADDRESS OF WELCOME,

To the Members of the American Therapeutic Society, at the Seventeenth Annual Meeting, Detroit, Mich., June 9, 1916.

By Charles G. Jennings, M. D.,
Detroit.

Mr. President and Members of the American Therapeutic Society: I assure you that I am very much gratified at the opportunity of meeting you as a society for the first time in Detroit. It has not been my profit and pleasure to meet up to this time the members of the society as a body. It is particularly interesting from one or two points of view that the American Therapeutic Society should meet at this time in the city of Detroit—a regenerated city greeting a regenerated science.

Detroit is one of the oldest cities in the United States, and therapeutics is certainly the oldest department of medicine.

Detroit has come to the notice of everybody in recent years. When I first came here, Detroit was a quiet, unpretentious, very delightful city, but little known outside of Michigan. We were on the map up in a corner. Within a very few years there has come a remarkable knowledge of Detroit, and this knowledge has been the result of efforts within the city. We were known not very long ago for our manufacture of drugs, perhaps to some extent for manufacturing stoves, but neither of these articles of manufacture attracted very much attention. About ten or twelve years ago, a half dozen young men, the sons of three of the social and financial leaders of the city, thought that automobiles were good things. They imported into the city the Packard manufacturing plant, and organized it upon its present basis. Being men of quality, their idea was to manufacture a machine of quality, the best automobile that could be made, and from that idea have developed the great Packard works. At the same time, a man in the humbler walks of life was planning an automobile on a different idea. He was a poor man and he thought of an automobile for a poor man; the result of that idea was the great Ford factory. From these two have developed the great and remarkable industries that characterize Detroit today and that are the cause of its regeneration.

Therapeutics has regenerated because of the developments in the elmentary sciences of medicine. It was impossible to improve therapeutics when we had simply post mortem pathology; it was impossible to improve therapeutics without a scientific symptomatology. It was not until it was realized that disturbances of function are many times more important than disturbances of structure that therapeutics could develop upon a scientific basis, and the great development of the next few years in medical science will be along the line of therapeutics, and accurate therapeutics, based upon a scientific knowledge of disturbances of function. So old regenerated Detroit welcomes a regenerated therapeutic science.

But Detroit needs an apology as well as praise. We have the distinction of being a great city, but we also have the unique distinction of being the only city of its size in the world, with the possible exception of some of the great Oriental cities, like Pekin, and I am not certain about that, that has no great institution of learning. Detroit in its development has been deprived of the enlightening and uplifting influence of a great university, and that is its great misfortune. We have grown up without having in the midst of us a body of men devoted to learning and to culture, and so we have developed perhaps a little too much along commercial lines. We have learned how to produce wealth, but we are so new that we do not know how to spend it. We need to learn that. That comes with a prolonged possession of wealth. We will learn some day, and will perhaps be an intellectually as well as commercially regenerated Detroit.

We are embarrassed just at the present time because we have so much of entertainment on our hands. We should love to welcome you in a more abundant way, but unfortunately we have this great American Medical Association meeting so soon; we have the American Academy of Medicine, the American Proctological Society; we have the alumni meeting of the Detroit College of Medicine and the graduating exercises, and all these burden us, and we are like a hostess with an overburdened house at a week end. Notwithstanding all this, we give you the liberty of the city, and permit you to enjoy yourselves in the best and most profitable way that you can.

RESPONSE TO THE ADDRESS OF WELCOME

To the American Therapeutic Society, June 9, 1916.

By Thomas E. Satterthwaite, M. D., Sc. D., LL. D.,
New York.

Gentlemen: We are today surrounded by an atmosphere of progress, in a part of our country where pioneer work of various kinds is being done; much of it, I feel, on enduring lines. In fact, I believe we may look to the Middle West confidently for the most intelligent opinions on the great questions of the day.

Our sessions have heretofore been in New York and Montreal, in Boston and San Francisco, and intermediate points, but we have now invaded a section of our country which in some respects carries the banner in our march of progress. Certainly, Michigan, Illinois, Wisconsin, Missouri, and Minnesota are in the van as to medical legislation and institutions, for Ann Arbor and Detroit, Chicago, Minneapolis, and St. Paul, and Rochester, Minnesota, can now testify to medical achievements of the first rank in the history of American medicine. Was not the Northwestern University of Chicago the first in the Middle West to require preliminary education before entering on medical studies? And did it not, in 1859, institute a longer curriculum with graded courses? And in 1890 did not the University of Michigan introduce a compulsory four years' course, with a graded curriculum, making hospital experience an integral part of the medical course? And now, for more than ten years, Chicago, Ann Arbor, and Minneapolis have had four year graded courses; and they were, I believe, the first institutions of the country to introduce them. In fact, they were in existence, if I am correctly informed, as early as 1903.

Besides, it is here in your Middle West that you have succeeded in convincing the general public that the use of public hospitals is *primarily* for undergraduate medical instruction. We in the East have not been so successful in combining college lectures with hospital experience. It is true we had this in mind in starting the New York Post-Graduate Medical School and Hospital in 1882, as the name indicates, but we did not get our hospital until 1885. The New York Polyclinic followed, with an associated hospital. Our difficulty in the Post-Graduate School was trivial, because the medical men who founded it always owned it, and lay influences never had any part in directing its policies. As it enlarges—and it is always growing larger—the school and hospital will, it is hoped, always be under one roof. But these are graduate, not undergraduate institutions.

Going further to the west, I feel proud that one of my early students in the Post-Graduate School has been the founder of a medical institution which also shows what concentration of intelligent effort can accomplish. It may be said with truth that at Rochester some results obtained have surpassed those of any other locality in the world.

By looking over our membership roster, it will be seen that it embraces men in the more important specialties. At one time or other we have admitted specialists in every department of medicine and surgery. Their proportionate representation has varied from year to year. So far as the American Medical Association is concerned, we classify them somewhat differently, but actually, even with our small numbers, we recognize more specialties. For example, the stated sections of the American Medical Association are as follows:

1. General medicine.
2. Surgery.
3. Obstetrics and gynecology.
4. Ophthalmology.
5. Otology, laryngology, and rhinology.
6. Pediatrics.
7. Pharmacology and therapeutics.
8. Pathology.
9. Physiology.
10. Nervous and mental diseases.
11. Dermatology.
12. Preventive medicine and public health.
13. Genitourinary diseases.
14. Orthopedic surgery.

We have recognized all these in the American Therapeutic Society, and in addition: 15, Anatomy, 16, Bacteriology, 17, Immunology, 18, Medical jurisprudence, 19, Materia medica, and, 20, Climatology.

Most of our members are or have been teachers. Two years ago, I found that we had about fifty professors among our members. In the latest roster, of 1915-16, I have found by inquiry that of the hundred members sixty were or had been professors, twelve associate professors, and ten teachers, making a total of eighty-two per cent. These figures indicate fairly well the quality of our membership. The tables of 1916-17 will show a still further increase in the quality of the men.

Most of us are aware, I am sure, that we are being entertained by the medical profession of one of our oldest cities, on a river that not only transports more tonnage than any other river in the world, but has on it a beautiful island park, Belle Isle, one of the thirty of the City Beautiful. With a population less than a million, you of Detroit have made of late such giant strides in your industrial life, and have accumulated so much material wealth, that your future prosperity seems assured. Your Detroit College of Medicine and Surgery, founded in 1913, and therefore only three years old, is a proof of your pioneer spirit, with its preliminary entrance requirements, graded curriculum, five year course, clinical opportunities, and laboratory facilities. It is not to be wondered at that the proportion of medical students to the population is greater than that of any other city in the United States. Nor am I aware of any other place where hospitals and medical institutions are so open for clinical instruction. In this respect and in your laboratory facilities you have set an example for our more conservative laymen in the East.

Again, if I am correctly informed on these matters, your eleven hospitals, asylums, and homes offer 1,300 beds for medical instruction. If you are imbued with the university idea, as I have no doubt you are, you are already working for a closer affiliation of your medical bodies.

Apart from this, some of you will, I know, join with me also in thinking that you have with you one of those men whose name is to be remembered in history, as far sighted and great enough to throw his energies and soul into the diabolical caldron of hate and fury that has characterized the terrible European conflict. Even if his efforts have not been immediately successful, they have had a healthful influence.

John Brown failed in his mission, but his soul went marching on. Were Ford's efforts a failure? I believe not. He tried to secure peace at a time when his method was the only one that offered any hope of ultimate success. Fortunately I, and you who are my associates in the army of the United States, have prepared ourselves for any results of the jealousies of ambitious men, and of our own internal dissensions, if any such should arise. God grant we may not be called upon. Our preparedness spells peace, and we have been fellow laborers with Mr. Ford though our methods have been different.

As I have intimated, the field before us at this session is a broad one, for therapeutics necessarily includes all its branches, special as well as general, experimental and applied, pharmacal and nonpharmacal. It is true that apart from operative methods, and the application of mechanical contrivances, there has been a steady increase in our nonpharmacal remedies, of which hydrotherapy, massage, pneumotherapy, psychotherapy, phototherapy, electricity in many forms, and the application of cold and heat are good examples. We are forced to admit their powers, for each one of them has established a claim to be recognized as an important aid to our work. Yet after all, the administration of the organic and inorganic materia medica of our pharmacopœia plays such an important part in the management of disease, that pharmacology (taking it in the broad sense inclusive of materia medica) cannot be dissociated from therapeutics. If the aim of the science of medicine is the prevention, cure, or amelioration of disease, then therapeutics is its most important branch. The therapeutic nihilist may exist, and talk profoundly of the *vis medicatrix naturæ,* but the medical colleges of the United States will, notwithstanding, continue to believe that therapeutics is worthy of a chair; encyclopedias of medicine will recognize it as a distinct department, international medical congresses will dignify it with capital letters, and the section devoted to it will not be surpassed in practical results by any other.

In early times the application of remedies was empirical. Accident led to the discovery of mineral springs, and the virtues of Peruvian bark. It will always be helpful, but at the present time, new remedies are almost wholly the results of tests on the lower animals, corroborated by clinical experience. When Vesalius by his physical researches instituted a campaign of personal investigation that eventually led to the discovery of the circulation of the blood, and laid the foundation of scientific medicine, he opened the way for the therapeutics of today.

It is by research work in the fields of medicine and surgery that this progress has been made. Accident has played a comparatively small part in this work. It has for the most part merely given us clues by which to work out our problems. The late Dr. Carlos Finlay, of Havana, suggested, in 1881, that yellow fever might be communicated by the mosquito, but even before his time the Indians of Central America knew that by netting the entrance to their tents fevers were kept out. It remained for the United States Yellow Fever Commission to discover, some years later, that it was a single variety of mosquito, Culex fasciatus, that conveys the poison, and that protection from this mosquito gives immunity from the disease. We all know now that this discovery has reduced the incidence of yellow fever to a minimum; in fact, the fever has been almost eradicated.

In the case of the Loeffler bacillus of diphtheria and the plasmodium of malarial fever, the discoveries were due to intelligent, patient, laborious research. If we find that beriberi and pellagra are caused by the present milling processes, these discoveries also will have been the result of long and patient labor. What may be accomplished by such researches is shown by our successful handling of the hookworm disease, and by antityphoid, anticholera, and antiparatyphoid inoculations.

Only a confirmed antivivisectionist will say that therapeutics is not advancing. We know it is going forward by leaps and bounds; but many do not realize in figures how important the discoveries of late years have been, so far as the saving of life is concerned. We believe that in diphtheria antitoxin a remedial agent was introduced that has saved thousands of lives, and we know that it has practically done away with intubation in laryngeal diphtheria. But in many other respects we do not appreciate the full force of our advances; often, however, these matters may be reduced to figures. For example, in Rome the mortality charts show that, in 1887, malaria ranked in mortality with tuberculosis and other great infections, killing in Italy in that year over 30,000 persons (Osler). In 1906, less than 5,000 died of the disease, and in 1907 a few over 4,000. By protecting dwelling houses against mosquitoes, and by legislation for the gratuitous distribution of quinine, the great destroyer of the plasmodium, the fatality from malaria was reduced to the last named figures.

The American Therapeutic Society is not an organization devoted to materia medica; it is a society of specialists, embracing, according to the intention of its founders, every department of therapeutics in medicine and surgery. It has been no easy matter to gather these specialists together so as to get new light on therapeutic weapons. But our meetings have been fruitful in results. At one of them a discussion on the borderline diseases took up their surgical versus their medical side. From one of the surgeons present came the statement that the profession had learned much from medical men about the treatment of appendicitis, which only a short time previously had been declared by one of the best known writers on internal medicine to have no medical side. One distinguished member, now our president, was the first, I believe, to come forward and say that in certain forms of appendicular diseases surgical treatment is not called for. So the world moves; and so much for the scope and aims of the work of this society. It brings together a coterie of experts and general practitioners, able to discuss intelligently the prophylaxis and treatment of every affection in the whole range of our art and science, making possible a degree of progress impossible in special sections.

One of the dangers of the day is overspecialization. The modern tendency is to work in an ever narrowing field, and to lose our appreciation of what is being done about us. It is imperative, therefore, that we should at times come together, listen to one another's views, and compare results. In this way we lift the topic under discussion from the narrow rut in which it may have been placed by specialization, and illuminate it by the white light of truth that comes only from a combination of all the different colored rays.

It was no small thing to start a national society with therapeutics as its object, especially as the founders would certainly and naturally be credited with commercial aspirations. But the principles upon which this society was organized, as stated in its constitution and by laws, soon showed the profession that commercialism could not exist in the organization, and that a member indulging in such practices would, *ipso facto,* cease to belong to it. We are quite ready to recognize the energy and intelligence shown by our great pharmaceutical houses, and realize fully that they employ the best medical talent obtainable, are certainly adding to the sum of human knowledge, and aid us in unnumbered ways in our combat with disease. But, though they enlist our interest and invite our admiration, we nevertheless draw a sharp line between the practice of medicine and commercialism. Established in these principles, this society has given expression to every phase of scientific therapeusis consistent with the ethical practice of experimental and applied medicine and surgery in all their branches.

Contemporary Comment

The Frequency of Hereditary Syphilis.—The frequency of hereditary syphilis, remarks *Pediatrics* for November, 1916, is a matter concerning which there has been a great deal of discussion but no general agreement. It is obvious that to trace accurately the frequency of any hereditary disease is by no means an easy task, and the reliability of such figures is dependent on many factors. Dr. Frank Spooner Churchill and Dr. Richard S. Austin, who wrote on the subject in the *American Journal of Diseases of Children* for October, made an inquiry as to the incidence of hereditary syphilis, drawing their final conclusions from an analysis of the literature, and an intensive study on their own part of 695 patients at the Children's Memorial Hospital, Chicago.

Their conclusions are as follows: Statistics as to the frequency of any given disease must be based on large numbers of patients, carefully and accurately studied as to diagnosis. The diagnosis must be made after judicious weighing of all the evidence, both clinical and laboratory. Study of the literature on the incidence of hereditary syphilis shows a wide range of results, it being variously estimated at from two to fourteen per cent. in Europe and America. Intensive study of a group of 695 patients in the Children's Memorial Hospital, during the winter of 1915-1916, the study embracing both clinical and laboratory methods of investigation, shows an incidence of 3.3 per cent. of hereditary syphilis. The amount of hereditary syphilis among the hospital infants and children in four large cities of the United States, New York, St. Louis, San Francisco, and Chicago, appears to range from two to six per cent.

War Hurts Attendance at the University of Toronto.—Figures recorded to date in the registrar's office at the University of Toronto, remarks the *Dominion Medical Monthly* for December, 1916, show the ravaging effects of war on the enrollment lists of all the faculties of the university. The registration of students in Arts, Applied Science, Medicine, and Forestry is practically complete, and the records show that in some cases the number of students now enrolled is less than half that of 1913-14. . . . Undergraduates and graduates of the University of Toronto serving with the colors now number 3,020. Over 140 University of Toronto men have given their lives for the British Empire.

The Book Agent Impostor.—Several months ago, remarks *Northwest Medicine* for November, 1916, we published a warning against a swindling book agent, who was reported to be working physicians of the far west. During the past month we have received letters from two eastern publishing houses, again sounding warning against this man who styles himself B. T. Little, and who is reported to have recently worked the physicians of Washington and Oregon. He states that he is a representative of one or more publishing houses in the east and solicits orders for medical books and subscriptions to various medical journals, beside collecting on accounts due various publishers. He tries to put over the old swindle of working his way through college, and says he represents a students' benefit association. It seems as if any physician in his right mind would have sufficient regard for his own finances not to pass out money for medical literature without assuring himself of the standing of the man he is dealing with, but it seems that doctors in both Oregon and Washington have reported themselves as victims of this impostor. A word to the wise should be sufficient.

Notification of Pregnancy.—The compulsory notification of pregnancy to the health authorities of every community is the plan suggested by a speaker at the recent annual meeting at Milwaukee of the American Association for the Study and Prevention of Infant Mortality, observes the *Lancet-Clinic* for November 11, 1916. The notifications are to be treated confidentially, and would be designed to furnish the necessary information to the health authorities, "who should be required to determine that proper prenatal and safe obstetric care are assured to each prospective mother," to quote the speaker, Dr. Arthur B. Emmons, of Boston. It savors much of coercive legislation, and recalls the methods in vogue in the paternalistic governments of Europe, which we are wont to decry; yet when one considers that forty per cent. of the infant mortality in this country is due to inadequate care at the time of parturition, stringent measures would seem in place. The scheme would bring to thousands of prospective mothers inoculated with syphilis or infected with the gonococcus proper medical attention. Perhaps the advantages of such a notification might be made so attractive that women would voluntarily acquaint the health authorities with their state. But whether voluntary or compulsory, the adoption of the plan would reduce infant and maternal mortality.

Editorial Notes and Comments

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THE NEGLECT OF HYPNOSIS AS A THERAPEUTIC AGENT.

The days when hypnosis was first applied in a practical manner in the treatment of disease were days of argumentation as to the nature of this remedial method. Modern hypnosis had its origin in mesmerism; and because mesmerism was associated in most people's minds with mystery, the same attitude was in the beginning assumed toward hypnosis. In fact, the struggle which ensued right within the field of medicine proper among some of the foremost neurologists in France as to the exact nature and method of action of hypnosis, led to decided uncertainty and skepticism on the part not only of the lay people but of physicians themselves. even the neurologists, psychopathologists, and psychiatrists in no small number. Under such circumstances, with such theories as that of "magnetic fluid" floating in the air, and being disseminated and whispered far and wide, it is not at all astonishing that a general attitude of distrust was impressed upon the medical profession. Furthermore, the employment of advertising methods and quackery in the exploitation of the apparent mysteries of hypnosis for commercial purposes, strengthened this attitude. The profession looked with suspicion upon any one who employed hypnosis as a therapeutic agent.

In spite of this, however, in France, England, and elsewhere, and not least in the United States, certain workers in the field of psychopathology devoted themselves to the scientific study of hypnosis, so that it has been taken out of the realm of mystery, quackery, metaphysics, and the unknown, and its nature and method of producing results have been clearly and scientifically established.

Hypnosis as a therapeutic agent has come to stay. In fact hypnosis is employed by the foremost psychopathologists, and so firmly has its therapeutic value become established, and so well recognized is it by all who have had the good sense to employ the method in suitable cases, that it is truly astonishing to find how much ignorance on this matter exists, and how little used as an instrument of definite therapeutic value we find it among the rank and file. Boris Sidis, in his *Symptomatology, Psychognosis, and Diagnosis of Psychopathic Affections,* has expressed the idea we have in mind so well, that we cannot refrain from quoting him at length:

> From a practical therapeutic standpoint hypnosis is of the utmost importance. Whenever it is possible the hypnotic state should be used for the alleviation of nervous and mental suffering. Not to avail oneself of hypnosis in the treatment of mental troubles and claim the omnipotence of some other method as a panacea for mental affections is to show undue enthusiasm not justified by experience. Many psychopathic cases have been treated by me and cured permanently by means of hypnosis alone. Some of the cases were of severe character, and the employment of other states and methods would have required months, if not years of treatment with possibly no chance of recovery, on account of the dragging character of the treatment. Treated by hypnosis the patients became permanently well after a few treatments. . . . This can hardly be affirmed of any method no matter how enthusiastic one may be about it. Whenever, therefore, it is possible to obtain a deep hypnosis the latter should by all means be used. Hypnosis is a powerful instrument in the armamentarium of psychotherapy, and the medical man who wishes to get results should cultivate its use.

When a man of the scientific probity and standing of Sidis comes forward with such an unequivocal statement, it means something. But Sidis does not stand alone in this, since all broadminded psychopathologists here and abroad who have employed the method have come to the same conclusion.

Every medical man of average ability who will devote the time and effort to master hypnosis can apply it practically in his work. It behooves the average practitioner to take notice and to act accordingly.

OUR DAILY BREAD.

The importance of nutrition and the need for better regulation of our food supplies are urgent questions of the day. In the effort to improve these conditions we should not neglect the physiological aspect of the subject. The science of dietetics is rapidly changing our views on nutrition, and presenting helpful rules for dietary guidance. We are no longer wholly dependent upon our culinary art and the instinctive cravings of appetite. By applying the principles of dietetics, it is now possible to correct common errors in diet, to prevent waste, and to promote judicious economy. In this field of endeavor a great deal can be accomplished by giving simple advice regarding habits of eating and overeating. By these means many prodigals would be saved, and taught to invoke the three Graces of the table: Variety, simplicity, and moderation. We should remember the old Roman adage to take only so much of food and drink as to refresh and not oppress the powers of the body.

In discussing this subject before the Second Pan-American Scientific Congress, Professor Lafayette B. Mendel (*Changes in the Food Supply and Their Relation to Nutrition*) called attention to our modern conditions and referred to some remarks of Professor Rubner which are so pertinent that we quote them herewith: "The nutrition of the masses is to us a problem which may be approached from many sides. It is necessary that not only the hygienists, in the narrower sense, take up the struggle for betterment, but that also the great army of men who are truly humane in their hearts, shall take their places beside us. The battle which we have to carry on is not only against unavoidable and natural difficulties; we must not forget that human society includes many elements, unwilling to make the least concession to a humanitarian movement, persons whose prosperity is selfishly held superior to the welfare of their neighbors, and who will oppose such a movement with all the means at their command. Let us hope that our opponents will, at the last, rejoice with us in a triumph of the Humane Idea."

DEFECTIVE CHILDREN.

In civilized countries no problem is harder to solve than that of defective children. In industrial countries, in lands in which the population is massed together and living under unhygienic conditions, degeneracy advances and feeble mindedness is common. Of all the causes of feeble mindedness none is more frequent than syphilis, and feeble minded parents will beget children with similar mental defects. How can we deal with persons whose mental capacity is subnormal, or abnormal, so that they will be happy and even useful and, at the same time, not be a menace to the community? If they are allowed to be at large and to procreate and bear children, their mental defects are likely to be transmitted on a large scale. The criminal class is almost wholly recruited from the ranks of these defectives, as they are practically all potential criminals. Sixty per cent. of prostitutes are defectives; they constitute a social danger of the gravest character. Defectives supply the great majority of murderers, thieves, and social outcasts of every variety. They are responsible mainly for the spread of venereal infections which are the real origin of many of our physical and mental diseases. By permitting freedom to mental defectives a vicious circle is established which may widen until a whole race is compromised. Defective children cannot be properly educated along with normal children; they deter the children with whom they are associated, and tend to contaminate them. There is little or no difference of opinion among those who have studied the matter that steps should be taken for their own salvation and to safeguard the public at large. The entire question, however, simply bristles with difficulties. The most sensible plan is segregation, and undoubtedly the best way to segregate them is on farm colonies, where they are well supervised, educated to the extent their limited intelligence will allow, learn the trades best adapted to their deficient brain power, and lead healthy lives. This plan has met with success whenever it has been carried out; the obstacles, however, in the way of its universal adoption are many. Cost is frequently the stumbling block, State and city authorities being often so penny wise and pound foolish as not to appreciate the fact that as a menace to health and society the defective, left to his or her own devices, will soon be a greater expense to the community than the outlay of the few dollars required to put into operation the necessary preventive measures. The cost of crime alone is colossal. The cost in ill health due to these victims of heredity is even greater, and the harm they do to the cause of morality cannot be estimated in money. The cost is but one of the reasons why defective children are not dealt with in an effective manner. Before a mentally deficient child can be committed to institutional care, farm colony or what not, the case must be diagnosed by an expert and the permission of parents or guardians must be obtained. The psychiatrist cannot go to the defective child and although psychiatric clinics are established now in the hospitals of most big cities, it is by no means an easy matter to induce the parents of mentally deficient children to take them to such clinics for examination. Moreover, even when children are known to be below par, the parents are often averse to allowing them to go to an institution, especially when they are not very obviously defective. There is a certain amount of stigma attached to institutional life and, moreover, the defective offspring at home is often a source of revenue.

The best means of impressing upon the general public the menace of the defective is by education with regard to the whole matter. When the people at large comprehend the nature of the danger, they will insist that measures be taken at least to minimize it, and cost will not be allowed to stand in the way.

INJECTION OF NONSPECIFIC PROTEINS.

The response of a sensitized animal to the parenteral injection of the specific protein is a matter of common knowledge, although the precise mechanism of the response is still a subject of debate. Among other theories we may recall that of Vaughan, which postulates the liberation of protein split products, a fraction of which is toxic. It is also well known that the parenteral injection of a nonspecific protein in an unsensitized animal is followed by certain more or less constant phenomena, among them the tendency for the body temperature to rise and for the leucocytes in the blood to increase in number. Very recent observations made by R. Müller seem to show that in localized inflammatory processes the injection of a nonspecific protein is also followed by a local hyperemia and an increased transudation into the inflamed tissues. Good use was made of this reaction in the treatment of gonorrheal complications, buboes, staphylococcal, and other local inflammations.

Following this lead L. Müller and C. Thanner (*Medizinische Klinik,* October 22, 1916) tried this form of therapeutics in certain ocular affections, largely because many of these conditions have long been treated with agents which provoke local hyperemia. Their results were so favorable as to justify a brief summary.

Four cases of parenchymatous keratitis of hereditary luetic origin were thus treated, with immediate relief of the photophobia and pain, and marked shortening and reduction in the severity of the course of the affection. All of the cases had previously been treated with antiluetic remedies without effect. Eleven cases of iritis were also injected with protein with the most favorable results. In these the photophobia and pain disappeared on an average in twenty-four hours after the first injection. One case with an old history of gonorrhea was promptly relieved. Cloudy cornea and choroiditis also responded well, but the cloudiness was not totally removed in all of the cases. Finally, conjunctivitis was favorably influenced by the treatment, the edema being promptly cleared up.

The protein employed was that of whole milk, and for the purposes of treatment the milk was boiled for four minutes just before injection. The dose, from five to seven mils, was injected deep into the gluteal muscles, care being taken that no vein had been entered. The injections proved somewhat painful for a short time, but no ill effects were observed in any case.

IS PELLAGRA CONTAGIOUS?

The prominence with which pellagra has come before the profession in recent years has caused all aspects of the disease to be investigated; thus we are gradually amplifying our knowledge of it. Many beliefs and theories, at first held by occasional observers, have been rejected in the light of more complete data. Others still hold sway, although as more and more investigations are being made, the ground tends to crumble from beneath them. The impression, for example, seems to be fairly widespread, although countenanced by practically no direct proof, that pellagra is contagious. It is true that it bears certain superficial analogies to many infectious diseases which are also contagious. The only direct evidence of which we are aware which would seem to argue in favor of the contagiousness of the disease is the report of the successful inoculation of a monkey by Harris in 1913, with filtrate from pellagrous lesions. Later on, however, this same observer, in further experiments, got different results, as did Lavinder and Francis. The question then was still undecided until the recent work of Goldberger.

Goldberger determined to test the matter by actually subjecting human subjects to exposure. A number of persons volunteered, and fifteen men and one woman were selected. Thirteen of this number were physicians. The materials used were blood, nasopharyngeal secretions, epidermal scales from pellagrous skin lesions, urine, and feces. The blood was administered by intramuscular or subcutaneous injections, the secretions by application to the mucosa of the nose and nasopharynx, and the excreta were given by mouth. The pellagrous material was obtained from seventeen cases, varying in severity, and including three fatal cases. As insanitary methods of sewage disposals have often been alleged to be responsible for the transmission of pellagra, special attention was given to the excreta; the infectiousness of both urine and feces was tested six times. The blood was tested twice, the nasopharyngeal secretions twice, and the scales from lesions three times. No change was made in the subjects' diet or in their manner of living.

The experiment was carried on during a period of from five to seven months, and in none of the subjects did any symptoms develop to justify a diagnosis of pellagra. Goldberger (The Transmission of Pellagra, *Public Health Reports*, November 17, 1916) therefore concludes that pellagra is not a communicable disease, but one of dietary origin, brought about by faulty, probably deficient diet. The conclusion bears out the one at which he and Wheeler arrived in 1915, when a group of convicts received a diet deficient in certain elements, with the result that in a number of them the disease developed.

THE CLOTHES OF CANCER PATIENTS.

Ettie Sayer, of London, writes to the *Lancet* for December 2, 1916, on the possibility of the transmission of cancer along with discarded clothing. The letter speaks of two patients with inoperable cancer of the cervicothoracic region who have inherited and worn the clothes of relatives who died from similar growths in similar local positions, the one six years ago and the other eight. In the latter case the patient exhibits a striking replica of his late brother's growth. The absence of any weighty opinion in support of some definite interim procedure obstructs the carrying out of hygienic measures in dealing with cancer that are employed in conditions which are in many other respects the same. People are not willing to sacrifice the property of relatives who have died from a disease which they have been assured is solely due to "eating meat," or to "chronic irritation," or to a "birth cell gone wrong."

There is no bacteriological proof that "cancer" is actually associated with a microbe. But clinically one gets abundant evidence of a something which superimposes itself upon tissues that have become devitalized through having had to carry on a lengthy state of warfare with certain chronic bacteria, playing the role of forerunner to more virulent microbes. Not only has a bacterial preparing of the way (by some such herald as that which is responsible for fibrositis) been a feature in every case that has occurred within the correspondent's experience during recent years, but also every local alleviation that he has managed to obtain has been due to the help of a remedy possessing bactericidal properties. Sayer states that he has never seen a cancer case without sepsis somewhere.

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News Items

Change of Address.—Dr. Alfred C. Reed, to 350 Post Street, San Francisco, Cal.

Yellow Fever.—Quarantine measures on account of yellow fever were instituted on November 21st by the Cuban quarantine service against arrivals from the Island of Martinique.

Philadelphia Medical Examiners' Association.—Dr. Lawrence Eisenberg was elected president of this society at its recent annual meeting; Dr. Howard M. Kuehner was elected vice-president and treasurer, and Dr. M. C. Neufeld, of Chester, secretary.

New Officers of the Eastern Medical Society.—At the annual meeting of the Eastern Medical Society of the City of New York, held on Friday evening, December 8th, Dr. I. Seth Hirsch was elected president and other officers were elected as follows: Dr. H. E. Isaacs, first vice-president; Dr. G. G. Fishlowitz, second vice-president; Dr. Joseph F. Saphir, recording secretary; Dr. A. A. Hilkowich, treasurer.

Leprosy in Newark, N. J.—It is reported that Newark has a case of leprosy in the isolation ward of the City Hospital. The patient is a Syrian rug peddler who arrived in Newark a week ago from Springfield, Mass.

Smallpox in Connecticut.—The health officer of Waterbury, Conn., reported by telegraph on December 4th to the United States Public Health Service that there were present in that city twenty-one cases of smallpox of a mild type.

Philadelphia County Medical Society.—The following officers were elected at the recent annual meeting of the North Branch of this society: Dr. Maximilian D. Bloomfield, chairman; Dr. Carle Lee Feldt, vice-chairman; Dr. M. P. Warmuth, vice-president of the County Society.

Poisonous and Disease Carrying Insects of Philadelphia.—At a meeting of the Philadelphia County Medical Society, held on Wednesday evening, December 13th, Mr. Herman Hornig, city entomologist, delivered an address on Poisonous and Disease Carrying Insects in and Around Philadelphia. The lecture, which was illustrated with over one hundred lantern slides, gave details regarding the many types of flies, malarial bearing mosquitoes breeding in the vicinity of Philadelphia, caterpillars, etc. The program was arranged by the Committee on Insect and Animal Transmitters of Disease.

Personal.—Dr. Henry Dwight Chapin, of New York, delivered an address on the Relationship of Pediatrics to General Medicine, at the twentieth anniversary meeting of the Philadelphia Pediatric Society, held Tuesday evening, December 12th.

Dr. Theodore LeBoutillier, of Philadelphia, has been appointed pediatrist to the Philadelphia General Hospital.

Professor Lawrence G. Henderson, of Harvard University, delivered the annual Samuel D. Gross Lecture of the Pathological Society of Philadelphia, Thursday evening, November 9th, his subject being Acidosis.

Dr. L. V. Heilbrun has been instructor in microscopic anatomy at the College of Medicine of the University of Illinois.

New York Geriatric Society.—The next meeting of this society will be held on Wednesday, December 20th, at the St. Agnes Branch of the New York Public Library, 444 Amsterdam Avenue, New York. The subject for discussion will be Surgery in the Aged. Papers will be read by Dr. Robert T. Morris, Dr. Parker Syms, Dr. Walter M. Brickner, Dr. Edward Wallace Lee, and Dr. F. C. Yeomans. Among those who will participate in the discussion are Dr. Howard Lilienthal, Dr. Gordon K. Dickinson, Dr. A. Sturmdorf, and others. Physicians are cordially invited to attend. Dr. I. L. Nascher is secretary of the society.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, December 18th, Clinical Association, Medical Society of the Woman's Hospital; Tuesday, December 19th, West Branch of the County Medical Society, Academy of Stomatology; Wednesday, December 20th, Section in Otology and Laryngology of the College of Physicians; Thursday, December 21st, Section in Ophthalmology of the College of Physicians, Southeast and Northeast Branches of the County Medical Society; Friday, December 22nd, South Branch of the County Medical Society, Northern Medical Association.

Medical Association of the Greater City of New York.—A stated meeting of this society will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, December 18th, at 8:30 o'clock. Dr. William P. Emerson, professor of pediatrics at Tufts Medical School and physician in charge of the nutrition clinics of the Massachusetts General Hospital and Berkeley Infirmary, will read a paper on the Faulty Food Habits of Delicate Children and will show a food exhibit demonstrating a simple method of checking up diet, which will apply to underweight and overweight in older patients; also to low protein, carbohydrate or fat as desired. The subject will be discussed by Dr. H. R. M. Landis, director of the Phipps Institute, Philadelphia, Dr. Graham Lusk, Dr. Charles Gilmore Kerley, Dr. L. E. La Fetra, Dr. Charles F. Bolduan, and others.

Fatalities from Street Accidents.—According to the report of the police commissioner, 65 persons lost their lives in New York during the month of November, 1916, as the result of street accidents. Of these 23 were killed by motor trucks, 19 by passenger automobiles, 7 by horse drawn vehicles, 7 by electric cars, and the rest by motor cycles, falls, and collisions. Thirty-two of the victims were children. The report of the National Highways Protective Association says that during the eleven months of 1916 in New York city 363 deaths were caused by automobiles, 74 by trolleys, and 71 by wagons, compared with 312 by automobiles, 69 by wagons, and 69 by trolleys in 1915.

The Sherley Amendment.—The Circuit Court of Appeals for the Third Judicial Circuit of the United States has upheld to a decree of forfeiture of a shipment of "patent medicine" on the ground that the labels contained false and fraudulent statements regarding the curative effect of the medicine. The suit was brought under the Sherley amendment to the United States pure food and drugs law. Judge Buffington, in the opinion, said that the purpose of the Sherley amendment was to "punish false and fraudulent statements regarding the curative or therapeutic effect" of drugs shipped in interstate commerce. The opinion is published in the December 8th issue of *Public Health Reports.*

The Yorkville Medical Society of the City of New York.—A stated meeting of this society will be held at Aschenbroedel Club, 144 East Eighty-sixth Street, Monday evening, December 18th. The principal business to be transacted at the executive session will be the election of officers and the reports of standing committees. The scientific program will consist of a symposium on diseases of the nose and throat. Papers will be read as follows: Acute Infections of the Nose and Throat, by Dr. Louis H. Schwartz; Chronic Infections of the Nose and Throat, by Dr. Max Marschark; The Nose and Throat as Portals of Entry in Contagious Diseases, by Dr. Louis Foscher; Complications and Sequelæ, by Dr. J. Davidson; Focal Infections from the Nose and Throat, by Dr. E. D. Friedman. The discussion will be opened by Dr. Wolff Freudenthal and Dr. Sidney Yankauer.

American Laryngological, Rhinological, and Otological Society.—The following officers were elected at the annual meeting of this society, to serve for the year ending June 2, 1917: Dr. Thomas J. Harris, of New York, president; Dr. John F. Culp, of Harrisburg, Pa., first vice-president and chairman of the Eastern Section; Dr. John E. Brown, of Columbus, Ohio, second vice-president and chairman of the Middle Section; Dr. James A. Patterson, of Colorado Springs, Colo., third vice-president and chairman of the Western Section; Dr. Richmond McKinney, of Memphis, third vice-president and chairman of the Southern Section; Dr. Ewing W. Day, of Pittsburgh, treasurer; Dr. William H. Haskin, of New York, secretary; Dr. H. Holbrook Curtis, of New York, librarian; Dr. George L. Richards, of Fall River, Mass., chairman of the publication committee. The next annual meeting of the society will be held at the Clifton Hotel, Niagara Falls, Ontario, June 1 and 2, 1917.

Dysenteric Epidemic in Alabama.—The health officer of Talledega County, Alabama, reports to the United States Public Health Service that during previous years typhoid fever and cases of diarrhea have been rather common in Talladega, particularly among new comers. Following a change in the water supply from a polluted spring to an artesian well, the typhoid and diarrhea were greatly reduced in prevalence. About October 20, 1916, the present outbreak began with about fifty new cases each day. These cases were characterized by an acute onset, a griping pain in the abdomen, diarrhea, and some nausea. Many had fever and were prostrated. The diarrhea persisted for from a week to six weeks and frequently reappeared after a few days' intermission. No deaths appear to have been due directly to the condition. On November 30th at least one fourth of the population is believed to have been affected. An officer of the Public Health Service has been detailed to make an investigation.

The Mississippi Valley Medical Society to Have an Official Organ.—Beginning with the January, 1917, issue, the Louisville Monthly Journal of Medicine and Surgery will become the official organ of the Mississippi Valley Medical Association, appearing with that issue in a new form and under the name of the *Mississippi Valley Medical Journal.* Dr. Henry Enos Tuley, secretary of the association, will continue as editor; Dr. H. H. Grant as business editor, and a special editorial committee, composed of the following, will assist in the editorial policy of the journal: Dr. William N. Wishard, of Indianapolis; Dr. Arthur R. Elliott, of Chicago; Dr. Willard J. Stone, of Toledo, Ohio, and Dr. Louis Frank, of Louisville. It is announced that a special epitome department will be established, giving each month a review of some special borderline topic.

Deputy Collector, Inspector, and Agent, Antinarcotic Act (Male).—The United States Civil Service Commission announces an open competitive examination for deputy collector, inspector, and agent, under the antinarcotic act, for men only, on January 3, 1917. From the register of eligible persons resulting from this examination certification will be made to fill about seventy-five vacancies in this position in the Internal Revenue Service, Treasury Department, at $1,600 a year, with actual traveling expenses and subsistence when away from post of duty on official business. There is opportunity for promotion to salaries of $5 and $6 per diem, with allowance of $3 per diem for subsistence and actual traveling expenses. The duties of this position will include the supervision and inspection of the sale of opium and coca leaves and their derivatives under the provision of the Harrison Antinarcotic Law approved December 17, 1914, and the detection of violations thereof. Graduation in pharmacy or medicine from a recognized institution, or the possession of a State license to practise pharmacy, is a prerequisite for consideration for this position. For full information regarding the examination address the United States Civil Service Commission, Washington, D. C.

Civil Service Examination for Psychiatrist.—The Municipal Civil Service Commission announces that applications will be received up to 4 o'clock in the afternoon of Friday, December 29th, for an examination, open to both men and women, for the position of physician for the examination of mentally defective children. From the list of eligible persons obtained from this examination certification will be made by the Department of Charities to fill a vacancy in the position of senior physician, at $2,520 per annum with full maintenance, and three positions of resident physicians at $1,500 per annum with full maintenance at Randall's Island Hospital and Schools for Children.

The duties of the position of senior physician in the Department of Charities are to assist the director of Randall's Island in the administration of the institutions and to directly supervise the clinic and the assisting physicians. The duties of the three resident physicians will be to assist in the care and treatment of mentally defective children.

The opportunities for exceptional experience in this specialty for the successful candidates are very great in view of the extensive field that New York presents for close association with so many prominent consulting physicians. The institutions at Randall's Island care for approximately 2,100 patients with an admission of 1,000 cases annually, including borderline psychopathic and delinquent cases. Owing to this active service, which is the largest in the United States, and the well equipped pathological laboratory, it is said that the opportunities for clinical, psychological, and pathological work with mental defectives and epileptics are unexcelled. Candidates for the position must have a license to practise medicine in the State of New York or must procure one prior to certification. They must also have had experience in the diagnosis of mental diseases and mental deficiency of such a character as would qualify them for the position.

The list resulting from this examination will possibly be used for the next four years.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-eighth Communication.

CYSTITIS.

Excluding the treatment of such cases as require surgical interference mention may be made of the more important therapeutic means for combating cystitis, and the underlying pharmacological basis.

Two leading indications are present: 1. To render the urine nonirritating and antibacterial; 2, to soothe the inflamed mucosa and alleviate the accompanying symptoms. To accomplish the first result it is necessary that all predisposing factors be rectified; next, the diet must be limited strictly to substances giving a minimum of possible irritants to the bloodstream, using milk for requisite protein and a simple carbohydrate like rice for energy. The patient will usually improve more rapidly if all food, other than water in abundance, is cut off for two or three days; moreover this plan will largely if not entirely obviate the time honored custom of giving alkalies for acid urine and boric acid or a benzoate for alkaline urine, either of which procedures complicates the situation while accomplishing little more than can be brought about by the water treatment.

When, in addition to this means of reducing possibly irritating constituents in the urine, it becomes necessary to make the urine antiseptic, either one of two drugs is available—salol or hexamethylenamine. In the intestines salol is broken up by lipase into salicylic acid and phenol; compound salts of these two products appear in the urine and manifest considerable inhibitory effect on bacteria anywhere along the urinary tract; but some renal irritation is liable to be induced during the process of excretion, lessening to that extent the value of the drug. Hexamethylenamine, during the process of its excretion from the kidneys, forms formaldehyde in the presence of acid urine, and this substance exerts a strong inhibitory effect on bacteria present in the tract. But if the urine is alkaline, no formaldehyde is formed; hence it becomes necessary, in using hexamethylenamine, to change an alkaline urine into an acid one, and for this purpose acid sodium phosphate is recommended. Care must be taken not to raise too high the percentage of available formaldehyde, since this preparation is itself an irritant to mucous membrane.

The best means for soothing the inflamed mucosa, thereby relieving vesical pain and tenesmus, consist of bladder irrigations. If the urine is alkaline, the irrigating fluid may well be a half strength boric acid solution; if the urine is acid, four per cent. of borax in a normal salt solution, with a small amount of glycerin added, may prove beneficial. In markedly acute cases, either of these preparations increases the distress; under such conditions we may advisedly substitute normal saline solution containing cocaine to the strength of 0.5 per cent.; this irrigation may be followed in about five minutes with a *freshly* prepared normal saline solution containing silver nitrate to the strength of from 0.5 to one per cent.; though in some cases a more effective irrigant than the silver nitrate solution is mercuric chloride in a one to 15,000 solution. In all these cases, the liquid serves as a mechanical means for washing out bacteria and other irritating products, while the contained medicament serves to stimulate regenerative processes. The method of gravity injection with siphonage removal gives most thorough irrigation, but great care must be exercised not to overdistend the bladder.

Great pain and tenesmus is most gratifyingly relieved by morphine; but we should place no dependence on any assumed local effect from morphine suppositories. Morphine exerts its narcotic effect chiefly on the brain, with scarcely any anesthesia of the sensory peripheral terminations.

Principles of Treatment in Fractures and Joint Wounds.—R. Lataste (*Paris médical*, October 28, 1916) discusses the postoperative treatment of wounds of the extremities, as encountered in military practice. The operation itself has for its purpose by opening up the wound, removal of blood, foreign bodies, and bone fragments, and judicious disinfection, to establish conditions under which the system can carry the combat against the local infection to a successful issue. The subsequently necessary immobilization to be effectual must permit of constant inspection and palpation of the limb, and be readily established and interrupted. A simple plaster apparatus, made from a long sheet of tarlatan eight, twelve, or sixteen layers thick, impregnated with plaster and water and applied as a gutter splint, gives best results in most cases, and is far superior to metallic gutters, which often do not properly immobilize. The wound itself should be covered with a smooth, comfortable, rather voluminous, but not too extensive dressing, and the plaster gutter applied over the dressing, with its edges turned back so as not to enclose more than one half the circumference of the limb. The gutter is held in place with a roller bandage, carefully applied with the limb in good position. For wounds near the shoulder the gutter is forked at its upper end; for the lower extremity, the gutter projects beyond the toes, the dorsum of the foot, however, remaining uncovered; for the knee, an inverted L shaped gutter is used, the shorter limb being fastened in front of the lower abdomen and pelvis. Such gutters can be quickly made and removed. At each dressing of the wound a new plaster apparatus is required, but its production requires only a few minutes, and furthermore, infrequency of wound dressing is, with immobilization, a cardinal principle of the treatment, all dressings tending to traumatize fragile tissues, to open the way to further infection, and to fatigue the patient—as illustrated in the temperature chart, which shows a rise after every dressing. If everything goes well without any redressing, he dispenses with it. The local and systemic conditions are, however, constantly and carefully watched. If the patient begins to suffer more, or the temperature rises, he is redressed, not for therapeutic, but for diagnostic purposes—to find out why the initial operative treatment has not been completely successful. Pus in the dressings is disregarded. If the patient is doing well, the pus is *ipso facto* shown to be innocuous.

Glycerin and Ichthyol in Septic Wounds.—Thomas W. A. Daman (*British Medical Journal,* November 11, 1916) reports that in septic wounds in which the circulation has been much impaired or in which there has been much hard crusting healing progresses very slowly under the usual measures. This can be overcome by the application of solutions of ichthyol and glycerin of varying strengths. This combination provides an effective antiseptic which also softens the tissues, stimulates the circulation, and, through its hygroscopic properties, stimulates the exudation of serum rich in antibodies. It also diminishes the tendency to excessive scar formation, and accelerates the processes of granulation and epithelialization. The dressings should be applied night and morning, or often only once daily. Effects nearly as good can also be obtained from solutions of magnesium sulphate in water and glycerin, but the presence of the water tends to diminish the osmotic action of this dressing.

Memorandum on Tetanus.—The War Office Committee (*British Medical Journal,* November 11, 1916) state that there is no question of the value of the prophylactic use of antitetanus serum, but the time of its use and its repetition are of great importance. It should be injected at the earliest possible moment and, since it has been shown that the passive immunity which the prophylactic injection confers does not last, the injection should be repeated at intervals of seven days as long as necessary. Three or four injections at such intervals should be given in long continued septic military wounds. The prophylactic dose should be not less than 500 U. S. A. units, and should be injected subcutaneously. Before performing an operation upon a septic wound, or at the site of such a wound, a prophylactic dose should also be given if more than seven days have elapsed since the last preceding injection. Such a preoperative dose should be given two days before the time of operation if possible. In the treatment of suspected wounds such antiseptics as hydrogen peroxide, potassium permanganate, chlorine water, or solution of iodine should be given the preference owing to their special antagonism to the growth of tetanus bacilli. In the therapeutic use of antitetanus serum so short a time as half an hour is of importance, and should not be lost in the presence of symptoms. In order to give the dose as soon as possible we should be on the alert for signs of local tetanus in the form of muscular stiffness in the region of the wound. The serum should be given intrathecally, intramuscularly, and subcutaneously, all at the same time. The first to reach the toxin at the site of its action, the second to attack the circulating toxin at once, and the third to continue the neutralization of the toxin for a longer period of time, owing to its slower absorption. Not less than 3,000 units should be injected intraspinally, from 5,000 to 10,000 intramuscularly, and 3,000 to 5,000 subcutaneously. The intraspinal injections should be given daily for three to five days, and then discontinued. The others may be given daily for longer periods of time. Symptomatic treatment with morphine, bromides, chloral, chloretone, and paraldehyde is a useful adjunct to the specific treatment. Phenol injections, and magnesium sulphate have not yet been demonstrated to have special advantages, and the latter is too risky for general trial.

A Rose Irrigator for Wounds.—Almroth E. Wright, H. H. Tanner, and Ralph C. Matson (*Lancet,* November 11, 1916) describe in detail several forms of a so called rose irrigator for wounds. This form of irrigator consists in a thermos bottle to supply the irrigation fluid at the proper temperature, a tube containing a drop counter, and a connection containing a number of openings to which rubber tubes can be fitted. Through each of the outlet tubes a piece of wire should be run, fastened above, so as to keep the tube in position in relation to the wound. Into the upper end of each of the tubes a piece of gauze should be inserted to conduct the fluid into it at a uniform and slow rate. By means of this form of irrigator it is possible to supply a perfectly continuous irrigation of physiological solution over the whole area of a wound, at a uniform rate and temperature, irrespective of the size, shape, or locality of the wound. The precise details as to each of these matters, and the methods for their regulation are set forth in detail in the original paper.

Exophthalmic Goitre. — Hector Mackenzie (*Lancet,* November 11, 1916) states that he has employed about all of the remedies advocated, and has had little result from most of them. Bromides proved useful where nervous symptoms were very marked; belladonna seemed to quiet the heart and soothe the nervous system; opium was found of value when there was looseness of the bowels; and calcium salts and the phosphates seemed to be beneficial when there was progressive loss of weight. None of the glandular preparations proved of any special value in the author's hands, and the same was true of the various other preparations of a similar type such as thyroidectin, the milk of thyroidectomized goats, etc. Contrary to the reported results of others, even the use of x rays did not very materially benefit many of the patients. One striking case was an exception to this rule, for after several repeated courses of intensive x ray treatments her hyperthyroidism was transformed into hypothyroidism which responded well to the use of thyroid extract. It is possible that the general use of x rays has not been sufficiently intensive to produce results. His experience with operative treatment of exophthalmic goitre has also been unfavorable, and he is not able to fully subscribe to it.

Congenital Clubfoot.—I. Reitzfeld (*Medical Record,* Nov. 18, 1916) gives a report based on twenty-six cases, and states that treatment consists of three fundamental principles; correction, retention, and supervision. Correction is obtained by manipulation, and then maintained by fixation first with adhesive straps, later on with plaster of Paris which is changed every two or three weeks, and the same process repeated. Special types of talipes require certain special modifications. When correction has been obtained, massage, especially of the calf muscles, is instituted. The average time required for cure in all types of clubfoot is four months, although constant supervision is necessary for two or three years to guard against relapse.

Indications for Operations on the Stomach.—Julius Friedenwald (*Maryland Medical Journal,* November, 1916) gives the following indications for operation on the stomach: Obstruction whether at the pylorus or cardia is an indication. Gastrostomy is to be done in impermeable strictures of the cardiac orifice or esophagus. In benign obstruction the operations indicated are pyloroplasty, gastroenterostomy, or pylorectomy, while in malignant disease pylorectomy is to be done for cure, and gastroenterostomy for relief. In gastric or duodenal ulcer operation is to be considered only where there are complications or where the condition has resisted medical measures, and the operations are excision of the ulcer, pylorectomy, pyloroplasty, or gastroenterostomy. In gastric carcinoma there is only one cure and that is early operation and in doubtful cases exploratory incision.

Relief of Dysmenorrhea and Sterility by the Intrauterine Stem.—H. A. Royster (*Virginia Medical Semi-Monthly,* October 27, 1916) discusses in particular the treatment of the anteflexion type of dysmenorrhea, in which the pain comes on a few hours to a day before the flow, and is relieved as soon as free flow has been established. This class constitutes the majority of all cases. The patients are either young girls clamoring for relief from excruciating pain, or barren married women. Having made a probable diagnosis of anteflexion dysmenorrhea, he selects a day immediately after a menstrual period and examines the patient under ether. If anteflexion and no complications are found, dilatation, and in some instances curettage are performed and a stem is inserted—all under the strictest surgical technic. The patient remains in bed about a week, during which time measures are taken to correct improper modes of living and unhygienic habits. He insists that the stem shall remain in place over three menstrual periods, or even longer if necessary. The first period is usually as painful as before; the second should be less painful, and the third almost or quite free from pain If pain persists the stem can be safely left for a longer time, until a painless period occurs. Six months was the longest period in the series. Use of the stem for one or two weeks, as heretofore, is useless. Where the pain recurs some months later, the stem may again be introduced, perhaps without an anesthetic, after dilating the canal gradually with bougies. The Wiley stem, with distinctly bulbous tip and somewhat straighter than most other stems, gives best results. The author usually heats it in boiling water to bend it quite straight, thus correcting the anteflexion, slight anteflexion being normal. Of fifty-nine cases, treated in five years, forty-eight reported permanent relief from pain; in ten of these the procedure had been repeated. Of the remaining eleven cases five were improved and six unimproved. Cure of sterility resulted in sixteen women who had been married without issue for two to sixteen years before the beginning of the treatment.

Curative Treatment of Tetanus.—Bacri (*Bulletin de l'Académie de médecine,* October 24, 1916) reports that he has had such excellent results from repeated, massive doses of antitetanic serum, all patients recovering in his series of thirteen cases, that he is convinced of the curative power of this serum in all stages of the disease, irrespective of whether a prophylactic injection has previously been given. In eight of his cases no such injection had been made. The treatment recommended consists in daily subcutaneous injections of fifty to sixty c.c. of serum at one dose for six successive days. The total amount used in his own cases ranged from 160 c.c. in a case diagnosed early to 420 c.c. No marked serum symptoms, early or late, were noted. In nine cases a slight recrudescence of trismus was noticed in the twelve hours following the injections. The fever due to tetanus passed off by the sixth or seventh day at the latest. Generally by the third day after the beginning of treatment the course of the disease became much milder. Massive, repeated doses shortened the affection, enabled the patient to take food, and reduced or almost eliminated the period of convalescence. Although the serum proved curative at all stages, its use should preferably be started as soon as trismus appears and persisted in in spite of an apparently mild nature of the disease.

Malignant Edema.—F. McKelvey Bell (*Canadian Med. Assoc. Journal,* October, 1916) states that the treatment of malignant edema, or septic gangrene, must be radical and immediate in order to be useful. The term malignant edema seems to be unfortunate, for it may suggest anthrax to some minds, while the condition under discussion really is one of septic gangrene. Every hour lost increases the chance of death, out of all proportion to the apparent danger. Deep incisions four to six inches long are made down almost to the bone, avoiding the main arteries and nerves, and kept wide open. Several such incisions are made. The wounds are then irrigated with hydrogen peroxide, followed by a combination of this and of carbolic acid in equal parts, and packed lightly with gauze, left in just long enough to check bleeding. Dressing and irrigation are repeated every three hours. After the first dressing no gauze is left in the wound, but a thin layer is laid over the opening to exclude dust and flies. Closure of the wounds has to be prevented. While this disease is very rare in civil life it has proved to be comparatively common in military hospitals at the front. For rapidity of onset and disastrous effects it has few equals. Treatment should be instituted the moment the disease is suspected, without waiting for a bacteriological examination.

Red Mercuric Iodide Insoluble.—G. Frank Lydston (*Journal A. M. A.*, November 11, 1916) states that this salt is becoming widely used for intramuscular injection in solution in oil, but the fact is overlooked that when injected it is precipitated and is then no more soluble than calomel, or the salicylate of mercury. It apparently undergoes slow solution and absorption later. Athough it is precipitated by blood serum it may be injected intravenously in solution with potassium iodide, apparently without harm.

Tonsillectomies in Poliomyelitis.—Joseph C. Roper (*Long Island Medical Journal*, November, 1916) calls attention to the finding in the recent epidemic of a considerable group of cases in which there were localized foci of pus in the tonsils, from which the typical organisms could be isolated. In these cases the progress tended to be slow with more or less prolonged fever, and at times late development of paralysis. On the strength of the pathological and bacteriological findings the tonsils were removed from a group of such cases. In some of the removed tonsils similar foci were found, but not in all. Several of the patients thus treated showed marked benefit after the operation. The tonsils were never removed during the acute stage of the disease, but usually after the end of the third week.

Results of Auditory Reeducation with the Vowel Siren.—Marage (*Bulletin de l'Académie de médecine*, October 24, 1916) points out the advantages of treating traumatic deafness with the vowel siren rather than by the ordinary vocal method of auditory reeducation. This series of one hundred cases comprised twenty-one cases of traumatic cicatricial otitis media, all of which were relieved by his method; eleven of labyrinthine concussion, with nine relieved; fifty-nine of combined cicatricial otitis media and labyrinthine concussion, with forty-six relieved, and nine of nontraumatic organic deafness, with eight relieved. With Marage's instrument one physician unaided can treat in three months two hundred patients, whereas by the vocal method only six could be handled during this period.

The Internal Administration of Iodides and a New Albumin Combination of Iodine; Iodolactin.—M. A. Girshovitch (*Roussky Vratch*, July 30. 1916) calls attention to the fact that the internal administration of tincture of iodine is without therapeutic value, since very little iodine is absorbed. This fact he established by testing the urine for the presence of iodine. The urine is shaken with chloroform and nitric acid. In the presence of iodine the chloroform becomes pink, occasionally red. The urine of persons taking ten drops of the tincture three times daily for two weeks failed to show the presence of iodine. In an experiment on a cow, forty grams of metallic iodine suspended in oil was injected subcutaneously, and while marked local and constitutional symptoms appared, the milk was found free from iodine. This explains why the administration of tincture of iodine is not followed by iodism—a supposed advantage which is emphasized by the advocates of the internal use of the tincture in preference to the salts of iodine. As to the latter, absorption takes place very rapidly, as shown by the urine test. The author discusses the advantages of the various combinations of iodine with albumins or oils, and calls attention to a new combination of iodine-iodolactin, which is a product possessing all the qualities of the other organic combinations, but containing a larger proportion of iodine (fifteen per cent).

Intravenous Injection of Hypertonic Solutions of Glucose in Septicemia.—G. I. Boradulin (*Roussky Vratch*, August 27, 1916) states that he found by experience that intravenous injections of collargol and electrargol are more effective in the treatment of septicemia than polyvalent antistreptococcic serum. While overcoming the infection it is necessary to support the patient, particularly the heart's action. For this purpose he found that a thirty per cent. solution of glucose in water answers much better than the isotonic salt solution usually employed. From 250 to 300 c. c. may be injected at once, the fluid being introduced very slowly. This he regards as essential, and states that the operation should consume not less than one hour. The injection may be repeated two or three times a day for three or four days. The glucose acts as nutriment to the muscles, particularly the heart muscle, by supplying the glycogen which seems to be used up in the course of septic infection. This fact he demonstrated by experiments on two dogs in which suppurative peritonitis was induced. One of them received an intravenous injection of glucose solution. On the following day the dogs were killed, and the livers examined for glycogen. The dog that received the glucose showed glycogen in the liver, while the liver of the other was free from glycogen.

Treatment of Paralysis Following Acute Poliomyelitis.—John Joseph Nutt (*Long Island Medical Journal*, November, 1916) states that after the thirty-fifth day of the disease measures should be instituted for the care of the resulting paralysis. These should consist chiefly in the proper adjustment of braces which support the affected member, relieve the strain on the paralyzed or weakened muscles, and yet permit a certain amount of motion in the normal planes with adequate limitation of excessive motion caused by an unopposed normal muscle. The brace should be worn continuously with the exception of a period of two hours each day, during which it should be removed, and the child allowed freedom to move about on the floor or bed. At night a hot bath should be given, with or without the addition of sea salt, and while in it the child should be encouraged to move the affected member. The full range of each motion should be completed by the attendant at this time to prevent the formation of contractures. After the bath a session of muscle training should be given, and the brace then applied for the night. Massage should be employed with great caution, since if applied incorrectly or excessively it may do great damage. The various forms of mechanotherapy should not be used, and no surgical operation should be considered during the first two years after recovery from the acute attack.

Unsatisfactory Treatment of Chronic Bone and Joint Disease.—The treatment of tuberculous joint disease, observes the *Medical Press* for November 29, 1916, in children is sufficiently prolonged on occasion to break the heart of even the most enthusiastic surgeon. The patient is always an unwelcome arrival in the hospital ward, and it is precisely this fact that makes the disease so hard to treat properly. Many a little sufferer is sent home discharging copiously from sinuses who really should be kept for two years properly to eradicate the infection. In London the great infirmaries which stud the city are the homes where these poor victims can be always under medical care; but in Dublin, with its huge number of hospitals, there is no place, save the Unions, where a bed can be promised for an indefinite period. The awful scourge of tuberculosis is so foul a blot upon some of the fairest spots in the country that one cannot but wonder why, in the efforts which have been so perseveringly made in the last ten years to cope with it, provision has not been made for an aspect of the disease which every surgeon dreads. It would be the greatest of practical charities to institute hospitals, not for incurables, but for cases which cannot be thoroughly treated under the present system of hospital work. No one can blame the authorities in a hospital for looking askance at a case which meets the eye month after month, and sometimes for even a year. The institution of a proper refuge for a large and altogether pitiable part of our population is a work which should invite the sympathy and hearty cooperation of all who really mean to help in the fight against consumption. Till we have such a place no surgeon can even venture to predict a fair result to treatment of hips and bones.

A Treatment for Burns.—In this age of new methods for old troubles it is only fitting that the burn, that old enemy of dressers and nurses, should also have something new as regards its treatment. Dr. Barthe de Sandfort, of the St. Nicolas Hospital, Paris, has for some years been using paraffin, melted and at a temperature of from 80° to 100° C., in the treatment of ulcers and burns, and he now describes the method again and in more detail. It is quite simple, and consists in spraying the liquid over the burn and allowing it to cool. The paraffin, which may be mixed with some resin to give toughness, dries quickly, and a mask is thus formed under which the most surprising lymphocytosis occurs. This is followed, according to the *Medical Press* for November 29, 1916, by the appearance of small islets of epithelium, and the most gratifying result of the treatment lies in the rapid healing without the hideous scars which our more accustomed methods permit. The wound must be dressed at intervals determined by its severity, and the dressing consists in raising the wax from the wound and allowing a stream of peroxide to flow over the surface. The paraffin is again applied as before. The method has already been employed for some years, but it has not been heard much of in Great Britain. It presents no difficulties to surgeon or patients, and its painlessness is in strong contrast to the usual agony of the dressing of a large burn. The result is ideal from the cosmetic standpoint, and altogether the method deserves a trial at the hands of those who have been taught by bitter experience to dread above everything the familiar bad burn. The yellow stains of picric acid which ultimately bestow themselves all over the bed and clothes of the sufferer are no great attraction to the esthetic mind of the nurse, and by her as well as by the patient will the treatment be welcomed if its results are what they seem to have been in the St. Nicolas Hospital.

Prophylactic Immunization with Bacillus typhi exanthematici.—Harry Plotz, Peter K. Olitsky, and George Baehr. (*Journal A. M. A.*, November 25, 1916) state that although it has not been possible for military reasons to give actual figures concerning the epidemics of typhus fever in Serbia, Bulgaria, and Volhynia, they have been able to prove the marked protective value of prophylactic vaccination with Bacillus typhi exanthematici. Thus among a total of 8,420 persons vaccinated there were only six who manifested the disease, although those chosen for the vaccinations were hospital workers and others most exposed to the disease. In one town complete vaccination was carried out in four of the five military hospitals, and in these four no cases of the disease developed intramurally. In the one hospital in which no vaccinations had been made there were thirty-four house infections in the same period of time. The vaccination does not offer complete protection, but the degree of protection which it does give seems to be very great. The vaccine was of such strength that each mil contained about two billion killed organisms of fifteen different strains, and the doses were of half, one, and 1.5 mil at intervals of five or six days.

Course of Spread in Experimental Tuberculosis.—Kurt Ziegler (*Medizinische Klinik,* October 8, 1916) reports that by using strains of tubercle bacilli of very low virulence, and injecting them into different portions of the body in experimental animals he was able to follow the routes by which the disease spread, and found these to be the lymph channels and glands in all cases. He also found that the spread did not always occur in the same direction from a given primary focus, a fact which confirmed the belief of some investigators that lymph does not always flow in the same direction, but that its direction of flow is largely dependent upon the function of the several organs. When the inoculation was intraperitoneal or into the omentum the glands about the pancreas first took up the bacilli and the disease extended thence toward the liver or spleen, or both, and upward along the lymph vessels and glands, passing through the crura of the diaphragm into the chest. From there the bronchial glands were next involved. The infection of the parenchymatous viscera and the lungs occurred by the lymphatic channels, and never by way of the blood stream. Infection by way of the tonsils and cervical lymph glands passed upward to the submaxillary region, and downward to the mediastinal and hilum glands, or along the glands about the aorta down to its bifurcation and to the kidneys. Careful autopsy in a human case confirmed these findings, and he holds that spread of the disease through the blood stream occurs only in acute miliary tuberculosis.

Miscellany from Home and Foreign Journals

Effect of Salvarsan on the Blood Wassermann Reaction.—John T. King, Jr., (*Journal A. M. A.*, December 2, 1916) gives the quantitative effects of intensive salvarsan treatment in the different stages of syphilitic infection upon the Wassermann reaction in a series of cases, using a uniform technic. One primary case in a series of twenty in various stages showed a reduction in the strength of the reaction from the use of salvarsan, the others showing no change. Even in cases not previously treated there was often little tendency for the reaction to be weakened by salvarsan, although such cases often showed pronounced clinical improvement. Only one instance of an increase in the intensity of the reaction was observed to follow the administration of salvarsan. This increase appeared one hour after the administration, but the titre returned to the original level on the following day. This throws some doubt on the validity of the use of the so called provocative dose of salvarsan, and the results recorded in the literature may have been due to faults in the Wassermann technic employed. No marked spontaneous changes in the intensity of the reaction were observed to occur over short periods of time.

Experimental Endocarditis.—H. K. Detweiler and W. L. Robinson (*Journal A. M. A.*, December 2, 1916) report that from blood cultures taken by a modification of Rosenow's method strains of streptococci were obtained from cases of endocarditis which were of a lower degree of virulence than any heretofore described. These strains were then cultivated and found to belong to a Streptococcus viridans variety. Their cultural characteristics and morphology are described. They were employed for inoculation into rabbits to determine their virulence, and selective localizations. With these organisms it was possible to produce all grades from simple bacteremia without localization up to the most malignant forms of infective endocarditis. Some form of heart lesion due to the organisms was produced in nearly fifty-seven per cent. of all rabbits. Endocarditis provided forty per cent. of the lesions, pericarditis thirteen per cent., myocarditis six per cent., and aortitis three per cent.; there was absence of lesions of the heart in thirty per cent. These results indicated the marked property of these organisms to localize selectively in the heart tissues. The clinical picture and post mortem findings in the rabbits in which developed cardiac lesions were very closely similar to those observed in the human cases infected with the same organisms. Fever was seldom more than slight, often absent, and one animal showed subnormal temperature. The cardiac lesions were almost identical with those from human cases. It was observed in the experiments that, not only could this Streptococcus viridans produce all grades of endocarditis, but also every grade of endocarditis could be produced in different animals by the same strain of the organism. Some of the experimental animals successfully infected recovered, and the belief is expressed that the finding of Streptococcus viridans in the blood of a human patient should not be taken as a certain indication of a fatal outcome. Coupled with these observations made on organisms isolated from the blood of human patients there was an extensive series of similar observations made with strains of Streptococcus viridans isolated from the mouths and tonsils of normal persons. These strains were found to be of very low grade of virulence and to locate specifically in the heart tissues to almost as great an extent, but in four instances they also showed an affinity for the joint tissues. This phenomenon might be explained, either on the hypothesis of the organisms having a dual affinity, or upon the theory that in some instances two types were present in a single culture. These observations, taken together, showed that the organisms isolated from the oral cavities of apparently normal persons have the same selective affinities, and the same degree of virulence as those obtained from the blood of persons ill with endocarditis.

Laboratory Diagnosis of Typhoid Infection.—A. Demolon (*Paris médical,* October 21, 1916) asserts that while the practice of antityphoid vaccination undoubtedly complicates the interpretation of the typhoid laboratory diagnostic tests, our aim should be, not to discard these tests, but to ascertain precisely the significance of the results they yield under different conditions. The blood culture method should be applied early in the case. In subjects previously vaccinated against typhoid it will usually give a positive result in the serious cases, though often negative in mild ones. The practitioner can easily carry it out himself by providing himself in the laboratory with a sterile syringe for venous puncture and a special receptacle containing an appropriate culture medium. Demolon uses a culture tube containing ten c. c. of ox bile (previously heated to boiling); to this five or six c. c. of the blood obtained from the patient are added. No peptone is used. To get rid of the skin staphylococci sometimes contaminating the culture because of insufficient skin disinfection, he passes the product of the blood bile culture through phenol bouillon at 37° to 38° C. for six or eight hours before transferring the culture to an agar slant. The blood culture failing to solve the diagnostic problem in certain cases, he resorts also to the Widal agglutination test, having previously carefully ascertained, however, the results obtained by a definite agglutination procedure in healthy vaccinated subjects. The usual one hour microscopic method is always used. In performing the test he much prefers to employ a young, virulent culture of typhoid bacilli rather than an old, heated, or attenuated culture, the results being much more definite with the former. In many vaccinated typhoid cases an immediate diagnostic conclusion can be reached from the agglutination reaction Thus, where a positive reaction in a one in fifty dilution is obtained, in conjunction with clinical signs of typhoid, a diagnosis of typhoid is warranted—especially if, after a negative test at the outset, the second test a week later is positive. When a paratyphoid condition exists, agglutination of one of the paratyphoid organisms in a suggestively high dilution, such as one in five hundred, will usually be noted; if not, the discrepancy may appear a few days later. When a mixed typhoid, paratyphoid A, and paratyphoid B vaccine has been administered, the physician will often be left in doubt by the agglutination test until a new, more accurate system of interpretation has been developed.

Renal Function in Pernicious Anemia.—H. A. Christian (*Archives of Internal Medicine*, October, 1916) reports observations in fourteen cases showing that in a severe anemia renal function, as measured by the dietary test of Hedinger and Schlayer, is disturbed in much the same way as in advanced chronic nephritis. The disorder of excretion seems to be either a nutritional or a toxic disturbance in renal cellular activity. There is no other evidence of chronic nephritis in these cases, and the disturbance decreases with improvement in the anemia, unless the latter is so persistent as to lead to a permanent disturbance of renal function.

Two Cases of Splenectomy for Banti's Disease.—W. F. Cholmeley (*British Journal of Children's Diseases*, November, 1916) reports two cases in which he performed splenectomy for Banti's disease in children. One case presented the typical lemon yellow tint of the skin with slight icteric tinge of conjunctivæ. These symptoms, which in an adult suggest pernicious anemia, usually point to Banti's disease in children. X rays and arsenic, which seem to help cases of lymphadenoma and leucemia, do not benefit Banti's disease, whereas splenectomy acts like a charm. The huge blood destroying organ is removed, and excessive hematolysis stops at once.

Acute Mammary Carcinoma.—S. C. McCoy (*Lancet-Clinic*, November 18, 1916) believes this condition is less rare than was formerly supposed. Both scirrhous and medullary varieties of carcinoma have been observed. The condition begins suddenly, usually as a diffuse process, the entire gland being enlarged, firm, and painful, though occasionally as a small nodule, or indurated mass. Fluctuation may or may not be noticed on palpation. The skin is edematous, reddened, and usually assumes the orange or pigskin appearance; the subcutaneous veins are sometimes enlarged, the nipple is sometimes retracted, and local and general elevation of temperature is the rule. The infiltrated skin may show small abscesses and necrotic areas. Early axillary and supraclavicular gland involvement, with general or regional metastases, occurs. Cachexia and toxemia are likewise promptly manifested, and death may ensue in a few weeks or months. The greatest diagnostic difficulty lies in the differentiation from acute suppurative mastitis. This may even be impossible before operation, unless a section of tissue is microscopically examined. The temperature is usually lower in acute cancer than in mastitis, the inflammation more diffuse, and the skin more extensively involved, brawny, and adherent. Early lymphatic involvement may occur in either affection. In his case, that of a robust woman aged fifty-two years, the condition was, for a time, mistaken for mastitis. Profound toxemia developed and death—operation being inadvisable—took place within ninety days. Brief accounts of twelve cases previously recorded in the literature are given. Apparently pregnancy and lactation have no especial relationship to the condition. He issues warning that whenever a diagnosis of mastitis is made, if the inflammatory symptoms fail to improve under appropriate treatment, acute carcinoma should be suspected. Even where the clinical diagnosis of acute carcinoma has come to appear certain, prompt radical excision may still offer some hope for prolongation of life.

The Teeth in Rickets.—J. Lawson Dick (*British Journal of Children's Diseases*, November, 1916) reports that in an examination of 1,000 school children in the East End district of London he found eighty per cent. of them showed evidence of rickets in their teeth. The great majority of the children were of Jewish parentage. Rickets is due to a defect in calcium metabolism and shows itself particularly in the teeth. Like syphilis, the condition is found especially in the permanent teeth. The teeth commonly affected are the central and lateral incisors, the tips of the canines, and the crown of the first molars. Of cases showing caries of the teeth, the lower first molar was decayed in eighty per cent., the upper first molar in thirty per cent., one or more lower premolars in thirty per cent., and one or more upper premolars in 12.5 per cent.

Rapidity of Hormone Formation in the Thyroid Gland.—David Marine and J. M. Rogoff (*Journal of Pharmacology and Experimental Therapeutics*, October, 1916) report a study of the psysiological effects on tadpoles of thyroid tissue removed from dogs at definite intervals after the intravenous injection of fifty mgm. of potassium iodide. A comparison of these results is made with the changes in the dogs' thyroid tissue following such injections, viz., an increase in stainable colloid material and a shrinkage in the gland cells, usually quite evident thirty-six hours after the iodide administration, and sometimes beginning within twenty hours. It was found that differences in the effects of the control and iodized thyroid lobes on the tadpoles could be detected as early as the eighth hour, but became marked only by the twentieth hour. Thus, the thyroid tissue changes observed seem closely related to the elaboration of the iodine containing hormone of the thyroid. Whereas the storage of iodine in the thyroid from iodides is, as has been already shown, practically instantaneous, the production of the hormone is relatively slow. After thirty hours only a small fraction of the iodine taken up in as many seconds is transformed into the specific hormone. Variations in the rate of hormone formation in different patients, and the normal occurrence of iodine in the thyroid in both an active and an inactive form, not only explain the varying reactions of exophthalmic or simple goitre cases to iodine administration, but also suggest the importance of the chemical nucleus or mother substance with which iodine, in becoming activated, is combined in the thyroid. This mother substance is known to contain an aromatic nucleus, and may be a tyrosin or tryptophane derivative.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Stated Meeting, Held November 23, 1916.

COMMITTEE ON MEDICAL ECONOMICS.

Chairman's Address.—Dr. Samuel J. Kopetzky said that this meeting had been called for a discussion of the insurance bill introduced in the New York Legislature by Senator Mills and in other States, notably in Massachusetts and California. The medical aspect had been so much revised and improved over what was in the original bill that it was time to submit the plan to the medical profession for study and amendment. The medical provisions of the proposed act were fully outlined in a booklet issued by the Committee on Social Insurance of the American Association for Labor Legislation at 131 East Twenty-third street, New York, in November, 1916. In this scheme medical supervision and representation were adequately presented.

If the proposed panel system was chosen, any legally qualified physician could join and the insured were to have free choice. In some districts the funds could provide medical care through other methods, such as salaried physicians among whom there should be reasonably free choice. The limitation of the number of insured patients whom a physician might treat went far toward preventing the larger part of the population of a town being treated by any one physician; moreover, it prevented overwork of the physicians. It was desirable to separate the duty of certifying persons as eligible for cash benefit from that of treating him, and for this and for supervisory purposes a fund might employ a medical officer.

There were two proposed methods of paying the physicians, the capitation payment, or so much a person per annum, and the payment by salary. A third method was possible; a compromise between salary and capitation, by which a total sum, calculated on the per capita basis, was distributed among physicians in accordance with the services rendered by each. A fee schedule could be made whereby a physician was paid pro rata for office or house visits. Whichever system was adopted, all medical service to the insured would be paid for including the dispensary practice which today was unremunerated.

Representation of the medical point of view was accomplished by the presence of a physician on the Social Service Commission, and by provision for consultation with representatives of the medical profession on medical matters. This secured a hearing to the medical point of view on both State and local problems. The necessary supervision could be obtained through medical officers employed by the funds, while matters in dispute might be referred to special committees, both State and local. To these committees, representing the various interests, power might be given to remove undesirable physicians from insurance practice, subject to an appeal to the commissioner. The minimum benefits to the insured were hospital, medical, surgical, and nursing attendance for twenty-six weeks, medicines and surgical supplies, not exceeding $50 in any one year, cash benefits, maternity benefits, and funeral benefit.

The proposed act provided for local medical committees. The Commissioner of Health, or local health officer, appointed a member of his staff, who would be a physician, as a member of the local medical committee of each district within his jurisdiction. The other members of the committee would be elected by the physicians on the panel of the funds of the district and by the staffs of the hospitals which had made agreement with a fund in the district to treat the insured members. The committee would elect its own officers and serve without compensation. It would pass on all matters affecting medical benefit made by the boards of directors of the funds of the district, also on any dispute in regard to the medical benefit, or any charge made against a physician because of his work for a fund. If the committee and the board of directors did not agree, the matter would be referred to an arbitration committee. One or more medical officers would be appointed by each fund which would pay them; they would be removed only upon charges and after hearing by the board of directors. The medical officer alone would have authority to issue a certificate of disability, and only after personal examination of the applicant, and after being recommended by the attending physician.

Health Insurance and Preventive Medicine.—Dr. B. S. Warren, of the United States Public Health Service, said that sickness insurance presented to its advocates various possibilities, depending on the angle from which they approached the subject. The employer saw in it an increase in labor efficiency and a stabilizing force; the employee saw in it relief in sickness to him and his; the physician saw it as a remedy for unpaid doctor's bills; the economist saw a basis for cooperation in other fields, and a remedy for industrial unrest; the public saw a relief measure which lessened the need for so much charity; the health official saw a measure for the prevention of disease. All advocates realized the possibilities for promoting health.

These measures were proposed as health measures, but not one provision had been made for the employment of health experts, nor any authority provided for spending any part of the funds for disease prevention, although the State was expected to pay one fifth of the funds in addition to the expense of supervision. No provision was made for membership of health experts on any of the directing or supervising bodies. The administration and control were vested in local boards composed of employers and employees with supervision by a State commission on which no provision was made for a doctor of public health.

Preventive medicine now constituted a special field of medicine and the general practitioner was no more fitted to practise in this field without special training than he would be to practise surgery without special training. To public health officials, then, the question naturally arose as to what additions and amendments were required to make the proposed measures directly preventive of disease as well as measures for adequate financial and medical relief of sickness.

As the States were already paying for departments organized for the prevention of disease, it seemed best to utilize these existing agencies rather than create new and independent ones. In States where the health departments were efficiently organized, it would be easy to extend their operations into this new field of public service. Furthermore, in those possessing inefficient health departments, the building up of such would be wiser than placing upon the State the burden of maintaining two health agencies, each operating independently of the other. This was considered a serious objection at the last Annual Conference of State and Territorial Health Authorities with the United States Public Health Service, held in Washington, D. C., May 13, 1916, as was evidenced by the report of the Standing Committee on Health Insurance adopted by the Conference. It was proposed that the coordination of the work of the health insurance system with the public health machinery should be effected. The following plan was suggested:

1. Make the State Commissioner of Health ex officio a member of the State Health Insurance Commission.

2. Detail a medical director from the State Health Department to assist the commissioner to supervise the administration of the medical benefits, and to act as health advisor and director.

3. Detail district medical directors from the State Health Department to aid in the administration of the medical benefits in their respective districts.

4. Detail from the State Health Department a sufficient number of local medical officers to act as medical referees, sign all disability certificates, and to perform such other duties authorized by law or regulation. This would provide a health machine composed of a corps of trained sanitarians subject to central control and direction.

It would require one medical referee to every 4,000 insured persons. In a State with 1,000,000 wage earners, this would mean 250 local medical officers giving their entire time to the study of the health of the insured persons. This would be in addition to the treatment furnished by the panel physicians. The only additional expense incurred by this plan would be for the medical director and the district medical directors, as all the measures now advocated provided for medical referees. The medical referees would more than save their salaries in the disallowance of unfair claims.

It was proposed that these officers be selected according to civil service methods, their qualifications to be based upon their knowledge of preventive as well as of clinical medicine, and their term of office to be made permanent after a probationary period, subject to removal only for inefficiency or immoral conduct.

Some of the advantages of this plan would lie, 1, in the superior class of men selected as State officials by examination, attracted by the prestige of State appointment and permanent tenure of office; 2, the elimination of local influence of any sort by interchange of station; 3, the completeness and accuracy of statistics; 4, extension of laboratory facilities; 5, patient's free choice of physician or surgeon receiving payment on capitation basis, regardless of whether the patient was sick or well, after the manner of the English National Insurance Act; 6, in the directly preventive character of the work of medical officers.

From the foregoing considerations it seemed clear that a close correlation of the health insurance system with State, municipal, and local health agencies would be effected by the plan outlined and that the disease preventing efficiency of both would be greatly increased. The medical referees would be selected, appointed, and supervised by the State. The State and district health departments would also be represented in the administration of the health insurance system. The organized, centrally supervised corps of State medical referees would be a part of the health administration of the State. They would be local health officers with a distinct and definite field. In large centres a division of the labor of the municipal health officers and the health insurance medical officers might be made so as to avoid conflict of duties. It was a well known fact that in many industrial cities and towns the sections occupied by wage earners, especially the poorly paid, were most neglected from the standjoint of public health. The contribution to preventive medicine and to public health work which the intimate knowledge daily gained by the visits of trained satitarians into the homes of wage earners would afford, would be almost incalculable. Only by such methods would the disease causing conditions, such as housing, congestion, unsanitary conditions, diet, etc., be regulated.

If a State health insurance measure, designed to affect a very large proportion of the public, undertook to be preventive at all, it should expect of the State that the State's own machinery for exercising this function be used to its fullest extent in direct and close coordination with the health insurance machinery for distributing the cost of sickness.

The Labor Man's Point of View.—Doctor Kopetzky stated that although Mr. Hugh Frayne, of the American Federation of Labor, National Civic Federation, was not able to be present at this meeting to explain the point of view of the workmen, it was nevertheless understood that the American Federation of Labor did not object to health insurance, but to its being made compulsory. This meeting was to be considered an open forum for the consideration of this point of view as well as others.

Compulsory Health Insurance from the Practitioner's Viewpoint.—This paper, by Dr. Eden V. Delphey, appears on page 1191 of this issue of the Journal.

Mr. Miles M. Dawson, insurance expert, was glad he had come early to hear these addresses of

Doctor Warren and Doctor Delphey. His own remarks would be in explanation of the advantages of compulsory health insurance, which was intended to protect the workman against anything that was likely to disable him. It had not proved practicable in any country to levy a tax for compulsory insurance of the entire population; if it was to be a contributory form of insurance, it would not be practicable in this country except for wage earners and salaried employees. One was always suspicious when it was proposed to undertake something that had never been undertaken before, or, if undertaken, had failed. But a plan which had been successful in other countries for twenty-five years could succeed in this country.

The Committee on Social Insurance was composed of people devoted for several years to different phases of the subject, and the draft of the proposed act, now up for discussion at this meeting, was the third draft of the bill proposed by them. It was still capable of improvements which it was hoped would be made.

The advantages that it offered were: 1. Instead of being compelled when ill to resort to patent medicines or to go to a dispensary, under this law every insured person and his family would be able to get medical and surgical attention, nursing, medicine, and sickroom supplies for twenty-six weeks of disability and, if necessary, hospital treatment, and the advice of specialists. It presented a solution to the medical profession of the problem of doing away with quackery, and with free dispensary services to people who were able to pay for them.

2. This health insurance law would bring to the insured when ill, after the first week, a sum of money equal to two thirds of the wages he received, and this would continue for the period of disability, not exceeding twenty-six weeks.

3. Medical attendance of the family was assured, also the lying-in of the wife so that the child would be brought into the world under the best conditions afforded by a well organized medical system. These were very real advantages to the workman, and he was expected to pay two fifths of the entire cost in premiums. At the present time workmen paid the entire cost and in a most expensive way, by neglect, by the pauperization of his family, or by paying, at a higher rate, for the services he secured.

There were several advantages of the proposed system of insurance to the employer of labor. It had been proved in Germany that the average duration of the lives of males was extended from thirty-six to forty-eight years in a period during which sickness insurance was introduced. No men were working who were not in condition to work; this meant greater efficiency, more work, better work, and more years in which to work. The workman when ill was promptly treated, and brought back to full capacity in the shortest possible time. The workman also lived under proper sanitary and hygienic conditions which tended to increase his efficiency.

The physician should have the most vital interest in this matter, for he had at heart the welfare of those he served. He would be engaged in prophylactic as well as therapeutic work to which his entire attention could be devoted, leaving his mind relieved of the old anxiety of providing for his own family with so many of his bills unpaid. He would be paid out of an assured fund for every service he rendered. Neither in Great Britain nor in Germany had the medical profession suffered through the introduction of health insurance. No system of health insurance in this country would be introduced which did not provide for panel physicians and for free choice of the insured among them, but for the sake of the physician himself as well as his brother practitioners he would be limited to a certain number of patients a year.

The speaker found himself very much in sympathy with many of the statements in Doctor Warren's address. But to introduce a State public health officer as the absolute arbiter concerning the payment of claims, as he would seem to have suggested, would be a mistake. There were many public officials who did not care to do much work, and many received appointments through influence, not merit, and could not be removed for inefficiency. It was necessary to have a medical officer of these funds who could be removed by the management. If some method could be found to benefit by cooperating with the health department without taking away the control of the funds from the insurance management, it would doubtless meet the approval of the entire country. Perhaps making the medical referees also health officers, ex officio, for certain duties would effect both purposes.

Lee K. Frankel, Esq., Ph.D., sixth vice-president of a prominent life insurance company, said that the general subject of health insurance was too broad to be covered in the brief time allotted to him. It seemed to him that very careful consideration should be given to the proposed legislation before it could be approved. He had given consideration to the "model bill" and some of its provisions were still indefinite. Few of the men who would be affected by it really knew what was meant by social insurance. Anyone who had followed the development of sickness insurance in Germany knew that there was no more ignominious page in the social history of that country than the conflict which had gone on for nearly thirty years between the medical profession and the sickness insurance carriers. One reason was the failure of German legislation to recognize a fundamental insurance principle. Basically, insurance was replacement of loss, and in the case of sickness insurance it was replacement of wages lost through illness.

Any proposed legislation in the United States must recognize that the physician's relation to any sickness insurance scheme must place him in a position of dignity and must not subject him to temptation. Not only his professional standing should be assured, but his self respect must be preserved. Under the German scheme the same physician was counsel for both plaintiff and defendant; advocate for both the insured and the insurance carrier. While the physician was expected to act justly toward the insurance carrier, he was frequently expected by the insured to certify him for benefits to which the physician knew he was not entitled; refusal to meet the wishes of the insured frequently meant loss of good will. The serious situation in Germany was indicated by the fact that the physicians were compelled to organize themselves to resist the insurance carriers.

If a proper scheme was to be developed in the United States, the carrier who paid the cash benefit should be divorced from the organization which gave sick care. The insurance carrier should do but one thing: that was, pay the cash indemnity. A separate organization should take up the problem of giving medical care to the insured, not only when he was disabled, but along the broader lines of prevention which would give the insured advice at any time, well or ill. Under such a scheme, medical, surgical, and nursing attendance would not be limited to twenty-six weeks, but would be given as long as necessary.

In Germany, insurance developed before the era of preventive medicine. Koch's bacillus was discovered subsequent to the introduction of the sickness insurance scheme. For this reason in Germany preventive medicine had always been the handmaid of insurance. In the United States a great health campaign had been developed, even in the absence of sickness insurance. The development in the United States would probably show the need of a centralized organization which should work along preventive lines and whose primary purpose would be to reduce the hazard of preventable diseases.

The speaker was of the impression that the subject was too large to settle in a few hours' discussion. There were many interests to be considered: those of the workman, the manufacturer, the physician, and in particular the public. It was important to forget acrimony, irritation, and recrimination. The various parties in interest should get together, discuss the subject from every possible angle, and finally submit a bill to the Legislature which would satisfy all parties and really mean something in the development of health insurance for the people of the United States.

Dr. Alexander Lambert did not consider advisable at this time Doctor Warren's idea of giving the entire control of health insurance to the Public Health Service or the State Department of Health in any given State because it would mean that these departments would absolutely control, not only health insurance, but the entire medical profession and their practice. Doctor Warren had stated that the average practitioner was not able, from his present training, to be a competent health officer. That was undoubtedly true, but the average health officer was just as incompetent to be a referee in medical and surgical matters; this brought matters to an impasse, each man being at present incompetent for the other man's job.

There must in any health insurance scheme be a blending of the ordinary clinical duties of the physicians and the duties of public health officers. Whether it was sufficient that the health department should have advisory representation on the board under the commissioners of health insurance, would have to be worked out. There was no reason under health insurance why the present laws regarding the report to the health department of all communicable diseases should not be carried out. This scheme of health insurance did not in any way abrogate the control of public health by health departments. While a blending of the health department and health insurance under the health commissioners was not only a desirable but a necessary thing, the absolute domination of the health department over the whole thing was not necessary, and this was the mistake contained in Doctor Warren's scheme.

As to the medical referees, they were considered an absolute necessity. The medical care of the patient must be divorced from the duty of deciding when a man was fit for work. The lack of appreciation of this fact was one of the great mistakes in the health insurance schemes abroad, both in England and Germany, and while it might be perfectly true that they did not care to copy in this country everything in the English and German schemes, a wise man certainly could learn from the mistakes of others. Both countries had found that medical referees were a necessity, and in Doctor Warren's plan it was the medical referee appointed by the health department who would dominate the whole situation over everyone.

(*To be concluded.*)

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting Held at the Academy of Medicine, March 20, 1916.

The President, Dr. Thomas S. Southworth, in the Chair.

GRIPPE AND ALLIED INFECTIOUS CONDITIONS.

Bacteriology of Grippe.—Dr. James Garfield Dwyer, of New York, said that they must keep in mind some of the main characteristics of the influenza organism in order to understand how it operated. The organism was present in large numbers in the sputum early in the disease and could be easily isolated, but in the later stages it was much harder to demonstrate or cultivate. It was an organism, moreover, that produced intensely toxic symptoms, acting in a similar way to the diphtheria bacillus. It did not usually call forth a leucocytosis. The report of the investigation by the local board of health showed that the influenza bacillus was isolated in only a small proportion of the cases, and that the organisms found most frequently were the ordinary pyogenic cocci. In the light of the clinical course of these cases, it was difficult to believe that the condition was due to organisms that they usually found in the nose and throat, especially when they remembered the intensely toxic nature of the condition. Moreover, the respiratory complications were rather of the bronchopneumonic type, contrary to that found in the ordinary pneumococcus and pneumococcus mucosa types. They were either dealing with an epidemic due to the influenza organism or they were dealing with one due to some causal organism not yet identified. The whole condition might be likened to that of scarlet fever, in which they always had the streptococcus but not as the causal factor. If the disease was due to the influenza organism, they knew that the latter was very easily killed off by drying, and that in the moist state, in sputum, etc., it remained alive for much longer periods; hence the spread by sneezing, coughing, and expectoration.

Probably the most important point to be emphasized bacteriologically was the value of serum or vaccine treatment.

Pulmonary Complications of Grippe.—Dr. Harlow Brooks, of New York, said that the frequency of pneumonia this year as a complication in what had been called influenza was known to all, but in the earlier epidemic he had found it more frequent than in the one in which they had just been participating; the fatalities also had been heavier in the earlier epidemic. In the one they were now passing through, the prognosis seemed to be better; all of the cases were milder from the outset, and most of them were cured unless complicated by other conditions, such as lung abscess, empyema, etc. Usually the first disturbance was a pharyngitis or tonsillitis, which gave very little trouble at first, but which on examination was evidently followed by a laryngitis, and this often by bronchitis. At any step in this chain the case might fall out and end in recovery without the complication. Practically all of the cases of pneumonia had had some additional and predisposing factor, as exposure, overwork, dissipation, or something of the sort. He had had no pneumonia develop in any of the cases where he had been able to persuade the patients to go to bed and live an invalid life from the outset for a few days. The predisposing conditions apparently formed a very important factor.

The onset was sharp, with fever, chill, and great prostration, more extreme than ordinary; as in the onset of bronchial pneumonia in adults, the signs of the bronchopneumonia soon developed; the bronchopneumonic signs might, however, disappear altogether and reappear elsewhere, either that, or a massing of the foci took place, and in many instances, especially those that went the wrong way, this massing was so great that the cases took on the physical characteristics of lobar pneumonia. In nearly all the cases which he had seen, this massing of the foci occurred and nearly all the cases which went bad developed it. A pleurisy also occurred, usually with a small amount of exudate, but the fibrin was of a particularly tenacious character.

The leucocytosis was high at first; later, the leucocytosis would fall and become a matter of 10,000 or 12,000, even though the case was active; the fall in the leucocytosis was not a measure of the lack of resistance of the patient. It would seem that for some reason they ceased to be formed in large amounts, and there was a fall of the polymorphonuclears. Often a true nephritis developed, but only in cases in which some faulty condition of the kidney had been present. The chlorides were present at the outset and apparently were not appreciably reduced until the massing of the foci and exudate took place. The sputum in the early stage was tenacious, abundant, and extremely sticky, so that shreds would lodge across the bronchi and remain some time; and at post mortem they would find big shreds of tenacious mucus, sometimes covered with fibrous, desquamated cells and mucus.

A striking characteristic was the appearance of blood in the sputum. In most of the instances in which he had been able to follow out this condition bacteriologically, Streptococcus haemolyticus was found. Only in cases in which the massing of the peri bronchial exudate was very marked did rusty sputum appear. A few cases terminated by crisis, but the others recovered by lysis. Sometimes the process lessened and then returned perhaps in a new area. The fully developed cases frequently looked like typical lobar pneumonia cases.

The bacteriology, followed in the ordinary clinical way, was interesting. In only a few cases was it possible to demonstrate the influenza bacillus; they might have been present but not demonstrable, even where injections of bouillon were made into the lungs and withdrawn the germs found were mostly the streptococcus, the streptococcus hæmolyticus, and the pneumococcus.

Doctor Brooks could not help thinking that in this epidemic the chief features were not due to the toxins of the pneumococcus; it seemed like a different thing from the pneumococcus infection, and judging from the organisms found, the streptococcus almost always predominated. He could not help feeling that the pneumococcus was not the main criminal in these infections. Bronchopneumonia, becoming massed into lobar pneumonia, but always definitely bronchial in extension, was the typical picture at post mortem, with tenacious exudate and the characteristic pneumonic foci. In many cases the bronchi became literally filled, but it was a tenacious fibrin containing many cells and much desquamated epithelium. The fibrinopus was so dense that they had to use considerable force to get it out of the bronchus. This would explain why so many cases became complicated with empyema; pleurisy was almost constant; very frequently it became an empyema. Pulmonary abscess obtained more frequently than ever before. Most of the abscesses were situated in the upper lobe near the apex, and were therefore easy to diagnose; and the prognosis was more favorable than in ordinary pulmonary abscess. Encysted empyema had been very common.

Medical Treatment of Grippe.—Dr. Reynold Webb Wilcox, of New York, observed that influenza differed largely from other diseases in that it seemed impossible to get specific medication from an antitoxin (which was the most likely, reasoning from the analogy to diphtheria) or in the form of a vaccine—so that the treatment of influenza usually resolved itself largely into the treatment of its complications. The laboratory workers were correct when they said that the bacillus of Pfeiffer was found with comparative ease early in the disease, and with difficulty later. Coming to the varieties of the disease, which had been classical for the past hundred years, they found the same indications for the treatment of influenza both as a specific and as a special treatment. The treatment in the three main clinical forms should be the same; but experience, since the epidemic of 1713, had proved that it was not. This season, the intestinal form had not been met with very frequently, but high intestinal irrigations preceded by calomel, and later, phenolphthalein, cleared up matters very quickly. But not one of these agents was directed toward the influenza bacillus itself, excepting so far as high intestinal irrigations promoted the excretion of toxins and stimulated the heart.

If they took the neuromuscular type they found the same thing; they knew that the salicylates caused marked relief of pain; they knew that the pains of influenza were relieved by gelsemium; here again they were attacking the problem from a different standpoint. They knew also that quinine, with or without monobromated camphor, would relieve very speedily the muscular pain of influenza.

When they came to the most frequent of complications, the pulmonary, which predominated even in the epidemic of 1713, they found out something of value from the pathological side, but they still fell back on their clinical experience.

If they had received no other information than that given by Dr. Harlow Brooks in his masterly report on post mortem findings, their time was well rewarded. That had been to the effect that the largest number of instances of influenza had been of the respiratory form, the so called catarrhal form, and they had given the greatest trouble. Many who thought they knew something of respiratory troubles, and something of the treatment of pneumonia had had their confidence rudely shattered during this last epidemic.

Doctor Wilcox said that the patients whom he saw were mostly those to whom he was called in consultation by their physicians and had undoubtedly the most serious forms, and therefore his prognosis might be more sombre than it should be, but all internists admitted that the mortality of the influenza complications this year had been remarkable, and those who had studied every form of pneumonia treatment had admitted their chagrin by saying that the type of pneumonia was more severe this year, which was a confession, at least.

Creosote carbonate had yielded better results in the respiratory diseases following influenza than anything else he had seen; in massive doses, of course. Whether they accepted the classification which Cole had given, that Class 3 contained the pneumonias with fifty per cent. mortality (which the clinician doubted); and that Class 2 figured larger with a better mortality, they would be fortunate in getting patients of Class 4—which would be very satisfactory if they could make their clinical picture agree with the laboratory. As a matter of fact, it did not make much difference what kind of pneumonia a man got, but it did make a tremendous difference what kind of a man got that particular pneumonia.

Those who had studied the mortality rate of public hospitals found that it had not varied much in the past half century, and inferred that their treatment had not been more efficient. The hospital pauper suffered from cardiac and vascular diseases, and from renal degeneration just as he did fifty years ago, and was undoubtedly more alcoholic, and this accounted for the mortality. The treatment of pneumonia had improved, but the hospital patient had become a worse subject.

It was the February and March respiratory diseases that are so frequently fatal, owing to the strain incident to business and social activities and, in many instances, dissipation of all sorts. That had been the cause of the marked fatality which Doctor Emerson had shown.

Grippe from the Community Standpoint.—Dr. Haven Emerson, Commissioner of Health, New York City, said that before allowing the impression to gain permanent foothold, that they had been dealing with an epidemic of influenza, it was well to consider that they had to date no facts indicating that more than a very small percentage of cases of acute respiratory disease, seen in the past three months, were due to the influenza bacillus. No confirmation of the suspicion that Bacillus influenzæ was the main etiological factor reached him as the result of inquiry among laboratories and physicians of New York, Boston, and Philadelphia.

It was largely a question of the virulence of the infection and the massiveness of the dose, the conditions of exposure, and the resistance of the individual, and if there was a combination of these, as we found in the winter season, when there was a diminished resistance, a crowding in public places of amusement, and overwork that continued day after day, they got all the maximum conditions favoring the dissemination of disease; and until the physicians taught their patients who had acute respiratory infections that they were dangerous to the community as carriers of an infectious disease there would be very little improvement in these conditions. This was an annual event, and this was the regular season for it, as in previous years.

The epidemic of infectious colds was, as had been reported in the *Weekly Bulletin* of the department, due to the presence of the pneumococcus-streptococcus group and the organisms common in the mouth and upper respiratory tract. Between the middle of December and the last of February (about ten weeks) there were 1,200 more deaths from respiratory diseases than for the same weeks during the past quinquennium. There were 800 more deaths from diseases of the heart, kidney, and bloodvessels during these ten weeks than for the past quinquennium in the same period. The department of health undertook a vigorous campaign of enforcement and education, arresting 1,500 spitters in one week in the beginning of January, and distributing leaflets and providing press bulletins during the beginning and height of the epidemic. He could find no basis for popular and medical belief that the epidemic was due to the influenza bacillus.

Complications and Sequelæ of Grippe in the Nose and Throat with Suggestions for Preventive Treatment.—This paper, by Dr. William Ledlie Culbert, of New York, appears on page 1182 of this issue of the Journal.

Aural Complications of Grippe.—This paper, by Dr. Edward Bradford Dench, of New York, appears on page 1180 of this issue of the Journal.

Dr. Edward E. Cornwall, of New York, cited from the Journal of Governor John Winthrop of Massachusetts, under date of 1647, a reference to what was apparently an epidemic of influenza which swept over New England at that time. Winthrop, in speaking of the treatment in vogue during that epidemic, commented to the effect, that of the patients who were treated by the regular physicians with bleedings and purgings, many died, while of those who were treated by the old women with cordials and comforting things, none died. Doctor Cornwall thought that the essential thing in the treatment of grippe was suggested by this ancient observation, viz., absolute rest in bed and supportive measures, with avoidance of those things which tended to weaken the organism in its fight with the disease; and he considered it a fair question, whether the widespread and extravagant use of the coal tar preparations and their chemical congeners in the treatment of grippe during the past generation had not contributed extensively to the great mortality which was traceable secondarily, at least, to the grippe. He thought it interesting to note that the great increase in deaths from diseases of the heart and cardiovascular system observed in recent years occurred in just that period during which the medical profession had been led astray by the business enterprise of the managers of the German dye factories, who had discovered how easy it was to make the doctors use their coal tar waste products as medicines, notwithstanding the fact that they were protoplasmic poisons, and especially myocardial degenerators. While other factors, no doubt, took part in the increase of deaths from cardiovascular diseases noted during the past generation, he thought it not unreasonable to give some of the credit to the very general and extravagant use of the coal tar drugs and their like.

The speaker had been much interested in Doctor Dwyer's reference to the parallel between influenza and diphtheria. He had alluded to the same thing in a paper read six years ago, and had there mentioned the similarity in the invasions of the mucous membranes, in the neuralgic pains, in the prostration, and in the myocardial depression and degeneration. He was also glad to know that Doctor Dwyer had a rational ground for objecting to the use of vaccines in influenza.

He reported an unusual type of complication of influenza which he had observed only in 1915, and in five cases. This complication was characterized by a sensation of heaviness, and loss of power in the lower extremities, and in the severer cases it rendered the patient absolutely bedridden. The worst case which he had seen occurred in a woman of about sixty years, who had had the grippe to his own knowledge from one to four times a year for the past fifteen years or thereabouts. This woman was confined to her bed with a practically complete paralysis of both legs for five months, after which she always made a gradual but complete recovery.

Dr. Joseph Friedman said that a number of young adults who had a persistent cough following an attack of grippe were referred to him for röntgenographic examination to ascertain if there were any tuberculous lesions. Stereoröntgenographs of the chest showed no evidence of tuberculous involvement, but a marked thickening and beading of the vertebral branch of the bronchi and their anterior and posterior branches, suggesting chronic bronchitis.

Dr. Paul Luttinger said that it might not be amiss to draw attention to a disease which showed great similarity to influenza in its mode of infection, and the etiology of which was ascribed to an organism belonging to the same hemoglobinophilic group of bacteria as the influenza bacillus, namely, whooping cough. The number of deaths from pertussis amounted to 385 in 1915, a high figure for New York. In reference to its epidemiology, they had been doing some research work in the laboratory, and some of the results might be of value in this discussion. They had been studying whooping cough, and came upon a good way of spreading the infection, not only of whooping cough, but of any respiratory disease. It was found that in the cheaper moving picture shows, in the tenement districts of the Bronx, Harlem, and Brooklyn, children would be admitted with a paroxysmal cough and would be sitting on the benches side by side with healthy children. An attendant would then come along with a perfume atomizer to "refresh the air," and as the children coughed, the atomizer very effectively spread the bacilli all around. Many of the children doubtless had influenza which had probably been contracted in the moving picture places. The cars also were frequently responsible for the spreading of disease. He then cited an instance where a woman boarded an elevated train at 105th Street and sat with her two children opposite to three children who had whooping cough. When she sat down she did not know they had the cough, for they looked perfectly normal, but a few stations further downtown they began to whoop. The mother of the three children could not attend to all of them at once, and on account of the crowded car the healthy children could not leave the car. The result was that a few weeks later the two children came down with the disease. It would seem that some regulation by which persons with coughs and colds might be excluded from public places and conveyances and thus prevent the "bad" men, as Doctor Wilson called those who lacked resistance, from getting the infection.

Doctor Myles said that his observation this winter with his clientele was that he had never had such favorable results; he could not say whether this was due to the treatment or to Nature. In his opinion, the epidemic started in San Francisco and came east gradually. In his opinion, the epidemics were spread by the congregation of people in large buildings with closed windows and revolving doors. He had never seen a severe epidemic in summer when the doors were all open. Ventilation along proper lines, however, was expensive.

He then told of a committee of which he was a member, which had once tried to secure proper ventilation in public buildings, theatres, etc., but could not accomplish much for they were told that it was too expensive to install and use the proper apparatus. The best time to treat influenza was during the incipient stage, but specialists and physicians more often had to treat the consequences or sequelæ. Doctor Myles knew of nothing better than using some volatilized oil in steam; it reached all the mucosa in the respiratory tract. He felt, also, that he had obtained good results from injection of an argyrol solution into the trachea and bronchi. He had also had some experience with ear cases, and in nearly every instance where the drum membrane was incised, the patient recovered quickly. Several of his patients had hemorrhagic conditions.

Letters to the Editors

"INFLUENZAL" POLIOMYELITIS.

Carmel, N. Y., *December 4, 1916.*

To the Editors:

The interesting article on epidemic gastroenteritis, etc., by Dr. Bernard Frankel, in this week's issue of the New York Medical Journal, goes far to corroborate my contention that infantile paralysis is a development of influenza. As he states, . . . "infantile paralysis has no clinical or etiological entity." This, I believe, should receive the endorsement of the entire medical profession. If such is the case, then it must be connected with some other disease.

The doctor states that . . . "it is a 'complication' of an infectious disease, that may or may not follow it." Why "complication"? I beg to respectfully take exception to this use of the word complication and desire to substitute instead the word "extension," or "development," and to attribue to influenza, the prevailing epidemic disease, the parentage of this interesting offspring. It is decidedly erroneous to regard it as a complication of any disease, just as it would be erroneous to consider, e. g., tuberculous meningitis, as a complication of tuberculosis, or syphilitic osteomyelitis as a complication of syphilis. Just as these two phases of disease cited are extensions of tuberculosis and syphilis, respectively, so is poliomyelitis an extension of influenza.

It is an "extension" to the spinal cord and its membranes of the very same influenzal process, that gives us "influenzal coryza," "influenzal bronchitis," "influenzal laryngitis," "influenzal gastritis," etc. It is but a very short step from any one of these to "influenzal poliomyelitis," and this is the correct term to use in identifying or placing the so called mysterious disease.

To the amazing lack of appreciation by the medical profession of the true nature of influenza as a constitutional disease, and its right to rank side by side with such constitutional diseases as syphilis and tuberculosis, having, like them, similar ramifications and extensions throughout the body, is due the fact that many of its peculiar forms and developments are mistaken for distinct, separate diseases, whereas, in reality, they are part and parcel of the basic influenzal process, as I have repeatedly pointed out.

What has been said above regarding poliomyelitis holds good also for the epidemic gastroenteritis to which Doctor Frankel calls attention. The correct term to use in referring to it is "influenzal gastroenteritis."

Joseph D. Harrigan, M. D.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Laboratory Manual of Organic Chemistry for Medical Students. By Matthew Steel, Ph.D., Professor of Organic and Biological Chemistry, The Long Island College Hospital, Brooklyn, New York. First Edition. First Thousand. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Limited, 1916. Pp. viii-193.

The avowed purpose of this volume is to provide a laboratory manual of experiments in organic chemistry of sufficient breadth to give the medical student a proper preparation for the understanding of the recent advances made in the subject of biological chemistry. At the same time it has been the author's desire to do away with the greater part of the unessential material connected with the subject of organic chemistry in general so as not to overburden the medical student. We feel that both of these purposes have been fulfilled in a very creditable manner, leaving little to be desired in the direction of additions or deletions. The volume is one of detailed experimental directions only, but the author has done well to interject occasional explanatory notes and to include suggestive questions regarding the several experiments in order to set the student thinking and therefore to enhance his understanding of the nature of the chemical changes taking place under his eyes. One particularly good feature of the experiments, as given, is their accurate quantitative nature. In each case the precise amounts of the substances to be used are specified. This makes for greater success in the experiment itself and serves to eliminate the large factor of waste so often associated with courses in experimental chemistry. There are very few errors in the book, and those are of minor nature. As an example, might be cited the mention of the tests for digitalin. This is a loose expression rather than an actual error, but it mars the book slightly. The term "digitalin," used without modification, is vague and may mean any one of a number of different substances. Nevertheless the author uses it to mean a single glucoside. Does he mean the true digitalin of Kiliani, digitaline of the French (digitoxin), or the variable mixture of glucosides known as German digitalin? Altogether, however, the book should prove a valuable and serviceable laboratory manual for teachers as well as students.

The Practitioner's Visiting List, 1917. Thirty Patients per Week. Philadelphia and New York: Lea & Febiger, 1916. Pp. 191. (Price, $1.25.)

This pocket visiting list of 200 pages is beautifully bound in leather with flap pocket, etc. It is adapted for thirty patients weekly and can also be obtained in three other styles: monthly, undated, for 120 patients a month; perpetual, undated, for thirty patients weekly a year, and sixty patients, undated, for sixty patients weekly a year. Several pages are devoted to general memoranda, obstetric engagements and practice, vaccinations, death register, addresses of patients, and cash account. In addition it contains calendars for 1917 and 1918, notes on uranalysis, incompatibilities, artificial respiration, and a host of other interesting and practical topics.

Interclinical Notes

A lady residing in Wayne county, Ohio, states that she has read in the Journal that there is no cure for hay fever. We feel pretty certain that we have not published any such categorical statement. Our correspondent continues, however, that after suffering from hay fever for many years she discovered a remedy. The victim must begin in early summer by drinking a strong infusion of strawberry leaves mixed with pink clover blossoms instead of plain water whenever thirst is to be slaked. When the pollination season begins, an ointment is used inside the nose, over it, and around the temples; this ointment is composed of equal parts of turpentine, lard, and "common liquid washing ammonia." Our sympathy with hay fever sufferers is such that we offer no apology for publishing this unorthodox prescription, although we think some caution is necessary in using the ointment on a mucous membrane.

* * *

Of papers likely to be of special interest to the practitioner in the *Scientific Monthly* for December, we may cite The Strategics of Scientific Investigation, by Professor T. Brailsford Robertson; The Desire for Food in Man, by Minna C. Denton; The Psychology of War, by Dr. D. E. Phillips; Our Duty to the Future, by Professor C. E. Vail; and the Origin and Evolution of Life on the Earth, by Dr. Henry Fairfield Osborn. We have read this magazine since boyhood's days, and we were delighted to find in conversing the other day with a distinguished specialist that he, too, had been an admirer for over thirty years. We hope our readers will accept our conjoined opinion that it is eminently fitted for the practitioner's leisure hour, telling in most agreeable fashion what is agitating the minds of his fellow scientists.

* * *

The English of the *Scientific Monthly* is usually admirable. Why, let us ask, however, does Minna C. Denton word a sentence in this singular fashion?: "The author does not wish to be understood as making the claim that these diseases . . . always or often have overeating as a sole or chief cause." Our own contributors are so fond of using that word "claim" when they mean "statement" that we have learned to know what they are driving at; but why should this lady deny that she demands the right and title to a statement concerning the sad consequences of overeating?

* * *

Leslie's for December 7th, speaks as follows concerning a certain kind of fool legislation: "Fads! Food fads and needless waste are responsible for a good part of the increased cost of living. The rise in flour to prices unexampled in this generation comes at a time when we have a law that foolishly forbids millers to blend a small portion of flour made from corn with flour made from wheat. This would make flour cheaper and add to its nutritive value, yet the law forbids it, just as it forbids the manufacture of oleomargarine even when made of the most wholesome materials. unless it pays a high tax which, of course, is a burden upon the consumer. An edible and very digestible butter is now being made in part from the oil of coccanuts and we presume that this will, also, be taxed to death at the behest of the butter makers. Drastic cold storage regulations have interfered seriously with the storage of food products in times when they are plentiful for times when they are scarce, and this has added to the cost of living. Pure food laws are needed, but when we carry them to ridiculous extremes somebody must foot the bill and that somebody is always the dear, long suffering, patient, shoulder bent public."

Meetings of Local Medical Societies

Monday, *December 18th.*—New York Academy of Medicine (Section in Ophthalmology); Psychiatric Society of Ward's Island; Medical Association of the Greater City of New York; Medical Society of the County of Erie (annual); Elmira Clinical Society (annual).

Tuesday, *December 19th.*—New York Academy of Medicine (Section in Medicine); Federation of Medical Economic Leagues of New York; Medical Society of the County of Kings (annual); Tri-Professional Medical Society of New York; Tompkins County Medical Society (annual); Medical Society of the County of Monroe (annual); Binghamton Academy of Medicine; Syracuse Academy of Medicine (annual); Ogdensburg Medical Association; Oswego Academy of Medicine.

Wednesday, *December 20th.*—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of the City Hospital; Schenectady Academy of Medicine; Medicolegal Society (annual); Buffalo Medical Club; Northwestern Medical and Surgical Society of New York (annual); Bronx County Medical Society; Dunkirk and Fredonia Medical Society (annual); Buffalo Academy of Medicine.

Thursday, *December 21st.*—New York Academy of Medicine (stated meeting); New York Celtic Medical Society; German Medical Society. Brooklyn; Auburn City Medical Society; Geneva Medical Society; Aesculapian Club of Buffalo.

Friday, *December 22nd.*—Society of German Physicians, New York; New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine (annual); Italian Medical Society of New York.

Saturday, *December 23rd.*—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending December 6, 1916:

Boggess, John S., Surgeon. Relieved from further duty at Seattle, Wash.

Brown, B. W., Surgeon. Relieved from further duty in connection with the Southern Sociological Congress and directed to rejoin station at Boston, Mass.

Derivaux, R. C., Assistant Surgeon. Directed to proceed to New York City for conference with the International Health Board in regard to plans for malaria work during the next year.

Fuller, J. K., Assistant Surgeon. Relieved from duty in plague eradicative measures in San Francisco and directed to report to the commanding officer of the Coast Guard cutter *Manning* at Astoria.

Liddell, T. J., Assistant Surgeon. Directed to take temporary charge of the Marine Hospital at Mobile, Ala., during the absence of Surgeon J. T. Burkhalter, on leave.

Simpson, Friench. Passed Assistant Surgeon. Directed to proceed to Vinton, Iowa, to investigate a reported case of bubonic plague.

Stimson, A. M., Surgeon. Directed to proceed to Rochester, Minn., for duty in connection with investigations of poliomyelitis.

Thompson, L. R., Passed Assistant Surgeon. Detailed to attend the annual conference of health officers at Louisville, Ky., December 13, 14 and 15.

Trask, J. W., Assistant Surgeon General. Directed to proceed to Louisville, Ky., to attend a conference of health officers, December 13, 14 and 15; also to represent the service at a conference with the Kentucky Commission on Provision for the Feebleminded.

Warren, B. S., Surgeon. Detailed to attend the conference held at the U. S. Department of Labor, Washington. D. C., December 5 to 9, and participate in the discussions on health insurance.

Woods, B. O., Assistant Surgeon. Directed, while in Alaskan waters, to make a sanitary survey of the city of Juneau.

Births, Marriages, and Deaths

Died.

Beil.—In New York, on Thursday, November 30th, Dr. Charles Louis Beil, aged forty years.

Besemer.—In Ithaca, N. Y., on Sunday, December 3rd, Dr. Martin Besemer, aged sixty-nine years.

Coleman.—In Asbury Park, N. J., on Wednesday, November 27th, Dr. Frederick Frelinghuysen Coleman.

Colgan.—In Bridgeport, Conn., on Friday, December 1st, Dr. Walter John Colgan, aged twenty-five years.

Crighton.—In East Hartford, Conn., on Tuesday, November 28th, Dr. Andrew John Crighton, aged fifty-two years.

Foreman.—In Kane, Ill., on Monday, November 27th, Dr. Claude Bernard Foreman, aged forty years.

Gombel.—In Baltimore, Md., on Wednesday, November 29th, Dr. William G. Gombel, aged sixty-two years.

Hogsett.—In Saratoga Springs, N. Y., on Sunday, November 26th, Dr. Charles Young Hogsett, of Fort Worth, Texas, aged forty-four years.

Lord.—In Rochester, N. Y., on Tuesday, November 28th, Dr. Matthias L. Lord, aged seventy-seven years.

Lowe.—In Canaan, Maine, on Sunday, November 26th, Dr. Ivory Lowe, aged eighty years.

Montgomery.—In North Birmingham, Ala., on Monday, November 27th, Dr. Edwin R. Montgomery, of Louisville, Ky., aged sixty-nine years.

Munsey.—In Suncook, N. H., on Sunday, November 26th, Dr. George F. Munsey, aged sixty-one years.

Norman.—In Millerstown, Ohio, on Thursday, November 23rd, Dr. L. Monroe Norman, aged sixty years.

Odell.—In Detroit, Mich., on Monday, November 27th, Dr. Robert W. Odell, aged seventy-five years.

Reed.—In Philadelphia, on Friday, November 29th, Dr. George Kempton Reed, aged sixty-nine years.

Roach.—In Quaker Street, N. Y., on Saturday, December 2nd, Dr. Paul Roach, aged sixty-seven years.

Ropinson.—In Amesbury, Mass., on Tuesday, November 28th, Dr. Harry Pringle Robinson, aged forty-one years.

Sieber—In Chicago, on Thursday, November 23rd, Dr. Francis Adam Sieber, aged seventy-five years.

Sinclair.—In Grand Rapids, Mich., on Sunday, November 26th, Dr. Malcolm C. Sinclair, aged sixty-six years.

Taylor.—In Edinboro, Pa., on Sunday, November 19th, Dr. Isaac M. Taylor, aged seventy-eight years.

Todd.—In San Francisco, Col., on Monday, November 20th, Dr. David Byron Todd, aged sixty-nine years.

Walling.—In Chicago, Ill., on Tuesday, November 28th, Dr. Willoughby Walling, aged sixty-seven years.

New York Medical Journal

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Original Communications

THE PRESENT MANAGEMENT OF THE POLIOMYELITIS EPIDEMIC IN NEW YORK CITY.*

By Frederick Tilney, M. D.,
New York,
Department of Neurology, Columbia University.

And Jaques C. Rushmore, M. D.,
New York,
Department of Orthopedics, Long Island College Hospital.

In spite of the fact that we have had three epidemics of poliomyelitis in the past nine years, we were not prepared for the last one. We were not prepared with substantial ideas concerning a quarantine calculated to safeguard the community. Alarms caused terror and panic until at length the quarantine became a travesty because of its inconsistencies or system of détours defeating the purpose of safety. We were not prepared for the hospitalization of the large number of children stricken by the disease. We had no broadly conceived plan for the proper clinical management of these patients. We had taken no particular thought as to how the best interests of these children might be served in their hospital care. Nothing seemed further from our minds than the recognition of the great opportunity for clinical study, of the unparalleled chance to advance our knowledge of this disease, and of the abundant clinical material from which to accumulate data invaluable to the diagnosis, prognosis, and treatment of the disease. There were many workers who devoted themselves arduously and earnestly to their task. It was not their fault that the hospitals were undermanned and the staffs sorely overworked. It was the lack of intelligent organization, the lack of well conceived planning, which caused the hospital situation to struggle along as best it could, perhaps to the detriment of the patients, certainly to the disadvantage of medical science. In its acute stage, therefore, this epidemic, like many others before it, must pass into medical history without sufficient scientific record.

In the matter of treatment for the acute stage we were found unprepared. We fluctuated between conservative expediency and radical experimentation. Those who advocated adrenaline injections met the criticism that rest and quiet were safer. The adherents of immune serum were soon to hear that horse serum was quite as efficient. Fortunately, the purely experimental use of diphtheria antitoxin was limited and shortlived because of its disastrous results. We were unprepared in forethought for the aftertreatment of the disease. No concerted effort was made to devise ways and means effectually to organize the forces necessary to this treatment. The patients were recommended to attend certain clinics or dispensaries and there the matter ended. This is a serious and important consideration. We owe to these little children the best care we can give. They are entitled to every effort in treatment which will reduce their handicap to a minimum as they are starting out in life. We owe it to ourselves to acquire the knowledge as to which are the best means of treatment for the paralysis, so that we may be of greater service to the children stricken this year, and also that our conclusions shall be useful in future epidemics.

Are we now doing the best that may be done under the circumstances? Perhaps, but there is room for improvement. In order to make a comprehensive answer to this question it will be necessary to consider, first, the adequacy of the method of aftertreatment in force and, second, the efficiency of such measures as are now employed.

The figures presented here are based on a study of the conditions obtaining in ten of the largest institutions in this city at present caring for about three thousand cases. The fallibility of such statistics is always admitted, but they offer the most graphic means of analyzing the situation.

Any method of aftercare, to be adequate, would require much calculation and thought. Such a method must have established a plan which would afford the best attention that may be given to these patients. This plan should determine which of the several departments of medicine concerned with the disease should have the direction of the cases; also what departments would form the most advantageous combination in furnishing the elements necessary to successful aftercare. A carefully considered plan would likewise have devised a classification for the grouping of cases. The residual defects of poliomyelitis differ in kind as well as in d
The patients, therefore, should not be tur

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*Read before the New York Neurological Society at the New York Academy of Medicine November 14, 1916.

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discriminately into a clinic, but should be individualized with reference to the needs of their aftercare.

In addition to these important features, there should be included a system of regular reexaminations at stated intervals, from which valuable statistics concerning the results obtained from the treatment might be compiled. Means should be provided for keeping a careful record of these findings in each case.

A system of distribution of the cases, according to the districts from which they come as well as the institutions most accessible to them, would facilitate the work. Arrangements should be made for the home treatment of such patients as may be unable to attend clinics. The requirements of equipment, as well as the therapeutic measures calculated to give the best results should be included in the details of any plan capable of producing an adequate method for the aftercare.

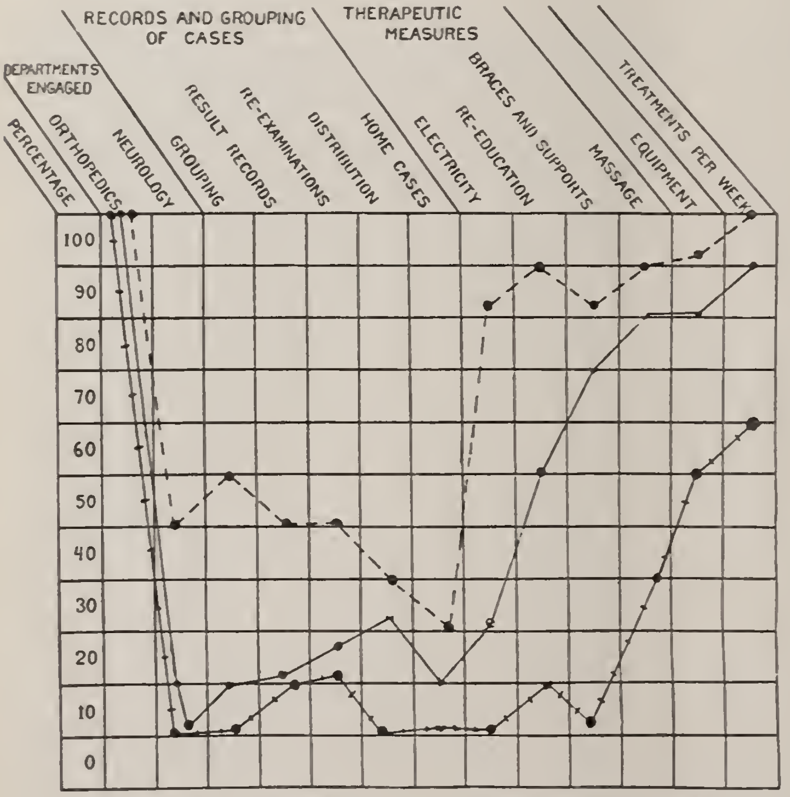

FIG.—Best work, - - -; average mean, ——; and most unsatisfactory, —|—|—|—.

According to the method in force at present, all cases are placed in charge of the Department of Orthopedics, although only thirty per cent. of the patients under observation are receiving distinctly orthopedic treatment. In the matter of cooperation between departments, there is a marked deficiency. In few instances has the neurological department been given any thing like a coordinate position in the care of these cases. It seems hardly necessary to dwell upon the fact that poliomyelitis, both in its acute stage and during the stage of paralysis, is a disease of the nervous system. To those recognizing this fact it is obvious that the knowledge and experience of the neurologist cannot fail to be of value in the aftertreatment. The adequacy of method, therefore, falls at present far below what might be desired in this important detail of cooperation between departments.

In the majority of instances, as the cases enter the clinics, no attempt is made to classify them with reference to their therapeutic needs. Sixty-four per cent. of the children in this epidemic were under five years of age. Muscle reeducation is impracticable in children under three and a half years, because it is impossible to obtain their voluntary cooperation. Children from three and a half to five years of age may derive much benefit from reeducation. They form a group difficult to instruct and should be delegated to the most experienced teachers. Children of five years and over need less specialized attention. Here, therefore, are three groups with reference to muscular training which should be recognized at once and dealt with accordingly.

A certain small percentage of cases requires measures to correct deformities before any other treatment is undertaken. This number should be negligible if the acute stage is properly managed. Many cases need neither support nor correction, but require massage, electricity, and training. In another relatively large group, support to prevent muscle stretching and joint injury is indicated in addition to the measures just mentioned. Not a small group is that in which electricity is inadvisable. Especially is this true in young infants to whom the currents are excessively irritating. Another group comprises cases characterized by pain, tenderness, and marked vasomotor relaxation. These cases show most improvement when treated by dry heat. All other means of treatment should be avoided until the pain and tenderness disappear. There is also the relatively small group in which the axial musculature alone has been affected. In this group corrective gymnastics are most effective.

It is desirable that a complete neurological examination and record be made in every case before treatment is undertaken. This may be most advantageously assigned to the neurologist, and the differentiation into groups made by him. At present, except in rare instances, this differentiation is not made, and the only apparent classification in many places is that determined by a passion for plaster of Paris and braces, or a disregard for electricity. In the matter of regular reexamination of cases and statistics showing the results of treatment, the present management is particularly deficient. This is to be regretted, as it deprives us of information valuable for future use.

The distribution of the cases for treatment according to their districts has either been overlooked or not yet sufficiently organized to be of any value. There is no reason why a Brooklyn case should be treated in New York or why a New York case should go to Brooklyn which, strange as it may seem, is of not infrequent occurrence. Such a distribution of cases by districts would spare many children unnecessary fatigue, and be at the same time less wasteful of the parents' time and efforts. It would also do away with the well known drifting about of patients from clinic to clinic and prove an actual economy, particularly in the matter of braces.

In general the equipment, including floor space, arrangements, and accommodations is good. There is, with one notable exception, a considerable deficiency in the more improved accessories for muscular training as well as electrical apparatus. That the therapeutic measures employed in the several institutions are not subject to any marked uniformity may be noted at a glance. Some of this is explained by complaisant prejudice, some is due to enthusiasm in pursuit of so called new ideas. For example, electricity as a therapeutic measure is in many places dismissed as worthless. Of course, we have no doubt that this attitude is directed against the improper and inefficient use of electricity. Knowing the source from which the objection comes, we feel certain that its sponsors have no intention of gainsaying a general biological law which they understand as well as we do, the law holding that highly differentiated tissues, when deprived of the opportunity to perform their natural functions, tend to revert to the primitive embryonic type of tissue whence they took their origin. Muscle is among the most highly differentiated of tissues; prevented from performing its natural function of contraction, it tends to revert to mesenchyme, the noncontractile connective tissue type. A flaccid, paralyzed muscle has lost its connection with the centre which energizes it to contraction. It does not contract voluntarily or reflexly. Eventually, in the course of weeks or months, it may regain the lost connection with its centre of energy. During all this time it is manifesting a tendency to go back to mesenchyme. It remains for us to supply the deficient function of contraction by whatever means we possess. Electricity is one of these means. Massage and passive movements are other means. If we neglect them the nerve may regenerate but find, when it comes to innervate its muscle again, a mass of completely or partially incontractile tissue.

The electricity to assist in this work cannot be had from a one cell buzzer battery, nor by throwing in the switch of the wall plate and simply letting the current flow. It is not only a particular type of current that is needed, but it must be properly applied and its use carefully supervised. The sinusoidal galvanic current is now regarded as best adapted to produce the necessary contraction. It has the advantages of a slow wave current, gradually increasing from minimum to maximum strength and alternating in polarity. It causes little or no discomfort, for which reason children can tolerate much more electricity this way than they can by the sudden make and break of the ordinary interrupted galvanic. Ten to fifteen milliampères is a sufficient dose. This amount may be slightly increased, if necessary, but usually no increase is needed. The duration of application in early cases should not exceed five minutes. A shorter interval is advised if the muscles stimulated give evidence of fatigue by showing lessening contraction. Cases of long standing may be treated for ten or fifteen minutes. Equally important is the method of application. Before beginning electric treatment it is desirable that the affected parts be massaged and then warmed by a calorescent lamp or hot pack. This procedure makes it possible to obtain good muscular contractions with much less current than would otherwise be required. The electrodes should be stabile. A towel wrung out in warm water is wrapped about the part to be stimulated. Over this the electrode is placed and held in position by bandage or tape. Sheet lead cut to the desired size and shape makes an excellent electrode and may be moulded to the part treated. Care should be taken to prevent the metal from touching the bare skin. This kind of electricity properly applied and under proper medical supervision, is beneficial and efficient in producing muscular contraction. Electricity in this sense is one of the essential factors entering into the combination of therapeutic measures requisite to the most effectual treatment during the stage of paralysis.

The electric current is also a valuable agent in the diagnosis and prognosis of the disease. It is the most reliable guide in directing the treatment, since it definitely points out the relative degrees of paralysis in the affected muscles, thus indicating the groups to which most attention should be given. Its value as a diagnostic measure has long been known to neurologists; they better than others understand its application and significance. In this fact is an added reason why the responsibilities assigned to neurology should be dominant in the diagnosis and treatment of poliomyelitis.

Muscle reeducation, to be most efficient, requires an elaborate system of accessories and a well trained staff of instructors. With one conspicuous exception, no such efficiency has yet been attained. This exception, however, is so noteworthy that it may well serve as a model for us all, in fact, it is a question whether better work in this line is being done anywhere else in the world today. Unfortunately, the inadequacies in muscle training in most institutions are such that in spite of this single particular excellence, the general average is low. To depend entirely upon muscle education, however, to the exclusion of electricity and massage, to allow a muscle to degenerate through failure to use these latter measures, and to rely upon an impulse from the central nervous system to maintain the nutrition of a muscle through nerve fibres which we know to be defective, cannot be too strongly condemned.

By and large the use of strictly orthopedic measures has been wise and conservative. On the other hand, in certain institutions caring for large numbers of children, some form of rigid support is insisted upon in nearly every case, on the average only one case in ten escaping this routine treatment. This attitude is extreme. As disuse results in atrophy, and as the maintenance of a well developed muscle is primarily essential for the regenerated nerve if function is to be restored, methods of fixations in the early stage should be used only to correct existing deformities. Equally harmful is too hasty prescribing of braces to encourage locomotion when rest is the imperative indication. A weakened muscle may be damaged as much by overuse as by fixation of the parts. All muscle exercises should be done under careful supervision, and caution should be taken not to subject weak muscles to the stress and strain of weight bearing. Those who think of motility in terms of plaster of Paris and braces only have, to say the least, a splinted conception of human motion. Such treatment in vogue in a few places deflects the curve to a lower level than should be the case.

Massage has the distinction of almost universal approval and is, in general, well managed. The principles governing the application of massage, as in the case of electricity, are primarily anatomical. Overstimulation by any means of the antagonists of a paralyzed group serves only to further embarrass the defective muscles. To be most effectual massage should in all cases be combined with passive and resistance movements. This latter detail requires skilled and trained workers. Student masseuses should be under most careful supervision. Untrained rubbers should not be employed under any conditions. Parents certainly must be classified in this last group. Much damage may be done by inexperienced workers in the improper anatomical application of massage. There is a tendency at present to press into service hastily trained workers with insufficient anatomical knowledge (to say nothing of their ignorance of the art of massage), and to assign this work to parents with no further instruction than to "rub the baby's leg every day."

From the statistics obtained, the accompanying chart was constructed, the curves of which show in graphic manner the character of the method for treatment now in force.

The curves charted were determined by a study of conditions in the several institutions, allowing 33.33 per cent. each upon the following counts:

1. Comprehensiveness of plan for treatment adopted.
2. Thoroughness of organization.
3. Effectiveness of work.

Three curves are shown, representing respectively the best work that is being done, that which seems the most unsatisfactory in the details mentioned, and a more or less indefinite mean between these extremes.

One of the most prominent defects is seen in the lack of cooperation between the departments of neurology and orthopedics. This combination at its best is only forty per cent., and as this figure is attained in but a single institution it does but little to sustain the general average in this important element of organization; this average being only six per cent. of efficiency.

In one institution the effort at grouping the cases with reference to their therapeutic needs represents fifty per cent. of full efficiency, while in the remaining clinics and dispensaries engaged in the work so little has been attempted in this direction as to render the general average less than ten per cent.

Adequacy in recording cases which may serve as the basis of valuable statistics is at its highest only forty per cent. It is so generally low as to bring the average down to less than fifteen per cent. These figures also apply to the reexamination of cases.

The average attained in distribution of the cases according to their districts is five per cent. Provision for the care of home cases or for cases which cannot be brought to clinics and are being treated in hospitals is valued at nine per cent. of full efficiency.

Electricity where best used and supervised is rated at ninety per cent., but its general application in the aftercare is so indifferent as to bring the general average down to ten per cent.

Despite the fact that one institution is entirely worthy of being rated at full efficiency in the matter of muscle reeducation, the general effectiveness of this treatment is so low as to force the average down to sixteen per cent. Were it not for the fact that the excessive use of supports was so prominent in a few institutions, this feature of the treatment would maintain a high average. Even with the handicaps placed upon this part of the treatment by the few clinics which make plaster of Paris and braces a routine formula, the average is seventy-five per cent. The general average for massage and equipment is also about seventy-five per cent.

Concerning the efficiency of such means as are employed, certain details are worthy of note. Owing to the lack of proper distribution of patients by districts, many of the clinics are overcrowded and overworked, while others are not up to their capacity. This not only handicaps the efforts of the workers, but detracts from the value of the treatment and requires an unduly long wait in the clinic for the majority of patients. This waiting is not only wasteful of the parents' time, but tends to discourage them in the continuance of the prolonged period of treatment necessary in the majority of cases. The proportionate relation between attending physicians and patients is eighty per cent., between graduate nurses and patients sixty-one per cent, between masseuses and patients sixty per cent., and between instructors in muscle reeducation and patients only twenty-five per cent.

These statistics show that with certain marked deficiencies in places we are doing fairly well in what we have attempted to do.

Where we fall short is in the method and plan of treatment. Here we manifest confusion of ideas and lack of deliberation. Without taking any unnecessary thought in the matter we have been willing to proceed along the lines that seemed to have sufficed in previous epidemics. The results are not surprising and we can see that there is much room for improvement.

CONCLUSIONS.

What we are most in need of at present is a comprehensive plan of organization. The suggestion here offered aims at the formulation of a method which will obviate many of the present deficiencies as shown by the statistics. The proposed plan covers the following details:

1. The management of the aftercare should be assigned to the department of neurology, since the problems of the vast majority of the cases in diagnosis and classification, in recording and prescribing, belong most properly in this field.

2. The ideal combination of departments in the aftertreatment will come from the intimate coordination of neurology and orthopedics.

3. Before treatment is prescribed the cases should be classified and grouped according to their therapeutic needs. This is the province of the neurologist.

4. Reexaminations of all cases, together with careful records of the findings, should be made at stated intervals, not only in the interest of changing or modifying the treatment as circumstances demand, but also for the information to be gained as to relative values of the several methods of treatment.

5. A distribution of the patients upon the basis of their districts of residence and the institution most accessible to them should be made and adhered to as far as possible.

6. No one mode of treatment should be employed to the arbitrary exclusion of all others. Every therapeutic means having the sanction of authority should receive due consideration in deciding the therapeutic requirements of each case.

7. In order to render such organization most efficient, certain regulations should be adopted for the guidance of the several institutions engaged in the work. Some unit of staff organization must be decided upon, such for example as one physician to twenty patients, one masseuse, one instructor in muscle reeducation, and one electrotherapist to twelve patients, and one nurse to forty patients.

Regulations should also be made governing the number of patients treated in proportion to adequacy of equipment; also recommendations regarding the number of treatments a week for each patient, the home treatment by parents, follow up work by social service and means of transportation.

We may easily recognize that the development of anything like efficient organization requires broad, cooperative action, and that the need of such organization is pressing. In New York city alone there were over 9,000 cases of poliomyelitis this year. In the United States the number of those affected was over 26,000. This is a real menace to the population. The history of the disease shows that we may expect another epidemic sooner or later. When it does come again we cannot plead the emergency of the circumstances as an excuse for unreadiness. That excuse is worn thin already. There are a number of things we must know before the next epidemic arrives. We should acquire greater knowledge of the communicability of the disease, so that upon this knowledge we may devise a rational and reassuring quarantine. We must establish more certainly the criteria of diagnosis and plan more broadly for the clinical management of the disease during the acute stage. We must arrange for the most efficient study of the pathological and serological material, and not leave these important matters so largely to chance. Above all we must arrive at definite conclusions concerning the best means of treatment to combat this affliction which, when it does not destroy, sets a blight upon so many victims.

If the statistics here given show a distinct lack of preparedness to meet this last epidemic, they also indicate a tendency to remain in this condition unless some determined effort is made in the near future. It seems not only wise but necessary, therefore, that we earnestly devote the proper attention to this matter against the time which is sure to come, so that we may be more confident in the advice we give, more certain in the means we employ, and, in our efforts, give evidence of concerted intelligence.

POINTS IN THE DIAGNOSIS AND TREATMENT OF POLIOMYELITIS.*

By B. Sachs, M. D.,
New York,
Neurologist, Mount Sinai Hospital; Alienist and Neurologist, Bellevue Hospital; etc.

The recent epidemic occurrence of poliomyelitis has induced the clinician, the pediatrist, and the orthopedic surgeon to become more closely acquainted with the disease; the neurologist, conscious, possibly, of his intimate knowledge of the subject, has refrained from stating publicly the results of a long experience with the disease and has not given account of the changes that have come over his own conception of infantile spinal paralysis. My readers must not expect an encyclopedic article on the subject of poliomyelitis; I have set myself the task of singling out for discussion a few points of special interest which may have some bearing on the proper early diagnosis and the treatment of the victims of this last epidemic.

We have a twofold duty toward the public: First, to assist, if possible, in the prevention of another epidemic, and, secondly, to lay down sensible rules for the guidance of the public in the matter of the selection of treatment.

As for the avoidance of future epidemics, the facts at our command show that the poliomyelitic virus is found in the secretion of the nose, mouth, and throat, and also, in some instances, in the gastrointestinal content; that for the present it may be positively identified only by the production of poliomyelitis in monkeys experimentally inoculated (1). The value of the discovery of the streptococcus isolated from the throats, tonsils, tonsillar abscesses, and the central nervous tissues, by Rosenow, Towne, and Wheeler (2), and corroborated by Nuzum and Herzog (3), will need further consideration. We know little about the exact manner in which the disease is carried from person to person. The facts to be considered are: The epidemic appeared in a very crowded section of the city and spread most rapidly among the population of that section; before long it appeared in other parts of the city and in other parts of the State and country; the infection must have been spread by healthy carriers and also by intimate contact with those afflicted with the disease. It is more than probable that the contagion is most easily spread in the prodromal stage of the disease. It is of interest to know that in a number of instances several children in the same family have caught the disease evidently from one another, allowing for the probable incubation period (one to two weeks), but that in hospitals the disease has not spread as easily as it has in private dwellings. In the 1907 epidemic no child lying in the ward with children suffering from poliomyelitis contracted the disease, and I am not aware that any of the children sent to the special poliomyelitis wards and hospitals during the last epidemic (under mistaken diagnoses) have contracted the disease after the accepted incubation period. If the disease is spread by contact, it must be by most intimate contact, else we cannot explain why children in hospitals should be more exempt than those in the more crowded quarters of a small family. There is still considerable uncertainty, however, about the exact manner in which the infection is carried, and until further knowledge of the subject is obtained it will, of course, be well to advise immediate isolation and strict quarantining of the cases that occur, and we shall do well as medical men to urge the greatest possible cleanliness in the homes of the poor and rich, in the matter of the preparation of food, especially in the spring and summer months.

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*Part of a symposium on poliomyelitis at a joint meeting of the New York Neurological Society and of the Neurological Section of the New York Academy of Medicine, November 14, 1916.

The better care of children's food during the past summer has led to a very remarkable decrease in the number of children dying from gastrointestinal infections, so that the entire mortality among children, according to the statement of the department of health, has not been greater than it was in nonepidemic years. If I had the authority to encroach still more upon the domain of the epidemiologist and of the health board physician, I would have the department of health insist upon covered garbage receptacles and would urge the proper screening of kitchens, markets, and hospitals. To the objection on the part of the health board that no one has proved that the virus is carried by insects, I would simply say that no one has disproved it: Let us make assurance doubly sure.[1]

Let me remind you that since the days of Heine (1840) the general symptoms of essential paralysis of children were known; the pathological anatomy of the disease was most carefully elaborated by the French and German observers in the seventh and eighth decades of the last century; that a little later Strümpell and Marie very strongly suspected the epidemic character of poilomyelitis and of some cases of polioencephalitis; that some of us who wrote textbooks many years ago, said of acute anterior poliomyelitis "that it comes on in the vast majority of cases after the fashion of an acute infectious disease"; that the first opportunity of studying a very extensive epidemic of the disease was by Medin, of Stockholm, in 1887, and that it was carefully described by his pupil, John Rissler, and that after there had been a very long discussion whether poliomyelitis was a parenchymatous or interstitial inflammation, it was shown to have been interstitial, and that the changes in the ganglion cells were secondary. But this seemed to be of minor importance once the evidence was established that the disease was, above all, an acute infectious disease of microbic origin. Most of us have long since forgotten the contention of Goldscheider, years ago, that poliomyelitis was often only a part of a general myelitis. We were well aware that the pathological findings of Charcot, Joffroy, and others were only the expression of the terminal stages of the disease whose initial stages were scarcely known. According to the studies of Wickman (5), Harbitz and Scheel (6), and the very comprehensive studies of I. Strauss (7), the pathological changes of the early stage of poliomyelitis include "a lymphatic infiltration of the anterior and posterior horns, and to a lesser degree also of the white matter"; other investigators dwell chiefly on edema, diffuse vivid injection of the bloodvessels, and punctiform or larger hemorrhages. So long ago as 1910, Strauss (*loco citato*) stated that "the presence in the white matter of edema coupled with . . . tigrolytic changes in the ganglion cells, offers a probable explanation of the rapid recovery of some of the paralyzed parts." Peabody, Draper, and Dochez (8) lay great stress on the edematous appearance of brain and cord, and conclude that the "damaging effects can be assumed to result in part from the direct pressure on the nerve cells of hemorrhages, edema, and exudate. Meltzer (9) has made clever use of these facts in formulating his plan of treatment, and very properly calls attention to the fact that all these conditions would during life be more pronounced than they appear to be when seen as post mortem findings. It is a fact especially worth noting that bulbar paralysis without anatomical findings plays a part in poliomyelitic infections as it does in certain chronic diseases of the adult.

Zappert's account of the epidemic in Vienna, in 1898, the excellent work of Wickman (5), the collective investigation report[2] of the epidemic in New York city in 1907 by your own committee, have familiarized the neurologist so thoroughly with the subject of poliomyelitis that he cannot share the general surprise which the disease has caused in the medical profession. What he has gained from the recent epidemic is the knowledge of the intense virulence of the disease, of the astounding rapidity of development, in some instances, and he has become more thoroughly acquainted with the atypical or unusual varieties of the disease. Incidentally be it said that every one of these atypical forms was recognized in the report of the Collective Investigation Committee of 1907 (published in 1911), and that the only difference between the epidemic of that year and the epidemic of 1916 is in the greater virulence and the higher mortality of the disease (26.24 per cent. in 1916). Since 1907 the work of Flexner, Landsteiner, and Popper (10), Lewis, Clark, Noguchi, Netter (11), Roemer (12), Levaditi (13), and others, has brought us considerably nearer to the final recognition of the actual virus of the disease and to the possibilities of treating poliomyelitis by the intraspinal injection of an immune serum. We have also learned to appreciate the value of the cerebrospinal content as an aid to diagnosis, particularly in the early stages of the disease and in the doubtful cases occurring during an epidemic.

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[1] At the meeting of the American Public Health Association held in Cincinnati, October 23d to 26th, the question of insects as carriers and of the contamination of food was thought worthy of discussion.

[2] The report is worthy of careful study; the chapter on treatment contains many useful hints. The report has been translated into foreign languages; New York authorities have forgotten it.

If we wish properly to understand the occurrence of the various types of the epidemic form of the disease, we must, of course, reconstruct any theory which would adhere too closely to the old time conception of an infection, singling out possibly the ganglion cells of the anterior horn and no other part of the central nervous system. Such a conception is, and always was wrong. As we view the disease now in the light thrown upon it by the recent epidemic, infantile spinal paralysis is a general infection exhibiting its power most markedly over the cerebrospinal axis. In its invasion of the central nervous system the meninges of the brain and the spinal cord, and especially of the cerebrospinal axis from the pons downward, may be involved and are involved in the furibund cases. In some of these the infection is evidently so intense that the respiratory and cardiac centres are seriously involved, and the patient may succumb to the disease within twenty-four or forty-eight hours. If the disease is less intense the meningeal involvement is noticeable only for the first few days, then subsides, and the effect of the poison is exhibited chiefly in the anterior gray matter of the cord. In other and less virulent cases the infection may be so slight that it produces merely the general symptoms of an acute infectious disease, a little headache, a little malaise, possibly a very slight rigidity of the neck, with vague pains throughout the system; but the infection is so slight that it affects the spinal cord to a very slight degree, if at all, and therefore never produces paralysis. We have, then, the furibund cases—often of the encephalitic type—the meningeal cases, the paralytic forms, and, lastly, the so called abortive cases, or, still better, the cases of infantile paralysis without paralysis. Viewed in this light, there does not seem to me to be much difficulty in establishing the various clinical types of the epidemic form of the disease.

We shall do well to retain the name of poliomyelitis, if for no other reason than that in a very large percentage of the cases the name accurately describes the chief lesion, and it is that lesion, with all its consequences, that gives us most concern. The bacteriologist and general clinicians will have to help us some day to combat the furibund forms and the meningeal cases.

For the proper treatment of the cases with paralysis, the neurologist will and always should be chiefly responsible. There is more to be said, however, regarding the early diagnosis of these various forms.

First, as to the furibund forms. During the period of an epidemic every man's guess has at least seventy-five per cent. probability in its favor. It will not be nearly so difficult, therefore, at such a time to recognize the furibund form of poliomyelitis as it would be at the very inception of an epidemic or in the interval between epidemics. The increase of the lymph cells and of the globulin content of the cerebrospinal fluid will corroborate materially the suspected diagnosis. It should not, however, be forgotten, and this will apply particularly to cases observed in nonepidemic periods, that there are forms of meningitis, including the tuberculous, occurring both in children and in adults, which may give entirely similar biological findings.[3] I am not sufficiently convinced as to the infallibility of laboratory methods and still less of the infallibility of the individual laboratory worker to yield to him wholly in the establishment of the diagnosis. Our board of health may have some justification in stating that the laboratory can be depended upon to make the differential diagnosis between meningitis and poliomyelitis at the time of an epidemic, but the experienced neurologist will surely look for other symptoms in substantiation of his diagnosis.[4]

The furibund forms which I have had opportunity of seeing, particularly in nonepidemic times, have always shown either an absolute diminution of all the deep reflexes, a marked loss of tonus in the muscles, a marked hypotonia, or in cases in which the meningeal symptoms preponderated, a slight increase of the reflexes and slight rigidity of the neck and spine; also a difference, determined by careful examination, in the paralysis of certain groups of muscles compared with others. A careful inspection of the entire body will, I am certain, in many instances reveal symptoms which can be used either to confirm or contradict the diagnosis. Purely clinical observation will be of great importance also in determining the exact condition of the muscular system in the cases of infantile spinal paralysis without paralysis. We must concede that there are such cases; but even in these a relative weakness of some groups of muscles can be demonstrated as well as a change of the deep reflexes, especially a diminution of the knee jerks, a loss of the Achilles reflex, and a loss of muscle tonus. It is in just such cases as these that a most detailed neurological examination, including electrodiagnostic examination, would be of the greatest value and interest.

As for the better known forms of poliomyelitic infection, those with more or less widespread paralysis, it is well to remember that whatever the laboratory findings may be, there are certain clinical features about poliomyelitis that are of the utmost importance. First of all, a rapidly developing paralysis, most intense at the beginning, occurs within twenty-four or forty-eight hours, and then subsides rapidly both as regards the number of groups of muscles involved and the intensity of involvement of each group; a very slight increase of the reflexes within the first day or two; after that a distinct diminution and a very early loss of the deep reflexes of the segments involved. Of almost equal importance is the behavior of the electrical reactions. During the first twenty-four or forty-eight hours the irritability is so great that an electrical examination can hardly be made. There may be a very slight increase of faradic irritability during that period, but very soon we are bound to discover some form of partial or complete reaction of degeneration, except in cases of rapid recovery.

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[3] This view is shared by H. L. Abramson, of the health department, *Med. Record*, November 4, 1916.

[4] The importance of attaching young men with especial neurological training to the staff of health board inspectors is self evident.

The difficulties encountered in the diagnosis of infantile spinal paralysis in children are not as great as is the recognition of the disease occurring in the adult, particularly during the time of an epidemic. Here again the experienced neurologist has, I believe, distinct advantage over others. Even he will not underrate the difficulties of the task. During the last month in my hospital service we have had a very marked example of an acute transverse myelitis in a man over forty years old, coming on with great suddenness, with a complete paralysis of the lower extermities and of the bladder, with absolute loss of sensation up to a definite level, and then subsiding just as rapidly and going on to complete recovery.

Several years ago I recorded similar instances of such cases as illustrating an acute infectious type of transverse myelitis. There is strong reason to believe, under the circumstances, that the poliomyelitic virus was responsible for the acute transverse myelitis observed this year. The laboratory findings were in support of this diagnosis.

During this same period we have had under observation an adult with a complete flaccid paralysis of both lower extremities, coming on suddenly, with a left facial paralysis, without marked changes in sensation, with some changes in the electrical reaction, without loss of bladder control, in whom we made the diagnosis of poliomyelitis. To our great surprise, the routine examination of the blood and of the spinal fluid showed a four plus Wassermann reaction, and the question then arose whether the original diagnosis was to be altered. One of our serologists naturally inclined to the view that this must be specific, and he might, perhaps, be encouraged in this view by the rapid improvement in the patient's condition, but I maintain that the mode of onset and the rapid subsidence of the symptoms were entirely in keeping with the diagnosis of a true poliomyelitis in a man suffering from constitutional lues. Considering the relatively great immunity the adult evinces toward this disease, it is of interest to put the question whether the preceding lues has possibly made this man more readily subject to this infectious disease.

At almost this same period I saw in consultation a lady in whom the diagnosis of poliomyelitis had been made because she had had some difficulty in the use of the right lower extremity, accompanied by distinct radiating pain of a rootlike character in that lower extremity without changes in electrical reaction and with marked increase of the deep reflexes in the affected leg. The onset was not accompanied by fever; it was slow and insidious in its development, and there was also slight tenderness on deep lateral pressure over the lumbar spines.

In this case the examination of the blood and of the cerebrospinal fluid yielded positive specific findings. I decided that the patient was not suffering from any poliomyelitic affection, but had spinal lues. Vigorous specific treatment brought about a rapid improvement in the patient's condition, the improvement being much more rapid than it was before this treatment was instituted.

It would be easy enough to increase such instances merely to prove that the entire subject of the diagnosis of poliomyelitis is one that requires, in many instances, the closest possible study on the part of men specially trained in the study of this disease, and that the neurologist, while he is only too happy to have the assistance of the bacteriologist, and in some instances also of the orthopedic surgeon, has to depend chiefly upon his own clinical insight and experience for the proper recognition of unusual types of the disease.

In the matter of treatment, also, I am of the opinion that there are several points which it is the duty of the neurologist to discuss and to put calmly before the general lay and medical public.

In the treatment of the furibund and meningeal forms, and, in fact, all the early forms of poliomyeiltis occurring during an epidemic, the neurologist will be only too ready to share honors and responsibilities with the pediatrist and general clinician. The early stages of the disease should be treated as would every form of a severe acute infectious disease. It is somewhat unfortunate that the American Public Health Association has said in its statement published in the lay press that "there is no specific treatment of established value in poliomyelitis." We medical men will understand the meaning of that word *specific,* but I hope the laity will not interpret it to mean that there is not much to be done at any stage of this disease. This same statement might apply to measles, or to scarlet fever, and surely no one would wish the public to believe that there is little for the physician to do in the earliest stages of either one of these diseases. It is my own impression that there are few diseases that would benefit so largely by discriminate and intelligent medical treatment as will these early and severe forms of poliomyelitis.

The treatment of the febrile condition, the method of feeding to be employed in cases in which there are apt to be difficulties of deglutition, the manner in which a child that is extremely sensitive to pain is to be sponged and bathed, and the manner in which the limbs are to be placed so as to avoid increasing pain or early contracture—all these conditions call for expert handling. And if the American Public Health Association or the health board of this city intends to enlighten the public, it would be well to avoid expressions that are very much more apt to harm than to benefit the public. Without specifying, this same health committee also states that "active measures" during the persistence of the acute symptoms of the disease are not only useless, but are apt to cause serious or even permanent injuries. Some of us may have some reasonable doubt as to what the committee meant by "active measures." I am glad, however, to note that the committee concedes that the "best chances of recovery from residual paralysis demand skillful aftercare."

In the early treatment of the furibund and of the meningeal cases the question arises whether anything can be done to avoid a fatal termination. Let lumbar puncture be done, noting the effect of each puncture. In every such case the immediate administration of an immunizing serum, as recommended by Netter (11) and Flexner (1), should be tried. The latter believes that it would be advantageous "to take the serum of persons whose attack was less remote so as to insure as high concentration of the immunity bodies as possible. Doses ranging from five to twenty c. c. will be found suitable, the injection to be repeated several times at twenty-four hour intervals according to clinical conditions and indications." All the usual precautions are to be observed as to Wassermann reaction of serum, etc. That it has been of use in some instances cannot be denied, but some of the statements that have been made in its favor must be judged with full knowledge of the fact that without serum injections many of the cases that begin in furibund fashion subside quickly.

I have been much impressed by Meltzer's (9) thoughtful contribution on the treatment of acute poliomyelitis. In the cases in which cardiac or respiratory paralysis is threatened, artificial respiration, if possible by Meltzer's method of intrapharyngeal insufflation, should be maintained for some time; and, by the way, why not use oxygen directly when there is the slightest difficulty in respiration? And I am also willing, on the strength of Meltzer's arguments, to allow that in future epidemics a further test be made of the administration of adrenaline.[5] That the rapidly advancing edema of the nerve tissues is an important factor in the causation of the symptoms there can be little doubt, and whatever experience others may have had with this treatment, there is surely a rational basis underlying it. Many cases were treated successfully according to Meltzer's method at the New York Throat, Nose, and Lung Hospital. Meltzer advises that two c. c. of a one to 1,000 adrenaline solution should be injected every four to six hours.

As for the use of hexamethylenamine in these earlier stages, opinion is still divided. The best that can be said of it is that the administration, aside from the occasional hematuria which it causes, is entirely harmless. But no one will hold that it has direct specific effect.

Let us hope that before another epidemic occurs we shall have advanced still further along the road of obtaining a positively immunizing serum, and that the number of rapidly fatal cases in any future epidemic will be greatly diminished. Properly equipped hospitals and well trained staffs will be of the greatest importance. Now that the epidemic is over we are face to face with the serious problems connected with the aftercare of children and adults suffering from paralysis due to this affection. Let us consider very calmly what we as conscientious neurologists can recommend.

First, with reference to the subject of electricity. What are the essential and incontrovertible facts in the case? Whatever opinion we may entertain as to the therapeutic value of electricity, we are all agreed, I am certain, as to the great value of careful electrodiagnosis. In every instance an electrical examination with the faradic and galvanic currents should be made of every group of paralyzed muscles. I know of no better way of answering the question, whether or not a muscle or group of muscles has a chance of recovery, than by determining the electrical response of such muscle or group of muscles. If after the lapse, say of the first four weeks, any nerve or muscle of a definite group still responds to faradic stimulation, it is fair to say that that muscle or group of muscles will recover completely in due course of time. If the responses are present but very much diminished, both to the faradic and galvanic currents, the recovery will be relatively slower. If there is partial reaction of degeneration, there is hope of recovery only after many months. If any muscle or group of muscles shows a complete reaction of degeneration with slow, wormlike contractions, with considerable wasting, then the hope that such muscles will recover is a very faint one, but even after many months the electrical conditions may improve and thus give hope for further improvement. I consider the proper electrodiagnostic examination of a case of poliomyelitis the duty and the privilege of the specially trained physician, and I know that there are few others who can be depended upon to make such examination. After having determined this point, then the tonicity of the muscles, the blood supply of the extremities—a point so often disregarded—the indications of the presence or absence of the slightest volitional innervation will be of great additional value.

Aside from the electrodiagnostic value, electricity will prove especially useful in stimulating muscles which are absolutely paralyzed, but are still responding to some form of galvanic excitation. Many paralyzed muscles can be exercised in this way and in this way only. The perfunctory use of faradic stimulation in the more serious forms of poliomyelitis is senseless and painful, but whenever it is found that muscles react to faradic stimulation, that form of current may be employed just as readily as the galvanic.

Our conclusion, therefore, is that the chief use of electricity, aside from its great use for the purposes of diagnosis, is in exercising all muscles which cannot be exercised by the will. We shall still plead for the intelligent use of it in a certain number of cases of poliomyelitic patients whose muscles cannot be exercised in any other way. The indiscriminate use of electricity as a remedial measure in all cases is as irrational as is the absolute condemnation of electricity as a measure scarcely worth considering. This leads us to a consideration of muscle training and educational exercises in general as the proper method of treating the paralytic cases.

Neurologists have long since recognized that exercise is the best form of treatment for a paretic muscle. Fastening upon the slightest beginnings in the return of volitional power, a muscle or a group of muscles is encouraged to improve by the careful repetition of appropriate movements.[6] This means practically that in every case the physician examining a patient must indicate the exact exercises that are to be performed up to the point of easy fatigue —not beyond that point. Dispensary or hospital divisions equipped with Zander apparatus would prove of great help in this matter. The patient exercising and patient training of the muscles can be carefully indicated by the physician, and must then be carried out either by a competent nurse or by the mother, if she can spare the time and if she has the ability to carry out the directions of the physician.

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[5] Meltzer makes handsome acknowledgment of Fraser's previous attempts to use adrenaline on the human subject. In eight cases in which "there was extreme respiratory involvement" this line of treatment was tried (1-1.5-3 c. c. to 1000 was the strength employed with an equal amount of saline). Five of the eight cases ended fatally.

[6] For details, cf. *Report of New York Investigation Committee*, 1910.

A word also in favor of rational massage to be given after warm baths. It will help to improve the circulation in the paralyzed limb and may tend to prevent undue wasting of the muscles.

Our public duty in this matter is to discourage excessive dispensary visits, unless it be in the relatively few cases that need regular and persistent electrical or Zander treatment. In all other cases an occasional visit to the dispensary—say once a week or once a fortnight—will prove sufficient, but the directions given at such a time should be carried out carefully and intelligently.

In this city there is now a movement afoot to spend a great deal of money on ambulances and automobiles which are to bring mothers and their little patients from distant parts of the city to various dispensary classes. Let us, by all means, encourage this sort of philanthropy, but let us state distinctly to the public that this matter should not be overdone and that far more good will accrue to the victim of this disease if some of the funds to be invested will go to secure visiting nurses[7] who will either carry out physicians' directions in the home of the patient, or who will, from time to time, teach the mother or other relative to conduct such exercises as the physician has indicated.

Aside from the waste of public moneys, I am also impressed with the waste of time and energy on the part of hundreds of mothers who are expected to drag their children to dispensary classes two or three times a week for the sake of perfunctory electrical treatment or for the sake of easing their consciences that they are giving their children the best possible care. The crying need in this city at the present moment is an ever increasing staff of *visiting nurses* under proper medical supervision, and we neurologists can afford to set the public right in this matter.

Lastly, let us take up the matter of orthopedic treatment. The public has been led to believe during this past epidemic that the orthopedist is the one specialist to whom all these cases should be referred. I have no wish to deprive him of any of the glory that may accrue to him from this popular misconception, but I have serious doubts, if this method is adhered to, that it will be for the greatest good of the greatest number of children. I allow that wherever there is the slightest tendency to deformity, whether in the earlier or in the later stages of the disease, wherever it is found that it will be impossible for the child in any way to use its upper or lower limbs without some special orthopedic appliance, that the judgment of the orthopedic surgeon be accepted in the most liberal spirit. But, in view of the importance which the neurologist attaches to the matter of exercise of paretic muscles, the question that must seriously be considered in every case is whether the partial or permanent immobilization of a limb will permit an early return of power on the part of such paralyzed or partially paralyzed muscles. Permanent orthopedic appliances—splints or braces worn continually—must be regarded with suspicion in cases in which there is good reason to think that considerable improvement will ensue from the careful training of muscles. The child with a Punchinello leg, with thigh and leg muscles that are thoroughly wasted, or the child that in its attempts to stand shows a marked genu recurvatum, will, of course, need its braces, and the children whose deep spinal muscles have been affected by the disease, and who are in danger of marked distortion of the spinal column, will also require proper splints and braces. Lovett (4) says that "braces, corsets, and other forms of apparatus are compensatory rather than therapeutic." Braces prevent "muscular stretching and the loosening of joints, and control deformity." No one could be more thoroughly in favor than I am of the surgical orthopedic measures that have been employed so successfully in the transplanting or in the shortening of tendons and in nerve transplantations. As I said in a discussion some time ago, there are very few chronic paralytic cases that can be carried through from beginning to end without the need of orthopedic opinion and treatment, but it is in these cases of moderate or slight paralysis that the best interests of the patient will be subserved, in my opinion, if orthopedic appliances are not resorted to too early or too persistently.[8] In this matter there should be the most amicable cooperation between the neurologist and the orthopedist.

So far as the after care of the large number of victims among the children of the poor is concerned, I believe we neurologists will do well to insist that special classes at the various dispensaries be arranged for these children; that they be examined first by men with competent neurological training: that the matter of electrical treatment, of muscle training and exercise, possibly of massage, be carefully considered, and that the treatment be outlined in friendly cooperation between the neurologist and the orthopedist so as to bring about the best possible results.

Finally, let us impress upon the public the fact that while the epidemic disease is serious and its results are often most appalling, many of the children are capable of a vast amount of recovery. And let us in that way, also, minimize, if possible, and counteract the panic which seized the public because of the public announcement of every case.

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[7] These "visiting nurses" may be recruited best from the ranks of those who have special training in gymnastic and other forms of physical therapy.

[8] Not every drooping shoulder or paretic deltoid needs the cumbersome corset with its winglike attachments.

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116 West Fifty-ninth Street.

SOME SOUTH AMERICAN TRAVEL NOTES.

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Impressions of a country gathered during a somewhat hurried tour are not without value, because, when they are so gathered, conditions appeal strongly to the traveler, and such impressions might in time become less emphatic through continued contact.

It seems safe to say that the vast majority of North Americans know more, think oftener, and visit more eagerly any of the European countries, or even the Orient, than South America. Yet the European countries have scarcely any claim upon us, certainly not in comparison with South America, which should attract us politically, economically, and scientifically; and what is more novel, is just as interesting and fully as beautiful as Europe. Custom and convenience are the chief reasons for this anomalous condition, and it is idle to expect a change until we have better and faster means of communication.

Fig. 1.—A partial view of Rio de Janeiro.

We can hardly realize the possibilities of South America viewed from any angle, nor can we bring about that close relationship which for entirely logical and natural reasons should exist, until we have these improved means of communication. We are as strange to the South Americans as they are to us, and this mutual strangeness can be overcome only by contact.

Europe has long since recognized these opportunities, and improved her means of communication with South America; in fact, Americans have to a certain degree, and not altogether wrongly, been trained to the idea that it is easier to go to South America via Europe than it is to go directly. We have already allowed many of our opportunities to slip from us, therefore we should now redouble our efforts that we may regain some of our lost advantages, as well as establish a relationship that is perfectly natural and far more logical than the commercial alliance that exists between South America and most of the European countries.

Few of us realize that our neighbors, with but one exception, and practically all of our colonials speak Spanish. In view of this, and since South America should be our most important field of activity, what would be more reasonable than the introduction of Spanish into our high schools?

Of greater importance, however, is the establishment of a steamship line worthy of the name between the United States and South America, and the completion of the Pan-American Railroad at the earliest opportunity.

So long as it takes nineteen days with indifferent comforts to reach Rio de Janeiro, and about five days more Buenos Aires, there will not be any overwhelming incentive for tourists to switch from Europe to South America.

There is no good reason why the present conditions could not be improved one hundred per cent., both as to time and comfort, and then, with the proper publicity, we should see a drift of tourists to South America that would in a short time bring quicker results than all the bureaus, congresses, pamphlets, etc., that after all are only second hand in their effect and of long range in their action, contrasted with the vivifying influence of actual contact.

One of our cabinet officers, on a recent visit to South America, strongly and properly spoke in behalf of the Pan-American Railroad, which was at once ridiculed by the *West Coast Leader*, which referred to it as "a chimera."

This attitude on the part of the *Leader* was entirely human. It would be unnatural to expect the English, who have been strongly intrenched in this productive field, to view complacently the oncoming Americans after having been so keenly grilled in a commercial way by the Germans for the last decade.

Fig. 2.—Oswaldo Cruz Institute; the main building.

There is nothing that would be so productive of results as the completion of this railroad, which is strongly analogous to the Cape to Cairo railroad. There is a stretch of approximately 10,000 miles from New York to Buenos Aires, of which about 7,500 are in operation.

Obviously, it would mean further climatic engineering and economic problems, just as the Panama Canal did, but to complete the remainder of the railroad and further adjust that which is already built would not begin to be the same problem that the Panama Canal was, and would perhaps yield greater results than the canal will yield, so far as America is individually concerned. With all this should go the creation of a real merchant marine, as it is childish to build up a trade that would be dependent upon the generosity of our competitors.

It seems needless to recall that south of the equator the seasons are reversed, so that while it is summer in the States it is winter below the equator, and my tour was confined to that part of South America south of the equator. Lack of space permits only of reference to the most important places and their most important points.

BRAZIL.

Brazil, a country as large as the United States, with Alaska omitted, affords, through its location and topography, a variety of climatic conditions, and with it a corresponding variety of diseases. Naturally the important centre here, is Rio de Janeiro. It would be an error to pass unnoticed the natural beauties of Rio. If there is one place in the universe that suggests a stubborn resolution on the part of nature to create a riotous centre of natural beauty, that place is Rio de Janeiro. It matters little whether it is viewed at dawn with the lowering clouds draping the projecting peaks in a fleecy mist, or seen in the full glare of the tropical sun, or toward twilight, when the sun lowers its rays, with its peaks in strong illumination and the valleys in soft repose, restfully suggesting the approaching night, or lastly, looking down upon it through darkness from the mountain side with the twinkling brilliancy of its countless lights, that suggest an inverted heaven, studded with stars of the first magnitude, it is always beautiful.

At Manguinhos, a few miles outside of Rio, is the Oswaldo Cruz Institute, which, on account of its distinct knowledge of the diseases common to the tropics and of the pastoral element of this country with its animal diseases, and some 300 varieties of biting flies, supplies an imperative need, and is one of the most important assets of the Brazilian government.

The institute is named after Dr. Oswaldo Cruz, who is still its efficient head, and who cleaned up Rio and made yellow fever a thing of the past. His *Chef de servico* is Dr. Adolph Lutz, who, together with a capable corps of investigators, is doing splendid work, covering a broad field of activities involving both animal and plant life. The institute is a small community in itself, in which not only the scientific work is being conducted, but the illustrating, printing, and binding are all under the same roof.

A problem is decided upon and divided up between the various members of the staff, and at a given time each makes his report and the work of all is discussed in joint session.

The researches of Carlos Chagas on *Thyreoiditis parasitaria* bearing his name have aroused considerable interest, especially on the east coast. Through the kindness of Dr. Alvaro Ramos, a number of cases were shown to me in one of the departments of the insane asylum. The condition is one of cretinism, believed by Chagas to be due to the presence of trypanosomes, Schizotrypanosoma cruzi.

Fig. 3.—One of the animal houses of the Oswaldo Cruz Institute.

There is a feeling in some quarters that is not to be ignored, that some of the work requires revision, and that it is not satisfactorily settled that the presence of the trypanosomes is responsible for the existing cretinism, but rather that it represents an incidental feature of the condition.

The hospital in which Doctor Cruz did his yellow fever work is still in existence, but without a patient, and in its empty state is a mute reminder of the days when grim conditions were not uncommon in this scenic paradise. With great interest, the staff described the mosquito brigade and demonstrated the screening and automatic arrangements permitting ingress and egress to and from this hospital, at the same time protecting it from the entrance of Stegomyia fasciata.

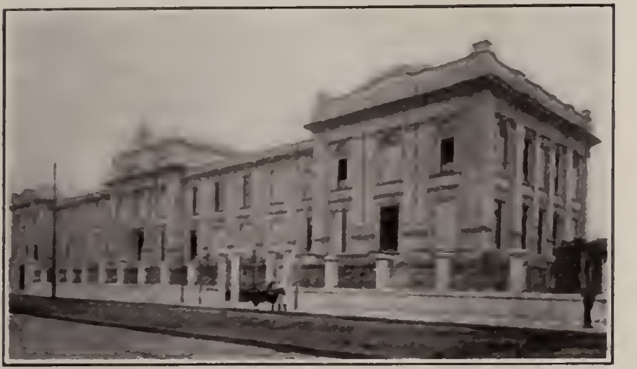

FIG. 4.—Bacteriological Institute at Buenos Aires.

The principal hospital is the Santa Casa Misera-cordia, with a capacity of 1,500 beds. The hospital is beautifully situated near the water, shaded with an arcade of trees, Fica benjamina. The hospital, in common with hospitals of Spanish and Portuguese countries, has a number of large courts filled with flowers. The floors are of waxed mahogany, and present a clean and serviceable appearance. The nursing is in the hands of Sisters of Charity, but a training school for nurses is being organized. Spinal analgesia is freely used here, as well as throughout South America generally, and we feel that we should use more of it than we do. Generally stovaine is the drug employed. Where general anesthesia is resorted to, the Roth-Drager apparatus is usually given preference.

Through the kindness of Professor Daniel D'Almeida, the surgical service was made accessible. The medical school has an attendance of 2,000, and it may be added that there is a school at Sao Paulo with 300 students and others at Bahia, Porto Alegre, and Bello Horizonte. The writer could not refrain from explaining the conditions that exist in the United States as the result of overcrowding, to which was quickly answered, "We have been warned and are taking steps."

In Sao Paulo, the second city in Brazil, there is the Instituto de Butantau, or, as it is familiarly known, the Snake farm. Here are seen snakes of all kinds, sizes, and degrees of virulence. They are handled and looked after as carefully as the blooded stock of some breeding farm, and occasionally a snake fight is staged between one of the harmless variety and a poisonous snake, in which the latter is destroyed.

Provision is made to receive snakes from any part of Brazil. Their virulence is tested and classified. The object of the institute is to study and classify the snakes of Brazil and prepare a serum to counteract the bites of poisonous snakes. It requires about six months to prepare the antitoxin in a horse for use in snake bites, and it is freely sent to any part of Brazil where it may be needed.

The hospital here, like the one in Rio, is known as the Santa Casa Miseracordia. Here some further light upon cases of chagras, leprosy, and leishmaniasis, was obtained through the kindness of Dr. Alexander M. Pedroso.

ARGENTINA.

Buenos Aires, the metropolis of the Argentine, the largest city in South America, the fourth largest in the western hemisphere, and the second largest Latin city in the world, is cosmopolitan, solid, busy, important, and has all the swing of a metropolitan centre.

The chief point of interest here is the Instituto Bacteriologico in the Departmento Nacional De Hygiene, which is under the able supervision of Professor R. Kraus, of Vienna. The institute has been in existence for a number of years, but has been installed in its present complete and imposing quarters only since July, 1916.

As the Argentine is mainly a pastoral country, and live stock represents its chief product, the institute very properly is as much dedicated to the study of diseases of animals as of man, especially as some of the diseases afflicting the human race are acquired from the animals, notably anthrax. The institute is the last word in its line and is complete so far as its interior and exterior arrangements go. It is also well supplied with animal houses, including a snake house. The animal side is fairly well balanced against the human side. Just as these various houses for the treatment and study of animal diseases exist so is there a hospital consisting of a number of pavilions for the treatment and study of the various infectious diseases.

The entire arrangement complete, concentrated, and practical, represents a centre of absorbing interest to any medical man. The institute, beside covering this wide field, prepares an ample supply of vaccines and serums for the Argentine, and holds itself ready to assume the control of any epidemic emergency that may arise in this extended country with its large and mixed foreign element. In the pavilion for anthrax, cases of varying severity were

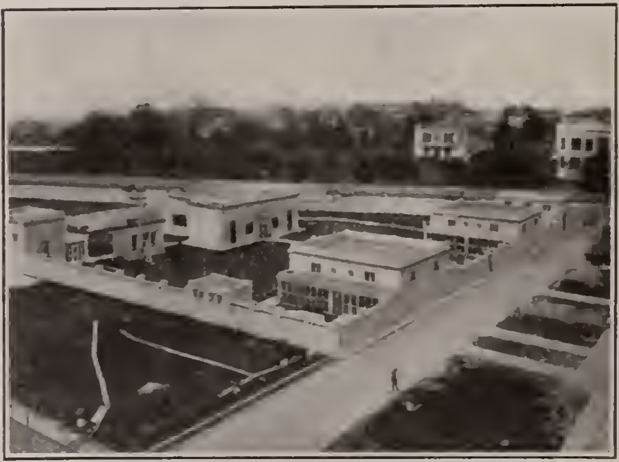

FIG. 5.—Section for the study of bubonic plague at the Bacteriological Institute at Buenos Aires.

shown, and the success achieved in the treatment with their serum is highly creditable.

The leprosy pavilion provided interesting material for the study of this condition. Some of the milder cases were outside in the sunshine. So far no headway has been made through the injections, more especially of mixed strains. Professor Kraus, while exhibiting these, significantly added, "Of course you have more leprosy in your country than most of you think"—a statement that will receive rather general endorsement.

Cases of leishmaniasis, a protozoal disease named after Major Leishman, of the English Army, and representing a form of trypanosomiasis, is said to be a common condition among the South American Indians, possibly more so in the low countries or Montanas than in the greater altitudes, although a case of unusual severity was shown the writer in Cuzco, Peru, at an altitude of about 13,000 feet. The native physician who brought the case emphasized its prevalence among the Indians. Its existence among these Indians, whose trials and tribulations are many, and whose cup of sorrow has long since overflowed, makes their lot a truly pathetic one. It is said that many of the cases falling into indifferent hands are commonly mistaken for lues, and it would not be surprising, judging from the appearances of advanced cases, if they were confounded with malignant disease.

FIG. 6.—A scene in Cuzco, Peru, the ancient capital of the Incas.

Excellent results are achieved in this condition through the use of tartar emetic, administered like salvarsan. It seems needless to say that a very small percentage of the cases ever receive such intelligent treatment, if any treatment at all, and so the disease continues to spread and destroy with practically no restricting influence.

The writer is indebted to Dr. M. J. Barilari, Jr., for his unsparing efforts as a guide to the medical side of Buenos Aires. The medical school has an attendance somewhat less than that of Rio, but still sufficiently large, if we consider the existence of a second one at Cordova, to make the criticism expressed at Rio, hold here. It occupies an entire block, and is architecturally imposing. It is of such a size as to require some hours to examine even superficially its departments, laboratories, museums, and libraries. The public morgue is in connection with the medicolegal department, and is so arranged as to give the public and the profession the best results

The medical charity of the entire city is under the supervision of the Assistancia Publica, patterned after its prototype in Paris. Although Paris is still, to a considerable degree, the apple of the Latin-American eye, it would be a misrepresentation to ignore the fact that the medical, military, and mercantile classes of South America have discovered Germany, and just as the armies of several of the South American countries have been under German supervision for years, so the medical side of Latin-America seems to have been gradually coming under the dominance of German thought and action.

The surgery we saw in the service of Doctor Finochetti at the Rawson Hospital was not without interest.

URUGUAY.

Montevideo, the capital of the smallest, but one of the most progressive of the South American countries, is the only place where the American dollar is at a small discount, instead of being at a large premium. So far as my observation went in medicine and other public departments, everything seemed of the latest and highest order. Their penal institution, which I was persuaded to visit, was ideal, possibly without a superior, and most likely with few equals. The old hospitals were being replaced by new and modern ones, and the medical school is imposing and palatial.

In South America generally, they are proud of their laboratories, especially the Röntgen laboratory, but the only place where radium was in evidence (most likely, however, not the only place it was being used) was Montevideo. Here it was extensively employed in the laboratory of Dr. Carlos Butler, who has given the cancer problem in Uruguay some attention, and outlined his results in an address before the first National Medical Congress held in Montevideo, April, 1916.

The Cordillera so completely divides South America into two unequal parts and the changes are so evident that we almost feel that we have passed from one continent to another.

It is as "the West Coast" that the South American generally speaks of the part west of the Andes

CHILE.

Santiago nestles in a semitropical valley in the foothills of the Chilean Andes, and in panoramic view of a beautiful chain of snow capped mountains There is but one medical school in Chile, situated at Santiago, and it has an attendance of 600 students. The three large hospitals are the Hospital San Vincente, which adjoins the medical school and has 600 beds; Hospital Del Salvadore for men and women, with a capacity of 750 beds, and the Hospital Sanborga, with 750 beds, and exclusively for women. They are all attractive hospitals and doing good work, but the Hospital Sanborga deserves special mention because of its patio or court, which was the most beautiful patio that has ever been brought to my attention.

BOLIVIA.

The next move took us into Bolivia, known as the hermit kingdom, because of its completely inland situation.

Traveling for forty-eight hours, most of the time on a thirty inch gauge railroad, which was entirely comfortable, however, and climbing from sea level to a barren plateau, 13,000 feet high, past smoking volcanoes and mammoth borax lakes, brought us to the abrupt rim of a canon, at the bottom of which, 1,200 feet below, lies one of the unique cities of the world, La Paz, the capital and metropolis of Bolivia.

Neither Bombay or any oriental city can outdo La Paz in its display of bright colors. With its ever moving masses of Indians and Cholas (mixed breeds), each trying to outdo the other in gaudiness of dress, its irregular situation, as its were, hanging upon the slopes of the canon that screens it from the howling blasts upon the plateau above, and under the shadow of Illimani, whose frozen summits are pushed 21,000 feet into an azure sky, it presents a scene, and, in the rarified air, a sensation that will never be forgotten.

What a splendid opportunity this city could afford for a critical study of the effects of extreme altitudes on animal life. We do know some of the changes, in fact, they are apparent, such as diminution in size of the people, and other effects that are not apparent, such as the increase in the hemoglobin. But the subject has never, to our knowledge, been as fully studied in all its ramifications as it deserves. The birth rate and infant mortality of these elevated regions are perhaps the highest in the world, and if the latter were not the case, it would doubtless be one of the most thickly settled of regions.

The entrance of the hospital in La Paz leads into a large paved patio, part of which is surrounded by wards for the insane, while the remainder is used for storing the funeral outfit, hearse, carriages, etc. Beyond this first patio, comes the hospital proper Primitive as it is inclined to be, it affords care and protection to the sick Indian. The Indian collectively, or regionally considered, represents an interesting problem, and in his present state he fulfills in South America the complete definition of the white man's burden. As we see him, especially in the high and remote regions of this extensive land, with his short, stocky stature and muscular development suggestive of iron, carrying the mail across the cold and tractless plateau, or racing in an altitude in which a foreigner is quite content to be able to slowly move about, with a face full of resignation, we find ourselves almost forgetting that he is a human being. Aside from the barest necessities of life, all his ambition seems to crave is his jar of chica, or fermented maize, and the ever present "cud" of coca leaves, without which he will do almost nothing, and with which no burden seems too heavy, he forms a most interesting and pathetic figure in human affairs.

In concluding these incomplete, fragmentary, and disconnected notes, we hope that they will help to attract attention to a vast region crowded with unlimited problems, resources, and interests of every variety. Buried and forgotten cities represent a civilization comparable to our own, and with the passing of which disappeared the secrets of a superior race. This should arouse in us an interest that has been unpardonably feeble in the past, and that deserves to be translated into vigorous action without further delay.

THE SURGICAL TREATMENT OF GOITRE.*

By J. Walter Vaughan, M. D.,
Detroit.

Obviously it is impossible to present in the space at my disposal much that is essential for a proper consideration of so broad a subject as the surgical treatment of goitre. As a consequence I will limit my portion of this symposium to a presentation of what experience has taught me to believe is the proper surgical treatment of these cases, together with a few remarks upon the research work that is being carried on at present in the Buhl Memorial Laboratory of Harper Hospital.

It is now quite generally conceded that the colloid contained within the vesicles of the thyroid gland represents, or is the active principle in the secretion. Bensley (Normal Mode of Secretion in the Thyroid Gland, *Amer. Jour. Anat.*, xix, 37, 1916; editorial article, *Journal A. M. A.*, May 27, 1916) has traced histologically the method of formation within the cell and the disposal from the cell of the intracellular colloid which he calls the "secretion antecedent." In brief, he asserts that the secretion occurs in vacuoles in the outer pole of the cell, and from there is transported directly into the vascular system. Obviously this fails to account for the colloid found within the vesicles, and Bensley states that in addition to the secretion from the outer pole of the cell, there is also an indirect mode, which consists of the extrusion of droplets into the vesicle, thus forming its colloid content. Thus the vesicles simply act as storehouses for the active thyroid principle when its rate of production is in excess of the body needs, and, conversely when the body needs are in excess of production, the stored colloid is available.

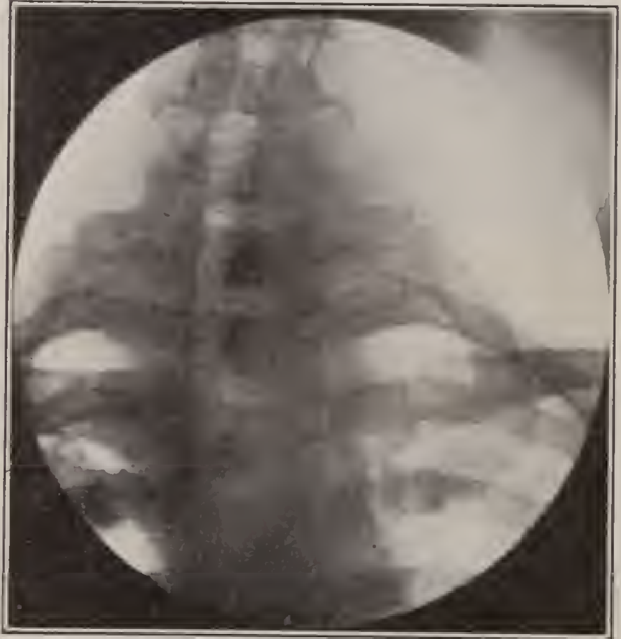

Fig. 1.—Lateral displacement of trachea in substernal goitre.

This conception of the formation and distribution of the active thyroid substance is of decided interest when applied to the pathological pictures in thyroid disease known to be associated with either a hypothyroidism or a hyperthyroidism. In connection with the former, Morse (*Jour. Lab. and Clin. Med.*, I, 4) has shown that in pellagra there is probably a more complete destruction of normal thyroid tissue than is found in any other disease condition. He describes the changes as a sclerosis and round celled infiltration. There is a striking overgrowth of connective tissue with almost complete destruction of normal thyroid cells, and what areas of thyroid tissue are left are cut off from their normal close contact with the blood supply and are destroyed by the pressure of the surrounding connective tissue.

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*Read at the seventeenth annual meeting of the American Therapeutic Society, Detroit, Mich., June 10, 1916.

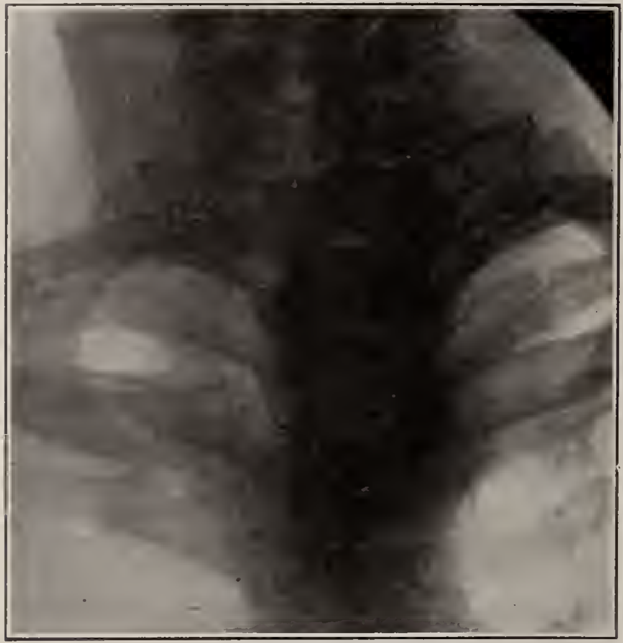

Fig. 2.—Lateral tracheal displacement caused by substernal goitre.

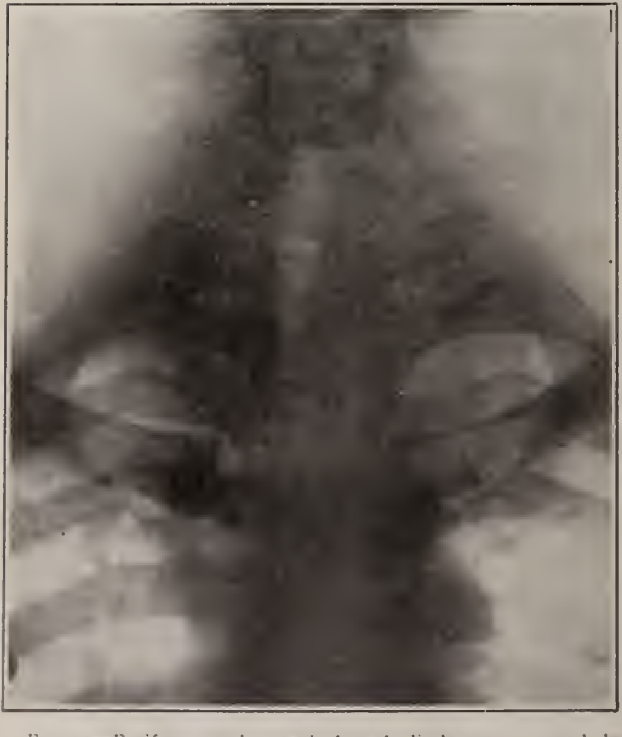

Fig. 3.—Fusiform trachea with lateral displacement caused by substernal goitre.

Though the foregoing may appear to be somewhat foreign to the subject, I have made reference to it because it illustrates best the type of gland in which the ability to form a normal active secretion is at its lowest ebb. It is the extreme limit of hypothyroidism from a standpoint of microscopical glandular pathology.

Parenthetically it might also be stated that the work of Morse suggests that pellagra is the ideal disease in which experimental surgical work in the implantation of normal thyroid gland tissue should be carried on.

From the study of Bensley's work it can be readily seen that a hypothyroidism may be accompanied with a greatly decreased amount of intravesicular colloid as in pellagra, the decrease being caused by a destruction of normal gland cells. Again this same condition may also be associated with a considerable increase in the amount of intravesical colloid as is occassionally observed in diffuse colloid goitre. In this latter case it is quite probable that there is a definite change in the chemistry of the colloid itself which is evidenced by its altered physical characteristics. Whether this is true or not, we are justified in assuming that a mechanical factor also enters into the phenomenon of hypothyroidism associated with simple goitre, since increased pressure within the gland must of necessity interfere with the proper functioning of gland cells upon which the greatest amount of pressure is exerted. This in itself would explain the greatly increased amount of apparently normal thyroid tissue so frequently observed in this type

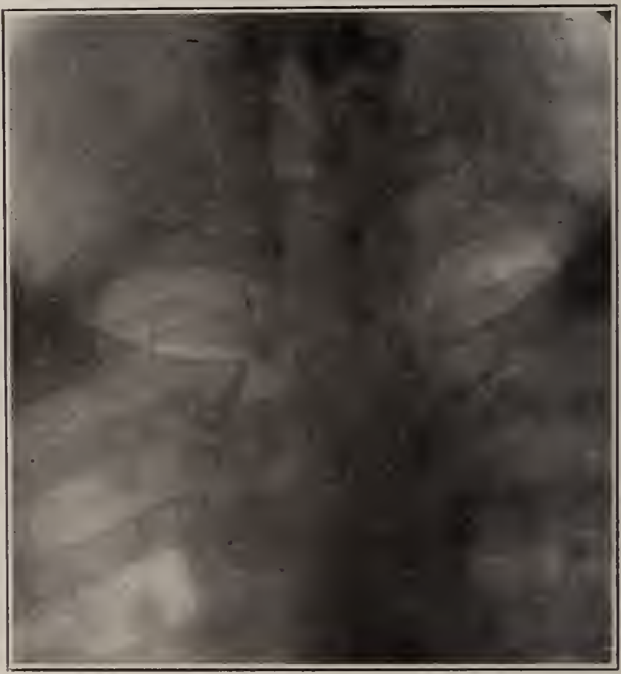

Fig. 4.—Fusiform trachea caused by pressure of substernal goitre.

of goitre, it being the result of a compensatory hypertrophy.

When we turn our attention to an examination of the thyroid cells in hyperthyroidism, we observe that they are much enlarged, usually being much higher than in the normal gland type, their periphery is much darker and the intravesicular colloid is decidedly lessened. There is also a perivascular round celled infiltration. In other words, we have hyperactive secreting cells which are discharging constantly more than a normal amount of colloid directly into the circulation, together with an inflammatory picture which I will refer to later.

In general it might be stated that all cases of hyperthyroidism should be subjected to surgical removal of a sufficient amount of gland tissue so as to diminish the amount of colloid entering the vascular system to as near the normal as possible, and conversely that no case which shows definite signs of hypothyroidism should be permitted to lose any functioning gland tissue.

Such a rule would be exceedingly simple were it not for the fact that occasionally cases are met with in which there are present definite signs of both hyperthyroidism and hypothyroidism at one and the same time. Such cases have been of the Graves type for so long that their ability to form the amount of colloid required for normal needs is almost exhausted, and yet during exacerbations of the disease the amount formed is still excessive. This is particularly true in the type of case that is termed secondary exophthalmic goitre accompanied with marked exacerbations and remissions. By secondary exophthalmic goitre I mean those cases which previous to the appearance of one or more of the symptoms which characterize Graves's disease, possessed some cystic or adenomatous enlargement of the gland.

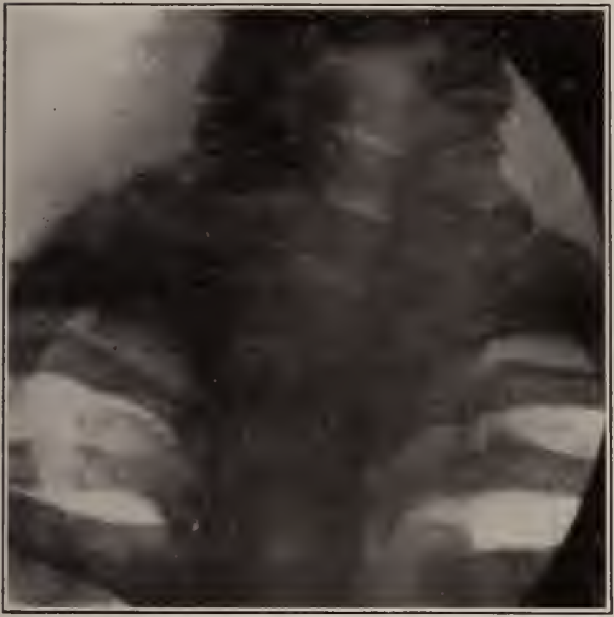

FIG. 5.—Involvement of trachea in carcinoma of thyroid gland.

Primary exophthalmic goitre I would classify as those cases in which the thyroid enlargement and other symptom complexes occur simultaneously. That such a distinction is important clinically was well shown in a paper presented by Doctor Ballin and myself seven years ago (Final Results of Thyroidectomy for Exophthalmic Goitre, *Journal M. S. M. S.*, 1909), in which were given twenty-one cases of the primary type with five deaths, and twenty-six cases of the secondary type without a death. Many of the cases in the latter class were clinically as severe as those found in the primary class, yet the risk of operation was much less. This is probably due to the fact that owing to the goitre formation, the actual amount of hypersecretive tissue is much less in the secondary than in the primary type.

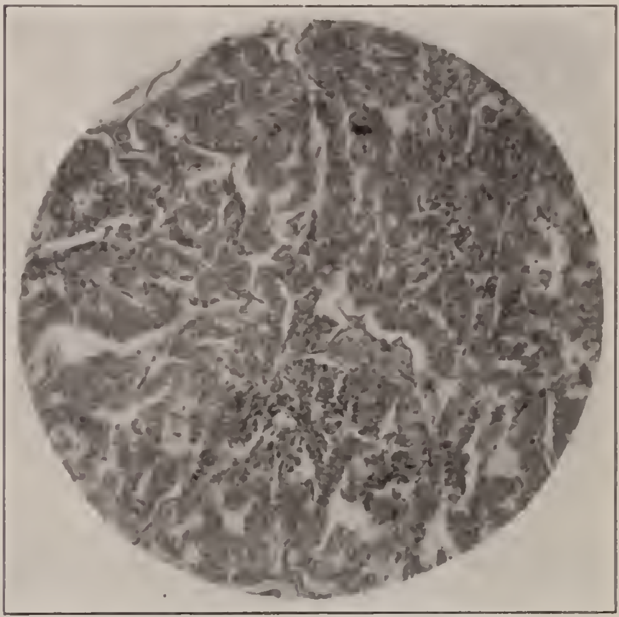

FIG. 6.—Microscopical section of carcinoma simplex of thyroid gland.

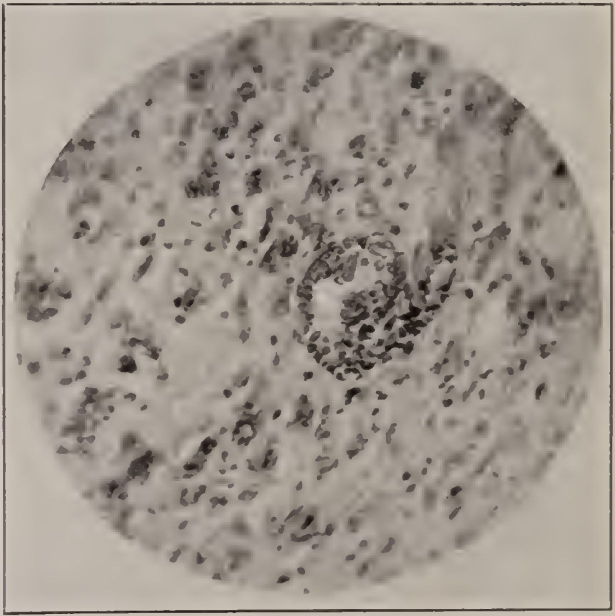

FIG. 7.—Tissue removed from same case as specimen from carcinoma simplex, taken two months later when growth of tumor was very rapid. Here it would be called a spindle celled sarcoma.

Probably the most valuable aid given in recent years for the proper treatment of the severe primary type is the boiling water injections advocated by Miles Porter. It is now my practice in patients suffering from severe symptoms at the time of entrance into the hospital, to place them at rest, confined to their beds, with ice bags over both thyroid gland and heart. Frequently, after twenty-four hours to one week, the acute symptoms have subsided sufficiently so that operation may be performed without risk. This brings the operation between exacerbations of the disease and is termed the interval operation. If the pulse rate and nervous symptoms do not subside, however, in from seven to ten days at the utmost, then the case is one that should be treated by Porter's method. Since adopting this procedure I have not had a death. One case improved so much after the injection of boiling water that the patient refused subsequent surgical removal and for two years has remained clinically well.

In all fairness it should be stated, however, that I do not see the severe cases at present that we had so many of formerly. Physicians in general, I believe, are advising operation earlier now in exophthalmic goitre than they formerly did, and surgeons are consequently obtaining a higher percentage of good recoveries and reducing greatly the mortality.

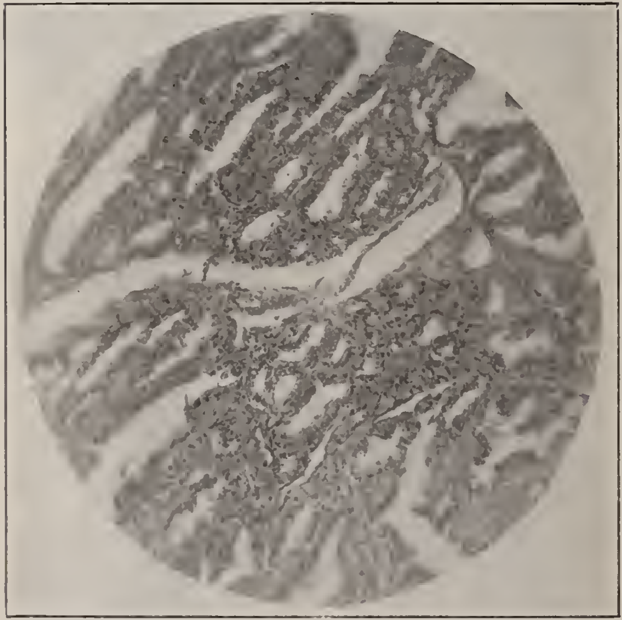
FIG. 8.—Microscopical section of exophthalmic goitre.

One point that does not receive sufficient importance in the diagnosis of Graves's disease is the accompanying monocytosis. Kocher, I believe, first called attention to the fact that in all cases of true exophthalmic goitre the relative number of polymorphonuclear leucocytes is greatly reduced, while the percentage of lymphocytes is correspondingly increased. It is interesting to note that after surgical treatment for this type of goitre the differential count quite readily readjusts itself to normal in conjunction with the improvement in nervous and cardiac symptoms.

Because of the blood changes, and especially because of the perivascular round celled infiltration observed in sections of an exophthalmic goitre, we are of the opinion that the disease is inflammatory in origin. All sorts of theories have been advanced concerning the etiology of hyperthyroidism, and much stress has been laid upon the possibility of its being either toxic in nature or associated with a deficient secretion of some of the other glands of internal secretion. For the past few months Doctor Morse has cultured all fresh exophthalmic goitres sent to the pathological laboratory at Harper Hospital by Rosenow's method. Only two of true primary type have been received, and both have yielded Streptococcus viridans. Several of secondary type have been cultured, but all have so far been negative. Spacē does not permit of more detail, but there is much evidence to support the infection theory.

Case J. A.—

Date	11-29-'07	1-2-'08	2-10-'08	2-14-'08	12-23-'08
Poly.	40.6	46	Operation	75	68.6
S. mon.	38	33		19	25
L. mon.	13.6	19		5	5.6
Eosin.	6	2		1	0.6
Mast.	1.6	..			

Primary exophthalmic goitre, first count before operation. Recurrence of symptoms January, 1908. Removal of more gland and count following. Patient has remained well with count approximately as on December 23, 1908.

Just one more word about Graves's disease. Formerly it was our rule to remove the largest lobe together with the isthmus and pyramidal lobe or not, as the case seemed to require. In a few cases symptoms recurred after an interval of freedom, and a partial removal of the remaining lobe was necessary to bring about a cure. Now it is my practice in relatively severe cases to remove the greater portion of both lobes, together with the isthmus and pyramidal lobe, and I believe that the results justify the more radical procedure.

Case 5—

	4-13-'09	4-16-'09	4-18-'09	4-21-'09	4-23-'09
Poly.	55.7	Operation	79.6	67.25	67
L. mono.	7.6		3.2	3.75	6.3
S. mono.	35.7		17	28	23.4
Eosin.	1		...	0.5	3
Mast.	...		0.2	0.5	0.3

Differential leucocyte count before and after operation in primary exophthalmic goitre.

Most goitres that the surgeon sees are of the simple or adenomatous type, and are presented for operative procedure for cosmetic reasons. Outside of the thyroid enlargements associated with puberty, and those diffuse varieties which are sometimes improved by the administration of iodine, all goitres should be treated surgically.

When surgical intervention is advised, early operation is practically without risk, but when delayed until the tumor is of such size as to interfere with respiration or deglutition, it makes the task more difficult. The accompanying plates, which have been made by Doctor Hickey, show well some of the deformities frequently associated with large neglected or overlooked intrathoracic goitres.

In conclusion, let me state that it is my belief that any abnormal tissue should be considered as being potentially malignant.

Cancer of the thyroid almost invariably presents a history of a quiescent tumor before rapid growth and, once actual malignancy is established, owing to the impossibility of removing the entire gland and its capsule, operation is of no practical avail.

Case 17—

	4-13-'09	4-16-'09	4-16-'09	4-21-'09	4-23-'09
Poly.	42.7	Operation	69.7	59.7	71.3
L. mono. ...	5.3		6.3	6.6	5
S. mono. ...	49.7		24	30.7	21.7
Eosin.	.3		...	3	2

Differential leucocyte count before and after operation in primary exophthalmic goitre

One accompanying section (Fig. 7) shows a carcinoma simplex which after incomplete removal recurred rapidly with a change to a sarcomatous type of cell.

KRESGE MEDICAL BUILDING.

THE ALLEGED PASSING OF THE HYPOPHOSPHITES.

By THOMAS J. MAYS, M. D.,
Philadelphia.

In its arduous work of refining our materia medica, the Council on Pharmacy and Chemistry of the American Medical Association recently determined to place the hypophosphite preparations on its expurgated list, for the reason "that the therapeutic use of 'these drugs' (except possibly in some cases as a convenient means of administering the positive element in the salt, as ammonium in ammonium hypophosphite) is irrational." (See *Journal A. M. A.*, September 2, 1916, p. 760.)

It must be confessed that this is rather a startling indictment, especially to those who were suffering from the possible deception that these agents had found some sort of a settled place in our medical armament, but, in view of what has recently taken place in the bosom of our Chicago friends, anything but the expected may be looked for.

Why is it "irrational" to give the hypophosphites? "Because," the council says, "there is complete or practically complete elimination of them in the urine," and, therefore, they can have "little or no effect on the body"? Is it the conviction of the council that it is essential for a substance to undergo a chemical change in the body before it is capable of exerting any "effect on the body"? If this were true, how is it possible for the vast majority of our most active medical agents, like strychnine, morphine, aconite, cocaine, etc., to influence the bodily functions? So far as we know, they are all excreted in the proportion in which they are administered.

It appears, however, that when we view this matter aright, the announcement of a "practically complete elimination" is a horse of quite a different color, and actually means that only eighty-five per cent. of the ingested hypophosphites is excreted, and that, consequently, fifteen per cent, remains behind Is the fifteen per cent. supposed to become inert and passive, or is the council following the fate of the ataxic, who stumbles and falls over his own heavy feet? When we reflect that Nature is quite an extravagant mistress in her biological operations, and that, according to Helmholtz, only twenty per cent. of the food that is consumed by the human body is turned into useful work, will any one be rash enough to assert that fifteen per cent. of a rather active drug is without influence when it is brought into contact with the impressible tissues of the body?

What, then, of the fifteen per cent. proportion of the hypophosphites, which, according to the council's own expert, is set loose in the body? Is this modicum capable of exerting the useful and favorable action of the hypophosphites which is asserted for them by a large majority of the medical profession, or does it lie there destitute of any action or power, thus giving proof to the arraignment that their administration is "irrational and unsound"?

It is hardly credible that any one but this council entertains such a thought, for it bears the mark of improbability on its very face. If the hypophosphites were wholly excreted, or if that portion which remains behind were impotent to make an impression on the animal structures, how do the council and its expert account for the fact that when, for example, three out of five young rabbits received these drugs in doses varying from a quarter of a grain to four grains daily for a month, and the last two received none of them, the average gain in weight of the first three was thirty-eight per cent. greater than it was at the beginning of the experiment, while that of the last two increased only elever per cent. during that time? Moreover, it is still more remarkable to find that the increase was exactly proportionate to the amount given to each. Thus, the first rabbit received twice the quantity that was given to the second, and the latter received twice the amount that the third one did—and the increase in weight was 41.35, and twenty-seven per cent respectively.

One other point to which attention is to be drawn here: If the council were longer on facts and shorter on innuendo, it would not make the preposterous statement (for such it is, until proof is offered to the contrary) that the therapeutic value which the hypophosphites possess is attributable to their basic contents. If the council is certain of its ground, it should show some experimental evidence to that effect. In the absence of such verification, its conclusion on this point falls flat.

Unfortunately, at the time when Churchill introduced the hypophosphites into England, more than half a century ago, he prejudiced the profession against them, probably by setting up standards for them which it was believed could not be realized. But, in spite of this antagonistic feeling, which in one form or another has been cropping out periodically ever since, they have grown in favor until the present, when they are employed in all civilized countries. It may not be out of place here to recall the names of the many eminent medical men who investigated the clinical action of these drugs and set their seal of approval on them:

Doctor Dareuberg, author of *Treatment of Pulmonary Phthisis,* two vols.: Owing to great loss of phosphates in the urine, and because the calcareous masses in the lungs are chiefly comprised of phosphates in phthisis, he employs the hypophosphites to reconstitute fibrous tissue which contains much phosphate, etc.

Doctor Charteris: While illustrating the value of the hypophosphites in a record of thirty cases, advises the giving of the lime and soda salts alternately.

Doctor Hodgkinson, physician to the Manchester Hospital for Consumptives: In an experience of twenty years with these drugs, he has obtained the best results in the first and third stages, and believes that they distinctly promote the formation of fibrous tissue.

Dr. Wilson Fox, author of *Treatise on Diseases of the Lungs and Pleura:* Confessing that he has made no extended trial of them, states that their value has been supported by authorities of weight, but believes that the cases treated with them would have been benefited by other treatment.

Dr. Theodore Williams, author of *Pulmonary Consumption:* They have proved of great service as tonics, cause gain in weight, and increase in strength, but their tonic effect is greatest when combined with oil.

Doctor Walshe, author of *Diseases of the Lungs:* Found the general health and the amount of flesh improve under their use.

Doctor Cotton, Medical Times and Gazette: Used it with apparent benefit in some cases, but thinks it liable to derange the digestive organs.

Doctor Denoble, of Ghent, Belgium: Gave it to sixteen patients, two of whom became entirely well, and six were very much improved.

Dr. C. J. B. Williams, physician to the Brompton Hospital for Consumption: The hypophosphites seem to increase the failing powers of respiration and circulation. Can this be by increasing the affinity of the blood for oxygen, so that it can attract it and maintain blood changes, even under the increased difficulties and obstruction produced by the disease? Patients who do well under the oil, but who eventually lose ground, will improve in weight and strength when the hypophosphites are added to the treatment.

Dr. J. C. Thorowgood, member of the Royal College of Physicians, London: physician to the City of London Hospital for Diseases of the Chest; author of *Consumption and Its Treatment by the Hypophosphites:* Out of a large experience he gives the details of thirty-five cases, of which he kept a full history, twenty-four of which (or sixty-seven per cent.) were practically well, and ten (or twenty-eight per cent.) improved, and one died. He says that, "having now been in the habit of using the hypophosphites pretty frequently during the last five years, I am able to say that my faith in their remedial power becomes more and more confirmed, while I recognize the fact that they require to be given with discrimination and care."

In reviewing Doctor Thorowgood's work, Doctor Anstie, editor of the London *Practitioner* (1, p. 237), one of the most distinguished medical writers and critics of England, says, "This modest pamphlet is calculated to make a good many people feel rather staggered and ashamed of certain confident assertions which it has been considered the correct thing to make in medical circles, when the hypophosphites, and the notion of their possibly beneficial effect in phthisis, have been mentioned . . . and now we have Doctor Thorowgood, a physician of very large experience as regards phthisis, and of a particularly candid mind, declaring that the results of trials of the hypophosphites, on a very large scale, are decidedly favorable, and that in a considerable number of cases they produce remarkable benefits."

We consider that the arguments hitherto used in this country, and the statistics adduced to prove the inertness of these remedies in phthisis, are simply worthless. We have no formed opinion on this matter. We simply know, from large personal experience, that the hypophosphites are most energetic agents in certain diseases of the nervous centres, and suspect, strongly, that in a very considerable group of cases of phthisis the morbid process takes its starting point from mischief in these very centres. We, therefore, at least, are not at all surprised or flurried at Doctor Thorowgood's calm statement, as the result of his large experience, of his belief that phthisis does frequently so arise, and that the hypophosphites are a perfectly rational, as well as a practically successful kind of remedy under such circumstances. We recommend this pamphlet to our readers' most serious attention. Close criticism it must and ought to have, but we are heartily tired of the bigotry with which the question has hitherto been treated.

In view of what has been brought forward here, where is the council's justification in stating that it was "the overwhelming weight of evidence against the probability that the hypophosphite preparations are of value as therapeutic agents," that led it to think "it well to investigate the subject"? There is no more defense for this than there is for making the audacious and insolent charge that "many physicians" have become such machinelike tools that they descend to the low and servile level of prescribing the hypophosphites "partly from the force of habit and partly because of the power of advertising."

It is hardly comprehensible that the medical profession has really and finally sunk to this moribund extremity in its efforts to differentiate between the useful and the worthless weapons with which to fight disease. Must all the therapeutic knowledge, experiential and experimental, which has accumulated through centuries of careful medical observation, be submitted to a self appointed censorship, the professional knowledge of which is confined to the comparative narrow limits of chemistry and pharmacy, which is presumably oblivious of all clinical experience in regard to these agents, which endeavors to introduce all sorts of illusory and impossible hypotheses to account for the action of drugs, and which is, therefore, no more capable of sitting in judgment on the weighty and intricate problem that has to do with the art and science of administering medicine, than is the botanist or the biologist, who is also engaged in a calling that is closely affiliated with medicine? It must not be overlooked that when the substances with which these special branches of knowledge deal are applied as curative agents, the new science of pharmacology springs into existence, for the pursuit of which a new mental and scientific equipment is requisite, and to which chemistry, pharmacy, botany, physiology, pathology, etc., are mere contributing agencies.

From the evidence which has been collected in this short discussion, it seems clear that the statements which have been launched by this council with the object of exploiting the worthlessness of the hypophosphites, make a very sorry showing alongside the many valuable therapeutic attributes which these drugs have been shown to possess. Why these agents were selected with the object of illustrating the council's pernicious activity in this direction, is, perhaps, not truly apparent; but, in all candor, it may be affirmed that few other drugs could have been more inappropriately chosen if the purpose was a fault finding one, because not many members of the materia medica have a smaller number of vulnerable points, or possess more lasting and better established claims on scientific medicine than these preparations.

And, finally, it is probably in place to assure the council that the last word on the availability of the hypophosphites has not been said; and to add that, if this body is really imbued with the scientific spirit of enhancing our therapeutic domain—the spirit that endeavors to advance and not to destroy the well attested—it should direct its zeal and attention to the real investigation of the many new and untried measures, and to the improvement of the methods of applying and administering the old. A rich and fallow soil is awaiting its advent.

1829 Spruce Street.

SOME RECENT TENDENCIES IN SURGICAL LITERATURE.

By W. Frank Fowler, M. D.,
Rochester, N. Y.

How often we congratulate ourselves upon thoughts supposedly our own, until a rereading of some nearly forgotten article discloses the source of our impressions. Of such unoriginal ideas this paper is largely composed.

The excellence of surgical papers appearing in the better journals has been increasingly apparent during the past few years. This improvement may be ascribed, in part, at least, to the example of a few truly literary surgeons who set the pace, to a more critical editorial attitude toward submitted manuscripts, and to several recent papers dealing with the subject of medical literature *per se*.

The recent transition from mere statements of facts, theories, and statistics to a narrative style of case reports has no doubt also contributed to an increased interest in medical English. There could be slight incentive to literary effort when the style of medical writing resembled newspaper market quotations. It is probable, too, that a quickened literary conscience is merely a natural part of the general medical uplift: an uplift evidenced by an accomplished standardization of colleges and a contemplated standardization of hospitals.

The journals, themselves, by virtue of superior paper, illustrations, type, and arrangement have attained general attractiveness and excellence. They encourage and demand worthy contributions. It is rather remarkable that the *Annals of Surgery* began publication as recently as 1885, and the first issue of *Surgery, Gynecology, and Obstetrics* did not appear until 1905.

Papers consisting of case reports and general discussions of personal experiences, together with those describing operative technic and experimental surgery appear most prominently. There is abundant evidence, also, of a renascence of surgical pathology for the surgeon, and the diagnostic value of the röntgen ray is given due recognition. Purely theoretical articles and papers dealing with subjects allied to general surgery are comparatively infrequent.

Papers consisting of case reports constitute an admirable method of written surgical teaching. Their worth has been noted by Seelig (1) and others. They have been inconspicuous in modern literature, however, until quite recently. The inherent value and interest of these reports lies in the fact that each one is a chapter from the book of experience. They readily lend themselves to pleasing methods of presentation and are therefore unusually readable and easily remembered.

For example, Lund (2) describes a series of cases of congenital cystic kidney. After considering the theories of etiology he quotes the classification of clinical history according to Milward as follows: 1. The stage of enlargement without subjective symptoms. The tumor may be discovered by accident. 2. The stage of subjective symptoms and objective signs, the signs and symptoms depending upon the size and weight of the tumor; and, 3, the stage of decreased elimination of urine.

He reminds us that both kidneys are usually involved, although one may be very large and the other not palpable; that the enlargement must be differentiated from that due to hydronephrosis or hypernephroma, but diagnosis may be impossible before operation; that the appearance of the cysts is quite characteristic, as they are multiple, are of varying sizes, with more or less functioning kidney tissue between them, and are yellow, green, red, and brown in color; that the function of the involved organs varies with wide limits; that the treatment consists in puncturing as many cysts as practicable (Rovsing operation) in the larger kidney with a view to arresting the disease and thus preventing further impairment of function; that the smaller kidney may be operated upon later, if necessary, and finally, although a cure may not be expected, it is usually possible to prolong life in comparative comfort for varying periods. The writer has summarized Lund's admirable article quite at length because he (the writer) believes that this type of paper is destined to fill an increasingly important place in surgical literature. It cannot, however, supplant other types of papers; each sort has its unique value.

In 1788, the Medical Society of New Haven County, Conn., published a small volume of *Cases and Observations,* containing, among other good papers, Hezekiah Beardsley's Case of a Schirrus in the Pylorus of an Infant (3). It is interesting to note in passing that the "schirrus" of Beardsley is probably the same condition recently discussed by Richter, Scudder, Downs, and others as hypertrophic stenosis of the pylorus. Beardsley's paper was written during the period when medical colleges were inefficient, and medical knowledge was gained principally from the preceptor at the bedside. Following the days of the preceptor, medical education was at a low ebb, the majority of medical colleges were still incompetent, there was no clinical teaching, and case reports appeared only sporadically in the literature.

The modern revival of clinical teaching is reflected in the literature by a return of case reports in the periodicals. We find ourselves consulting these reports more and more frequently for some point of information which may not be found in the textbooks at all, or, if there, is buried in unessentials. The bound journals, with their excellent indexes, constitute a valuable reference library of information, which is up to date, although somewhat limited in scope.

Returning to our analysis of the prevailing types of contributions, we notice a paper by Deaver (4) on gastric hemorrhage, which defines the significance of a symptom, and an article concerning the goitre question by Charles Mayo (5), which discusses the disease in its entirety. Papers by Schmidt (6) and Buford (7), the former relating to nephrectomy during pregnancy, the latter to the surgery of infants and small children, refer to particular classes of patients. An article by Carl Beck (8) concerning plastic operations on the stomach, and another by Horsley (9) on reversal of the circulation in the lower extremity, are typical contributions to the literature of experimental surgery.

Papers relating to technic, such as Porter's (10) description of his boiling water injection into the thyroid, and the contribution of Percy (11) concerning the effect of heat upon carcinoma of the cervix, involve new principles of treatment. The greater number of articles on operative technic, however, refer to the simplification of existing methods and are quite significant of the modern trend. Equally indicative of a present day tendency is the suggestion of Davis (12) that plastic surgery be made a specialty in every large surgical clinic. Davis quite properly reminds us that general surgeons as a rule do this work rather poorly.

Notwithstanding a pardonable pride in reporting brilliant successes, current writings show an admirable tendency toward honest analysis. Thus Beckman (13) reviews the postoperative complications (nonfatal) in a large series of cases, Connell (14) enumerates disappointing results from operations for chronic appendicitis, and Dickinson (15) reminds us that adhesions *do* ensue and death *does* follow operation. Such papers should serve as a check upon exuberant surgical enthusiasm.

Papers requiring drawings to supplement the text, particularly those describing technic, are splendidly illustrated, so well, in fact, that in many instances the text has become subordinated to the illustrations. The services of the few best known artists who specialize in this branch of art are not available for the majority. Nevertheless, the writer has learned from personal experience that the expenditure of a little patience in explaining what is required by means of rough sketches, illustrations from journals, and a few anatomy lessons will enable a capable commercial artist satisfactorily to interpret our ideas. Photographs of operative procedures are apt to be unsatisfactory. The camera will not always make prominent the part which should be emphasized. Blood stains and shiny lights on wet tissues detract from the general effect. Even a retouched photograph is inferior to a good drawing.

According to Garrison, the investigations of Sudhoff show that "up to the time of Vesalius, anatomical and other illustrations were for centuries based upon servile tradition and almost devoid of any signs of original observation." In another place Garrison states that "there were plenty of dissectors and dissections before Vesalius, but he alone made anatomy what it is today—a living, working science." The correlation of medical illustration and medical teaching is obvious.

The same tendency toward case reports and suitable illustrations, which is such a pleasing feature of the periodicals, is apparent also in a lesser, but happily increasing degree in recent textbooks. Seelig (16) says, "The value of adequate illustrations cannot be overestimated. Kelley's *Operative Gynecology* with Broedel's masterly pictures, in 1899, marked a new era and revolutionized the art of medical illustration both in this country and abroad." Few textbooks even today, however, contain such a comprehensive and well illustrated description of an operation as that given by Guthrie (17) of the Rodman breast amputation.

Textbooks of former years have fallen far short of their mission. They have consisted, chiefly, of a formal recital of facts and theories, uninteresting and insufficiently informative. The usual stereotyped lists of symptoms are very misleading, particularly to the young surgeon who has not yet gained the perspective of experience. He is at a loss whether to believe the patient or the textbook.

The didactic and the statistical have an undoubted value and cannot be entirely eliminated, as Seelig (18) reminds us. Nevertheless clinical teaching by means of case reports, notably the work of Cabot (19), is demonstrating its unique worth and is proving that textbooks need not be dry as dust. It is rather significant that Mall, of Johns Hopkins, has entirely done away with didactic, descriptive lectures in anatomy and isolates his student dissectors in separate rooms.

The ideal textbook would consist, as far as possible, of a series of monographic compilations of case reports, with conclusions and full bibliography. Each monograph should be written by a surgeon who is particularly qualified for abstract work and enthusiastically interested in his subject. The writer believes that abstracts of American papers, at least, should be made by the compiler himself. He should have complete knowledge. There will be no difficulty, ordinarily, in obtaining single copies of American journals from the publishers.

As regards style, we should be content to express ourselves simply, with familiar words and in our accustomed manner. Graceful phrases had best be left to those who are skilled in their use. We admire the art of Oliver Wendall Holmes, but we do not emulate it.

McCrae (20) deprecates the prevalent careless use of such medical words as "rheumatism," "asthma," and "biliousness." He cites the patient who told his physician that several doctors had made a diagnosis of rheumatism, but examination (he had never before been examined) revealed a popliteal aneurysm. It is evident, as McCrae states, that a hazy conception of medical terminology is often responsible for incorrect diagnosis. It is also apparent, as in the differentiation between acute osteomyelitis and rheumatism, that such a mistake might be disastrous. McCrae's article and the *Suggestions for Writers of Medical Papers,* by Mrs. Mellish (21), could be read profitably by all of us. Finally, it seems fitting to quote some one who warns us to "say what we have to say and stop."

The writer acknowledges his indebtedness to Dr. F. F. Dow for valued suggestions.

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193 ALEXANDER STREET.

DO YOU KNOW THAT?

By A. L. BENEDICT, M. D.,
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Before the promulgators of this kind of literature are placed in the same class of extrahazardous risks as the men who ask, Is this hot enough for you?—the writer would like to perpetrate a little himself.

Do you know that a gain in weight in a series of cases has been alleged for nearly every discarded system of treating tuberculosis?

Do you know that a healthy man cannot assimilate the amount of codliver oil and other fats often prescribed for tuberculous patients?

Do you know that warm air can be as pure as cold?

Do you know that a window open an inch, with the wind blowing thirty miles an hour and with the outdoor temperature 20 or 30° F. below the initial indoor temperature, will renew the air in a bedroom more quickly than a wide open window on a hot still summer night?

Do you know that a sleeping porch or verandah, inclosed in winter and provided with a gas stove, may contain more impure air than a well heated and ventilated living room?

Do you know that the average healthy physician, compelled to sleep on a cot in a tent, during a snow or rain storm, will forget all about the pneumococcus and insist that he is going to have pneumonia?

Do you know that a cleanly consumptive occasionally sneezes and coughs? Do you know how he is going to prevent the dissemination of bacilli in the resulting spray?

Do you know just what natural factors in disinfection render it possible for us to assure a recalcitrant community of ignorant persons, that a hundred tuberculous patients in an institution in the midst of them absolutely cannot infect their air or water?

Do you know that the same kind of foolishness that a phthisiophobe exhibits is what keeps a great many persons from being run down by locomotives and automobiles?

Do you know that, to insure sufficiently early operation in cancer of internal organs, the surgeon must be called before anything more than a guess as to diagnosis is made?

Do you know that, even then, twenty-five per cent. of cures is almost the highest announced under the most favorable circumstances?—and that ten per cent. is about the best actual achievement?

Do you know that, after the age of fifty years, absence of hydrochloric acid occurs in many more benign than malignant cases?

Do you know that very few cases in which hyperchlorhydria is demonstrated, are of ulcer, and that very few cases in which ulcer is demonstrated go on to cancer of the stomach?

Do you know that about all the positive advice we can give to prevent the development of cancer is: 1. Do not keep picking at a wart or mole, but have it removed; 2, do not allow any source of continually repeated mechanical irritation to remain; 3, do not take up x ray or radium work; 4, do not bear children; 5, do not live more than forty years.

Do you know that it may be impossible to diagnose cancer positively and still be possible to state positively that, if the condition is cancer, it has progressed too far for a radical operation?

Do you know that the rural death rate is higher and the rural birth rate lower than the urban, at least for New York State?

Do you know that a law closing all public restaurants would compel every man to set up housekeeping or starve? You don't? Then why do you think the same kind of legislation would settle the alcohol and social evils?

Do you know that the purity of the little boy is just as precious as that of the little girl? If you do, exert your influence to make the law recognize the fact. If you do not think so, explain how one can be preserved and the other neglected.

Do you know that a house of prostitution, however quiet and even limited to one inmate, would be as objectionable in the immediate neighborhood of your home as a moving picture show? Then do not denounce segregation too strongly.

A CASE OF LEPROSY IN CONNECTICUT.

By John E. Lane, M. D.,
New Haven.

Leprosy is very rarely seen in this part of the United States, and as far as I have been able to determine, only one other case has been seen in Connecticut in recent years. It is for this reason that the following case is briefly reported.

On November 20, 1916, T., aged twenty years, presented himself at the dermatological clinic of Yale University. A detailed description of the findings is needless, as he showed the usual features of a well developed though not severe case of the nodular type of leprosy: Nodules, dirty brownish gray pigmentation, areas of anesthesia, analgesia, and hyperalgesia, general glandular enlargement, and thickening of some of the nerve trunks.

Although the diagnosis was made at first sight, and though it would be unmistakable to anyone familiar with leprosy, it was thought best, in view of possible complications in the future handling of the case, to confirm the diagnosis by laboratory methods. Dr. C. J. Bartlett, professor of pathology in Yale University, School of Medicine, kindly made the examinations for me.

The Wassermann reaction, as is usual in these cases, was strongly positive. Leprosy bacilli were easily demonstrated in smears of the nasal secretion. Sections of an excised nodule were filled with masses of the bacilli.

The chief interest in this case is the illustration of the fact that leprosy patients wander about for a long time without being recognized, as a majority of the physicians have never seen a case of the disease, and quite naturally do not suspect it.

This patient was living in a nearby town, where he had been for six weeks. He was a Greek, born in Thessaly, and he came to New York in 1912. Since that time he has lived in different places in New York, in Pennsylvania, in West Virginia, and in three or four towns in Connecticut.

THE LATE DR. PETER BRYNBERG PORTER.*

By Reynold Webb Wilcox, M. D., D. C. L.,
New York.

Doctor Porter was the son of Peter Brynberg Porter of the old Delaware family who married Ann, daughter of Peter Brynberg, whose ancestors immigrated from Sweden in 1638. His mother was Elizabeth Deacon, daughter of Thomas Canby Alrich, a descendant of Jacob Alrich, the first Governor of Delaware, the progenitor of the family, and an immigrant from Holland in 1655.

He received his preliminary education at the Hyatt Military School, graduated as Bachelor of Arts at Yale College in 1867, received his Master of Arts in due course, and was a member of Phi Beta Kappa. He graduated as Doctor of Medicine at the University of Pennsylvania in 1869, and for two years served in the Philadelphia Hospital. Some years thereafter, he spent a long time in Europe, especially in Italy, and as a result became deeply and intelligently interested in the arts.

In 1871 he came to New York city, where he was engaged in the practice of medicine until his death on August 6, 1915, in his seventy-first year. He was for a time physician to the department of Diseases of Children at the Demilt Dispensary and to the New York Infant Asylum. He was for many years the New York correspondent of the *Boston Medical and Surgical Journal,* and since 1913 was an assistant editor of the New York Medical Journal.

He was one of the incorporators of the Medical Association of the Greater City of New York, in 1899, and was its recording secretary and editor of its Year Books, sixteen volumes, until his death. In these capacities his extensive knowledge of medical literature and accurate appreciation of its practical value, and his large acquaintance with professional men and the work which they were doing, resulted in the upbuilding of a large and influential scientific society, whose programs commanded full and appreciative audiences. Since its inception in 1900 he was the editor of the *Transactions* of the American Therapeutic Society. He was also assistant secretary of the American College of Physicians and of the American Congress on Internal Medicine from their foundation, and a member of the New York Academy of Medicine.

He was a member of the Sons of the American Revolution, and from time to time a contributor to patriotic literature, occasionally in verse.

He was a welcome guest in many of the homes of old New York families, where his broad education and courteous manners endeared him to a large circle of friends.

He was always essentially a student, critical, yet broad and constructive. He was of gentle disposition, charitable in thought and habit, yet ever maintained a high standard in all the associations of life. To those who knew and loved him he was a fine type of medical gentleman.

Health Affairs in New Mexico.—New Mexico is burdened with a law conferring upon the State Board of Medical Examiners the duties of a State Board of Health, without making provision for funds to carry on the work. Its duties consist mainly in licensing applicants to practise medicine, the qualifications of whom need only be mediocre. The law provides that the various county officers shall act under the orders of the State Board of Health in carrying out its regulations. Owing to lack of funds the State Board of Medical Examiners, in its capacity of State Board of Health, must see its functions usurped by the county commissioners. Thus, according to the *Lancet-Clinic* for November 11, 1916, a divided responsibility and a conflict of authority exist both pathetic and amusing. In the meantime, the public schools of the State have no proper sanitary supervision; there is no pretense of medical inspection of school children; and drinking water, especially in many of the rural districts, is obtained from questionable sources. As for vital statistics, "there aint no such animal!"

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*Read at the seventeenth annual meeting of the American Therapeutic Society, Detroit, Mich., June 9, 1916. The Journal's tribute to Dr. Porter's memory appeared in our issue for August 14 1915.

Dietetics, Alimentation, and Metabolism

Food and Food Preparation, in Health and Disease

FOOD AND EFFICIENCY.

By Martha Tracy, M. D.,
Philadelphia.
Professor of Physiological Chemistry, Woman's Medical College, Pennsylvania.

(*Continued from page 1151.*)

VI.

VITAMINE AND INORGANIC SALT REQUIREMENTS.

A quantitative statement of the daily vitamine and inorganic salt requirements of the body can be made with far less assurance than is the case in regard to the total fuel and protein food requirement. The chemistry of the vitamines, as previously stated, is still so vague that no definite measurement of the intake and output of these substances is possible. Experimentation and clinical observation, however, have given abundant proof that very small amounts of these mysterious compounds are sufficient to provide the essential stimulus, or supply the needed material without which the vital reactions cannot proceed.

Vegetable foods furnish the chief sources of these materials, especially the husks and cortical layers of cereals, and the juices of fruits. The potato is one of the vegetables which will most successfully supply to the body this vital need. Fresh meat and milk are also useful, but occasionally the milk of a particular animal has been found lacking in this regard.

Vitamines are variously affected by cooking and preserving processes, some being more thermostable or heat resistant than others, but it is a safe generalization that all are rendered in some degree less useful to the body by a high temperature, certain foods losing entirely their vitamine value by such treatment. The boiling of milk, therefore, the sterilizing to which canned foods are subjected, and the drying and smoking of meat, are all procedures which detract from the value of these foods by robbing them of their vitamine content. Excessive milling of cereals, also, such as is demanded by our craze for pure white flour and white polished rice, by stripping the grains of the cortical layer really renders these foodstuffs of inferior value to the body. A ration containing whole wheat and other unmilled grain products, some fresh food, with raw or lightly cooked vegetables such as lettuce and celery, and fresh fruit and fruit juices, will meet the vitamine requirement without other specific attention to this food requisite.

In our discussion of food requirement thus far, we have dealt with proteins as *nitrogenous* substances, and have laid stress upon the essential presence of this nitrogen in the food which is to serve for construction of nitrogenous or protein tissue. The proteins, as previously noted, however, also contain sulphur and phosphorus and, sometimes, iron and iodine. To build such tissue proteins these elements must be provided and are usually so provided in the protein of the food. Their requirement is, comparatively speaking, very small, and as to sulphur we need take no special thought to supply this element if we keep our protein ration adequate. This will provide about one gram of sulphur a day, which appears to be sufficient to meet the needs of tissue repair and to keep the body in a condition of sulphur equilibrium.

Phosphorus is needed in the body, not only to build into the protein of all the cells, but also in the construction of special phosphorized fats, or phosphatides, which are conspicuous as essential constituents of nerve tissue. In addition phosphorus must be supplied to provide the inorganic or mineral phosphates, chiefly of calcium, which give rigidity to the bones and teeth, and also to furnish the mineral phosphates of the blood. We find that some of this phosphorus supply must come to the body in previously constructed organic compounds, in the form of phosphorus-containing proteins such as casein of milk, and vitellin of egg yolk, etc., or in the form of simpler organic molecules called phytates, which are present in the husks and cortical layers of grains. If the greater part of the phosphorus requirement is thus met by the use of the food materials mentioned, the body can and does, for the completion of its daily need, avail itself of inorganic phosphates, such as are found in meat (muscle tissue containing acid potassium phosphate), in the whey of milk, and in fruit and vegetable juices.

In all, from 0.9 to 1.5 gram of phosphorus a day is necessary for normal metabolic processes. From a study of statistical dietaries of American families there is thought to be suggestive evidence of a tendency to deficient phosphorus food supply, and there is a growing appreciation of the fact that some of the nutritional disturbances difficult of recognition and, heretofore, of control, may in all probability result from a disturbed or inadequate phosphorus metabolism. It is interesting to note that, while cow's milk has a higher *total phosphorus* content than has human milk, the *organic phosphorus* is about the same in both. When, therefore, we dilute cow's milk in "modifying" it for infant feeding, in order to bring the protein and total salt content down to that of human milk, we are diluting also, with the fat and sugar, the organic phosphorus-containing compounds. We replace the fat and sugar by adding cream and lactose, but we do not as a rule remember to restore the organic phosphorus, and we may have here a clue to the failure of modified cow's milk with certain infants.

The element iron is an essential part of the characteristic protein, hemoglobin, which is the chief constituent of the red blood corpuscles, giving the color to these cells. Iron is also present in the nuclei of all cells, and so must be considered of fundamental importance in relation to cell multiplication and reproduction, a function residing in this part of the cell. About three grams of iron are believed to be present in the entire adult body, and as nearly as can be estimated about fifteen mgms. of iron a day will furnish an adequate supply for the maintenance of iron equilibrium. This iron must be supplied in organic form, in egg yolk, in the hemoglobin or its derivatives retained in red meats, and in vegetable organic compounds such as are relatively abundant in spinach, oatmeal, entire wheat flour, in breakfast foods, in peas, beans, raisins, and prunes. Iron in inorganic form, such as is frequently given medicinally, appears to serve only as a stimulant to the production of hemoglobin from the materials in iron-containing foods, but is probably not itself used in tissue construction.

The chief iodine-containing tissue of the body is the thyroid gland and its secretion, and our knowledge of the iodine food supply is excedingly vague. In certain geographical areas of the earth there occurs deficient development of this gland, and no food substance has been found to remedy this deficiency. In such cases the feeding with the dried thyroid tissue of another and normal animal provides the only recognized means of supplying the lacking material.

Calcium is a mineral substance of great importance for the building of bones and teeth (calcium phosphate and calcium carbonate), and as a constituent of the salts of the blood and lymph. Ninety-nine plus per cent. of calcium is in the bones, but the remaining fraction of one per cent. occurring in the body fluids is of vast importance in relation to the irritability and contractility of muscle tissue; the proper balance between contraction and relaxation of the heart muscle, for example, being related to the proper proportions of calcium, sodium, and potassium salts. According to Meltzer, "calcium is capable of correcting the disturbances of the inorganic equilibrium in the animal body whatever the directions of the deviations from the normal may be. In any abnormal effect which sodium, potassium, or magnesium may produce, whether the abnormality be in the direction of increased irritability or of decreased irritability, calcium is capable of reestablishing the normal equilibrium."

The amount of calcium necessary in the food to maintain in the body a normal supply of this element is not yet determined with definiteness. It appears that the equivalent of about 0.7 gram of calcium oxide a day will maintain calcium equilibrium in a normal man. In childhood, where construction of bone is going on, a greater amount of calcium is obviously necessary. Here, as with phosphorus, American dietaries show a tendency to deficiency in calcium-containing foods, and the infant changing at weaning from a milk diet with abundant calcium, 0.17 per cent. calculated as calcium oxide, to a diet of bread and meat containing respectively 0.06 per cent. and 0.01 per cent., is liable to suffer from lack of sufficient calcium for bone construction. Eggs and green vegetables contain a higher percentage of calcium salts, but the free use of milk is perhaps the simplest and most effective way of meeting the calcium requirement in children.

In sodium chloride, common salt, are two elements, sodium and chlorine, which are indispensable constituents of the body fluids. The chlorine is an essential element in the hydrochloric acid of the gastric juice, and the sodium chloride itself is present in the blood and lymph plasma. On a meat diet sufficient sodium chloride is coincidently ingested in the retained blood salts of this animal tissue. In a vegetable diet, however, this salt is not naturally present, and by reactions within the body some of the normal chloride supply may be led to form substances which are excreted, and the need of more chlorine may arise. Thus vegetarian animals, as well as man on a similar diet, crave salt as a necessary food constituent.

Potassium and magnesium are elements that are found in the form of salts in the fluid and solid tissues of the body, and are received incidentally in the food supply, chiefly as potassium and magnesium phosphates.

Of these mineral substances sodium chloride is the only one likely to be taken in deleterious quantity, and those who add salt in unnecessarily large amounts to every food would do well to curb this perverted appetite and avoid the constant strain and burden of excretion of this substance which mere habit thus places upon the kidneys.

We have elsewhere referred, however, to the fact that excess of protein will tend to yield acids in the body, such acids being the result of oxidation of the phosphorus and sulphur contained therein. The neutralization of such acids will require reaction with them of the base forming elements, sodium, potassium, and calcium, which may thus be withdrawn from other needful duties in the body economy. The limitation of the protein intake is therefore also to be recommended from this point of view of avoiding excess of acid forming foods.

VII.

BULK REQUIRED IN FOOD STUFFS.

Having thus established with a considerable degree of scientific precision just what materials, and how much of each, must, for efficiency's sake, be present in an average day's ration, is this the end of the story? The suggestion crops up from time to time that it would be convenient and time saving to prepare of these necessary foodstuffs, nicely purified and concentrated, neat little packages or pellets which could readily be carried in the pocket and swallowed at appropriate intervals, thus avoiding the annoyance and interruption of the day's work or pleasure for meals. Unfortunately for those to whom such a suggestion appeals, but fortunately for those of us who enjoy the pleasant relaxation of mealtimes and the taste of food, such a procedure proves to be entirely contrary to Nature's plan.

The food materials containing the necessary specified ingredients must undergo chemical changes in the gastrointestinal tract before they can be of use to the body, and for the accomplishment of such changes the digestive juices are necessary. These juices are secreted by the glands of the stomach and intestines under the influence of definite stimuli, and the agreeable taste of foods in the mouth furnishes a very important psychic stimulus to such so called appetite secretion. The wise physiologist, Voit, defines a food as a "palatable mixture of foodstuffs which is capable of maintaining the body in an equilibrium of substance." A food pellet washed down with a swallow of water would meet an unprepared gastric mucous membrane with no appetite juice ready to handle it promptly and properly.

The concentration of the food materials is also far from desirable. Food substances in more or less resistant and hard condition are of great advantage in providing needful exercise for the teeth and muscles of mastication. During the process of mastication the truly soluble and digestible parts of the food are separated from the coarse protecting fibres and husks, the taste buds are stimulated, and there is pleasure and satisfaction in the sensations produced. These coarser and indigestible parts of our ordinary food mixtures are also of value in giving bulk to the material ingested and thus furnish a mechanical stimulus to the muscular movements of the digestive tract. If these movements are not sufficiently active, there will be incomplete commingling of digestive juices with the food, chemical changes will be incomplete, absorption of the products of digestion will be hindered, putrefactions and fermentations due to bacteria will occur, and the residue of indigestible and undigested materials, with also such substances as are excreted from the blood into the intestinal canal, will not be moved along and properly removed from the body.

The essential food ingredients upon which we have laid such stress must, therefore, be presented to the body in such form as will taste good and create appetite, and must be intermingled with coarse and even indigestible substances whose presence is of advantage only as a matter of bulk. Condiments of various sorts are, in reasonable amounts, legitimate stimulants to the flow of digestive juices. The extractives or juices which give the agreeable flavor to meats and clear soups, are really no more than such appetizers, but are very desirable and useful from this point of view. On the other hand, the cellulose fibres of coarser vegetables, cabbage, turnip, spinach, etc., are of no value as appetizers, but are extremely useful as bulky foods, since they promote the peristaltic or muscular movements of the intestinal tract, and prevent constipation. Fruit juices are also important stimulants to peristalsis, and a glass or two of water taken with the meal will also promote chemical changes, absorptive function, and motor activity.

(*To be concluded.*)

The Treatment of Diabetes by Alimentary Rest.—O. Leyton, P. J. Cammidge, and John Hume (*Practitioner*, November, 1916) contribute three papers to this subject in which much attention is paid to the details of the diet. Leyton's procedure is as follows: For two days the patient is placed upon a diet poor in fats, e. g., for breakfast, two eggs and some special bread poor in carbohydrates, with a spoonful of marmalade made without sugar, a cup of weak tea with a little milk. For lunch, three ounces of lean meat, six ounces of cooked cabbage, two ounces of boiled potatoes, and a small baked custard pudding. For supper, a cup of tea with a little milk and a diabetic biscuit. For dinner, a plateful of clear soup, four ounces of fish other than salmon, herring, or mackerel, four ounces of cooked green vegetables, an egg, and an orange. After the second day the patient remains in bed and takes a Seidlitz powder on an empty stomach in the morning. If this does not act satisfactorily, an enema must be given. During the period of alimentary rest the meals are: Breakfast, three ounces of clear broth and six ounces of weak coffee without milk or sugar Lunch is exactly similar. Supper, six ounces of weak tea without milk or sugar. Dinner, similar to breakfast with perhaps six ounces of weak tea instead of coffee. It is essential that each article of food be prepared as directed, and to have the fluids given in cups that hold no more than the prescribed quantity. Weak coffee is made by pouring ten ounces of boiling water on one or two heaped teaspoonfuls of freshly ground coffee in a jug that has been heated, allowing it to stand five minutes, and then straining. Weak tea is made by pouring ten ounces of boiling water upon one heaped teaspoonful of tea and allowing it to stand for three minutes. Clear broth is made by adding an eggspoonful of meat extract that is not rich in protein to three ounces of boiling water. A vegetable is to be boiled in at least four times its weight of water: after it is fully cooked it is to be freed from water and weighed, then stewed for a quarter of an hour in a little clear broth and flavored with pepper and salt to taste. When it is to be cooked in several changes of water, two saucepans are necessary; when it is partly cooked in one it is to be transferred to the boiling water in the other. Cabbage boiled in three waters may replace French beans in the following dietary, which is started when the urine is free from sugar:

First day. Seidlitz powder. Breakfast: Six ounces of weak coffee without milk or sugar; three ounces of cooked French beans. Lunch: Six ounces of weak coffee without milk or sugar; four ounces of cooked French beans. Supper: Six ounces of weak tea without milk or sugar. Dinner: Six ounces of weak tea without milk or sugar; three ounces of cooked French beans. Carbohydrates, six grams; protein, three grams; fat, four grams; calories, 72.

Second day. Seidlitz powder. Breakfast: Six ounces of weak coffee without milk or sugar; seven ounces of cooked French beans; one boiled egg. Lunch: Seven ounces of cooked French beans; one boiled egg. Supper: Six ounces weak tea without milk or sugar. Dinner: Seven ounces of cooked French beans; one boiled egg. Carbohydrates 11, protein 23, fat 22, calories 334.

Third day. Seidlitz powder. Breakfast: Six ounces of weak coffee with one teaspoonful of cream; one boiled egg; seven ounces of raw lettuce. Lunch: One egg; seven ounces of cooked cucumber. Supper: Six ounces weak tea with one teaspoonful of cream. Dinner: Seven ounces of cooked French beans; one egg. Carbohydrate 16, protein 24, fat 21, calories 349.

Fourth day. Seidlitz powder. Breakfast: Six ounces weak coffee with a teaspoonful of cream; one boiled egg: seven ounces of raw lettuce. Lunch: Seven ounces of cooked cabbage; one egg. Supper: Six ounces of weak tea with a teaspoonful of cream, no sugar. Dinner: Seven ounces of cooked French beans; one egg. Carbohydrate 21, protein 25, fat 21, calories 373.

Fifth day. Seidlitz powder. Breakfast: Six ounces weak coffee with a teaspoonful of cream; one egg; seven ounces raw lettuce. Lunch: One ounce cooked lean meat; seven ounces cooked cabbage. Supper: Six ounces weak tea with a teaspoonful of cream, no sugar; one egg. Dinner: Eight ounces clear soup; one egg; seven ounces cooked French beans. Carbohydrate 21, protein 38, fat 23, calories 442.

Sixth day. Breakfast: Six ounces weak coffee with one teaspoonful of cream, no sugar; one egg; seven ounces raw lettuce. Lunch: Three ounces cooked lean meat; four ounces boiled French beans; one and a half ounce boiled potatoes. Supper: Six ounces weak tea with one teaspoonful of cream, no sugar; one egg. Dinner: Three ounces of cooked French beans; three ounces of cooked cabbage; one egg. Carbohydrate 25, protein 50, fat 29, calories 561.

Seventh day is a fast day. Seidlitz powder first thing in the morning. Breakfast: Three ounces clear soup; six ounces weak coffee without milk or sugar. Lunch: Three ounces clear soup; six ounces weak coffee without milk or sugar. Supper: Six ounces weak tea without milk or sugar. Dinner: Three ounces clear soup; six ounces weak tea without milk or sugar.

Eighth day. Breakfast: Six ounces weak coffee with one teaspoonful of cream; one egg; one ounce of cooked fat bacon; seven ounces of raw lettuce. Lunch: Two ounces of cooked lean meat; four ounces cooked French beans; one and a half ounce boiled potatoes. Supper: Six ounces weak tea with one teaspoonful of cream, no sugar; one egg. Dinner: Eight ounces clear soup; one egg; three ounces cooked cabbage; three ounces cooked French beans. Carbohydrate 25, protein 51, fat 41, calories 673.

Ninth day. Breakfast: Six ounces weak coffee with one teaspoonful of cream, no sugar; one egg; two ounces cooked fat bacon; seven ounces raw lettuce. Lunch: One and a half ounces cooked lean meat; four ounces cooked French beans; two ounces boiled potatoes. Supper: Six ounces weak tea with one teaspoonful of cream, no sugar; one boiled egg. Dinner: Ten ounces clear soup; one egg; three ounces cooked French beans; three ounces cooked cabbage. Carbohydrate 28, protein 54, fat 54, Calories 814.

Tenth day, same as the ninth, except for the addition of an ounce of butter tō the vegetables. Calories 1,039.

Eleventh day. Breakfast: Six ounces weak coffee with one teaspoonful of milk, no sugar; one egg; two ounces cooked fat bacon; seven ounces raw lettuce. Lunch: One and a half ounces cooked lean meat; four ounces cooked French beans; one ounce boiled potatoes; one half ounce butter. Supper: One half ounce white bread; six ounces tea with one teaspoonful of milk or cream; one half ounce of butter; one egg. Dinner: Eight ounces clear soup; one egg; three ounces cooked cabbage; three ounces cooked French beans; one half ounce butter. Carbohydrate 31, protein 54, fat 90, calories 1,150.

Twelfth day, same as the eleventh, with the addition of one ounce of butter. Calories 1,375.

Thirteenth day. To the diet of the eleventh day add two ounces of butter and half an ounce of white bread, taking care to spread the carbohydrates equally over the four meals. Not more than a half ounce of bread at each meal. Calories 1,660.

The fourteenth is a fast day, with a diet in every respect similar to that of the seventh day.

Fifteenth day similar to the thirteenth. From this time on the increase in the diet should consist of one ounce of boiled potato on alternate days, or, if the patient prefers, a quarter ounce of bread may be added on alternate days instead. A further increase of one ounce of butter or fat should be made on the twentieth day. The twenty-first day should be one with a modified diet. Bread and potatoes should be withheld.

When sugar reappears in the urine, the patient must fast until it disappears again; usually thirty-six hours suffice. The carbohydrate is then reduced to one half of that which was in the diet, and then increased very slowly five grams a week until the sugar appears again. The second limit must be recognized as the amount which is too much for the patient, and not more than three quarters should be given in the food for several months. Many diabetics manifest glycosuria on being given an excess of protein; then the limit must be found and the diet arranged so that not more than three quarters of the amount is given.

Both Leyton and Cammidge give tables showing the protein and fat content of various foods, which are much too long to reproduce here. The dietary Hume allows after the sugar has disappeared from the urine differs considerably from the one just quoted from Leyton, and does not seem so exacting, but the urine should be examined after each meal. He gives for breakfast two ounces of oatmeal well boiled and taken with cream; three ounces of smoked bacon and one whipped egg fried; tea with a little cream, and saccharin if desired as a sweetening agent; eight ounces of fresh white fish may be substituted for the bacon. Midforenoon: A glass of equal parts of cream and warm water, or one glass of warm lemon juice to which one teaspoonful of glycerin has been added. Dinner: Six ounces of roast meat, with green vegetables and the centres of boiled potatoes; custard unsweetened, flavored with lemon or vanilla, and taken with cream if desired. As a third course Gorgonzola cheese with lettuce is suitable. Soup and eight ounces of white fish served with butter may occasionally be taken in place of the roast meat. Supper: A glass of lemon juice or diluted cream or tea with saccharin may be taken. Six ounces of fish, or three ounces of butcher meat with vegetables or tomato; fish may be taken if roast meat was served with dinner. Soda water or beer is a suitable drink for the evening meal. The patient should be instructed to take only very limited quantities of bread. If sugar reappears, a fast is arranged. If this is caused by the protein, it may be necessary to restrict the whole diet. He has not found it necessary to estimate the the value of the food consumed in heat units, or to go into minutiæ of analyses, details which are difficult to obtain accurately in a hospital, let alone in private practice.

Editorial Notes and Comments

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THE DIAGNOSIS OF SCURVY IN INFANTS.

The fact that a child is fat is generally accepted as an evidence that it is in good health. It not infrequently happens, however, that infants who are fed artificially gain in weight and present a plump appearance, although they suffer from scurvy or other diseases caused by errors in diet. A distinguished orthopedic surgeon of New York recently stated that hardly a week went by without having an infant brought to his attention on suspicion of some skeletal fault which on examination turned out to be a victim of infantile scurvy. This has occurred so frequently that this particular surgeon has come to be quite an expert in the diagnosis of this disease.

While some of these cases are brought to the orthopedist by laymen, many are sent by physicians who would undoubtedly be able to make a correct diagnosis had their suspicions once been aroused as to the real nature of the disease. Scurvy in infants is characterized by marked prostration, anemia, and general debility. The child is apt to lie with the legs drawn up and immobile and any attempt to move the legs causes pain. Later the limbs become tender to the touch or everted and immobile, a condition of pseudoparalysis which, in the presence of an epidemic, might easily mislead the observer into pronouncing the case one of poliomyelitis. The later symptoms, including epiphyseal fractures, thickening of the bones, prolapse of the eyeball, puffiness of the upper lid, and subconjunctival ecchymoses, are so characteristic that they are not likely to be overlooked. It is in the earlier stages that the mistake in diagnosis is apt to occur, and here an inquiry into the diet of the infant will generally furnish a clue. Fortunately, infantile scurvy is not only diagnosed with ease and certainty, but it readily yields to orange juice, lime juice, and other recognized antiscorbutic agents.

THE GOLDEN AGE.

While we may fancy our present time one of most extraordinary advance in medical science, the golden age—the age which marked the most Brobdignagian steps in scientific discovery, making possible the progress of our present period—was the seventeenth century. In this year of the celebration of the tercentennial of the death of Shakespeare it is appropriate to call attention to the fact that many of the greatest minds in science arose, chiefly in the same country, and contemporaneous with, or just following the time of the great dramatist. It piques our curiosity to know what conditions produced, in such short sequence, so many great thinkers.

William Harvey stands foremost among the great men of this age, and his idea of the circulation of the blood was probably first presented in 1615 or 1616, though his book on *The Motions of the Heart and Blood in Animals* was not published until 1628.

The discovery of the movement of the blood through the capillaries, which Harvey saw only in imagination, was delayed until the invention of the compound microscope. The capillary circulation was first seen in the capillaries of the lungs by Malpighi, in 1668, while Leeuwenhoek, the Dutch scientist, in 1686, studied the general capillary circulation in the tail of the tadpole. The same man first described accurately the red corpuscles. He also investigated the structure of the teeth and of muscle and, last but not least, discovered bacteria in the tartar of the teeth. Willis, who described the circulation of the brain, and named the cranial nerves, belongs to the same century. The transfusion of blood in both animals and human beings is also noteworthy of this age.

The foundations of the physiology of respiration were laid by the versatile Robert Hook, who, in 1667, showed before the Royal Society a dog, without its ribs and diaphragm, which he kept alive by blowing air into the lungs by means of a bellows. He first pointed out that "a sufficient supply of fresh air" is necessary to life, and that the lungs have other functions than the cooling of the body. Hook also discovered and named the cell, and made many other contributions to science. John Mayow (1674) practically discovered that it was oxygen, though he gave it another name, which, in air, is essential for animal respiration, and that it was taken into the blood. The work of Robert Boyle, who worked in conjunction with Hook, helped to forward the study of the respiratory function.

Names of great men of this period might be multiplied, but we will add here only one other, that of Regnier de Graff, of Holland, who in 1677 was probably the first to obtain the digestive juices by means of artificial fistulæ. He made valuable studies of the ovary under various conditions, and his name has rightly become connected with the follicle.

Not only had the age its great investigators, but it was golden in its product in scientific reflection, for there stands out no less a figure than that of Sir Thomas Browne, whose *Religio Medici* has not been surpassed among medical writings for ingenuity and depth of thought, or for quaintness and vigor of style.

IS PROSPERITY SHORTENING OUR LIVES?

At the tenth annual convention of the Association of Life Insurance Presidents, held in New York recently, many and solemn were the warnings issued to the "pink, plump, smooth, and healthy looking American, hurrying, nevertheless, to his grave at forty years." The milk in the cocoanut appeared in the peroration of one of the speakers, who said. "The prosperity of our patrons necessarily interests us for with extravagance comes poverty and increases in policy borrowings and cash surrenders, and the loss of insurance protection to numberless families." Another orator, ignorant or heedless of how presbyopia descends upon the just and the unjust, attributed the frequent eyeglasses to strain by "close focus and inside work." A third speaker mitigated somewhat the alarming language of his predecessors by stating that the people of the United States carried more life insurance than all the other inhabitants of the earth put together.

There was a time doubtless when our countrymen put more money into insurance than they do now, because they did not find it easy to put it anywhere else. With the development of the savings bank, and especially of the postal bank, vast sums are diverted in their direction. Men, too, like to enjoy the fruits of their investments, and to accomplish that through insurance, they are obliged to take out the very costly endowment policies. Then perhaps they have not yet forgotten the merry investigation of the insurance companies by former Governor Hughes, and believe that too much of their money was expended on junketing, on violets for horses, and on entertainments for actresses. They are persuaded that the companies could be still more economical than they have learned to be; that they might shave perhaps another dollar off the doctor's examination fee. Ought not a doctor to examine candidates for insurance gratis? The public are an ungrateful lot. at best, and the more the companies do for them, the less thanks they will receive; particularly when the public observes the rather obvious prosperity of all officers of insurance companies. Still, if investment in insurance grows at the rate of one billion a year, what must have been the growth in times past, at which the officers gaze so longingly?

PHYSIOLOGY OF THE EIGHT HOUR DAY.

So important a matter as the proper length of the working day should by no means be left solely to the dictation of sentiments of social reform, economic improvement, or political exigency. If there is any rational basis for a proper working day, it must of necessity rest fundamentally on physiological grounds. Such is the argument ably and soundly defended by Frederic S. Lee (*Science*, November 24, 1916, p. 727).

Tracing the development of the eight hour working day, Lee finds that it has been fostered by a variety of motives, some good and some bad, but that the movement is sound and rational only so far as there are physiological grounds for it. Such grounds do exist. It takes no details of laboratory study to show the actual evil effects of a working day of fifteen hours, especially on women or children, and such conditions are disappearing. But there is abundant testimony of indubitable authority, specimens of which are cited by Lee, showing that the decrease of the working time from twelve to ten, from ten to nine, and finally from nine to eight hours, was in each case accompanied by a decided increase of output. Each change gave a definite and often quite extensive improvement in both quality and quantity of work done. The data on which these statements rest are too voluminous to quote but are available for the student.

Lee notes that the logical determination of the proper working day, since it rests finally on physiological grounds, cannot be made by legislation, nor can a hard and fast rule be established to which all workers must conform. The elements which make up fatigue are numerous and are psychical as well as physical. Occupations characterized by much muscular exertion, unusually quick or complex muscular action, often repeated monotonous single acts, constant strain of body or attention, and those carried on in crowded or unhygienic quarters, according to Lee predispose to a fatigue which may easily run over into exhaustion. He believes that more exact studies are needed on these fatigue factors in occupation, and also of the individual variations of susceptibility to fatigue. Because of the absence of trustworthy data on these points, it is hard to say absolutely that an eight hour working day is a physiological necessity. Professor Abbe, of Jena, is quoted as believing the eight hour day the ideal, and worthy of being sought by all industries. Such a conclusion is a temporary makeshift, however, and only postpones the real problem.

One paragraph in Lee's article should be quoted in full: "By so much as a man rises above this stage (of being employed by others), he becomes free to choose his own working time. It is a noteworthy fact that with the world's leaders, in industry, in finance, in professional life, the duration of the daily task is wholly secondary to its accomplishment. They are limited by no eight hour, ten hour, or twelve hour considerations. This indicates why such men become leaders. Laborers may learn a valuable lesson from this fact. The greedy employer who constantly saps the energies of those who are the medium by which he gains his wealth, is to be condemned no more than is the 'slacker' whose only guiding principles are a minimum of effort and a maximum of wage. Moreover, it is trite to say that the obligation rests upon the laborer that rests upon all men, so to use his free hours as to benefit himself, his family, and society."

These principles are sound, and if a true adjustment of such industrial questions is to be reached, it must primarily be on the basis of physiological requirements.

WAR AND PSYCHANALYSIS.

Many interesting revelations in the domain of functional nervous disorders have been disclosed by the present European war. In the first place, the old dictum that nervous conditions do not manifest themselves externally has been verified by the large number of neurotic candidates that passed the physical examination only to break down under the first severe strain in the training camps or trenches. It is quite evident that only men with strong constitutions are fit for the mental and moral shocks of war. Another important observation derived from a survey of the nervous victims is the realization that modern warfare imposes tremendous nervous tension and mental strain, so that adequate provision should be made to take care of all the neuropaths. This is a phase of preparedness that we should do well to keep in mind, and in which we may profit by the experience of others. Finally, some interesting light has been gained from the war concerning Freud's theories of the psychoneuroses, and the value of psychanalysis as a form of mental training. The severe demands of war and the rigid discipline of military training have quickened the instinctive emotions and transformed the repressed energies into great and heroic bravery. Suppressed desires and buried complexes may be factors in the blight of overcivilization, but in time of war these primal instincts find an outlet for themselves in the call of duty and patriotism. However helpful psychanalysis may be in time of peace, in time of war such methods appear unnecessary and undesirable. In fact, the conviction is forced on us that well directed discipline is superior to psychanalysis at all times, and that personal development and happiness cannot be divorced from self sacrifice. It is fair to assume that some of the concepts regarding the fixation of the libido, and the correct psychanalytical treatment will be greatly influenced by the experiences of the war.

COUGH AND THE LINGUAL TONSIL.

In his address as president of the Section in Laryngology of the Royal Society of Medicine, delivered on November 3rd, Mr. T. Mark Hovell, according to the *British Medical Journal* for November 18th, dwelt on the part played by enlargement of the lingual tonsil in the production of paroxysmal cough. He said that the tickling cough which was common after influenza, and might follow a simple cold or occur without known cause, was frequently due to enlargement of the lingual tonsil, the cough apparently being produced by the swollen tissue coming into contact with the epiglottis. A solution of chloride of zinc, fifteen to thirty grains to the ounce, with a trace of dilute hydrochloric acid to dissolve the salt thoroughly, was in many cases sufficient to remove the trouble, but the best remedy was trichloracetic acid, applied on a wool holder bent at a right angle, with only a very thin layer of wool attached to it, so as to insure the quantity of acid being small. A mirror should be used so that the acid might be placed accurately on the swollen tissue. He related two cases, in one of which paroxysmal cough had been very troublesome for fifteen and in the other for seven years; in both the cough diminished as the swelling of the lingual tonsil decreased.

News Items

Changes of Address.—Dr. William Van Pelt Garretson, to 11 East Forty-eighth Street, New York.

Endowment Fund of the Woman's Medical College of Philadelphia.—Announcement is made that on Wednesday, December 13th, $80,000 had been subscribed of the $200,000 which the college is endeavoring to add to the endowment fund of the institution.

Harvey Society Lectures.—The next lecture in the course will be given on Saturday evening, January 13th, by Professor E. V. McCollum, of the University of Wisconsin, his subject being the Supplementary Dietary Relationships Among Our Natural Foodstuffs.

Philadelphia Clinical Association.—The following officers have been elected to serve for the year 1917: President, Dr. Edward S. Saylor; first vice-president, Dr. Carl Lee Felt; second vice-president, Dr. C. S. Barnes; treasurer, Dr. William McKeoge; secretary, Dr. William Ruoff; governors, Dr. B. F. Devitt, Dr. C. S. Falls, and Dr. Edward Moore.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Tuesday, December 26th, West Philadelphia Medical Association; Wednesday, December 27th, County Medical Society; Thursday, December 28th, Pathological Society, Northwest Branch of the County Medical Society, Stomach Hospital Gastroenterological Society; Friday, December 29th, Medical Club (directors).

Civil Service Examinations.—Among the positions for which the Civil Service Commission of the State of New York will hold examinations on January 27th is that of intern in the Oneida County Hospital, Rome, N. Y., salary $900 a year, with maintenance. Candidates must be licensed medical practitioners or be eligible to take the licensing examination in New York State. An unmarried man is preferred. For full particulars address the State Civil Service Commission, Albany, N. Y.

Public Health Lectures in Boston.—A course of free public health talks is being given under the auspices of the Massachusetts Homeopathic Hospital, at the Department of Clinical Research and Preventive Medicine, Evans Memorial, on Tuesday evenings, at 8 o'clock. The course began on November 7th, with a lecture on Infantile Paralysis, by Dr. Mark W. Richardson, and will continue through December, January, February, March, and April, the last lecture being on April 24th by Dr. Orville R. Chadwell, on the Summer Care of Babies.

A Memorial to Doctor McCorkle.—It is announced that the late Dr. John A. McCorkle had set aside, in trust, bonds of the market value of $50,000 which became payable to the Long Island College Hospital upon his death; and for that reason this gift was not known at the time of the reading of his will. It is one of the largest gifts that has ever been made to a medical college and hospital by a physician in active practice. A committee of prominent citizens, headed by the Hon. Edgar M. Cullen, is endeavoring to raise an equal amount as a memorial fund to the late Dr. John A. McCorkle.

Medical Society of the County of New York.—A stated meeting of this society will be held in Hosack Hall, New York Academy of Medicine, Tuesday evening, December 26th, under the presidency of Dr. Frederic E. Sondern. An important feature of the program will be a memorial presenting the medical aspects of birth control, by a special committee composed of Dr. A. Jacobi, Dr. A. L. Goldwater, Dr. M. C. O'Brien, Dr. S. A. Tannenbaum, Dr. Frank Van Fleet, Dr. Charles E. Nammack, Dr. H. C. Taylor, Dr. W. H. Bishop, and Dr. G. W. Kosmak. The subject of infantile paralysis will be discussed as follows: Its clinical aspects, by Dr. Philip Van Ingen; its communicability, by Dr. Charles Gilmore Kerley; and the work of the health department in controlling it, by Dr. Haven Emerson, commissioner of health. The January meeting of the society will be devoted to a discussion of Compulsory Health Insurance.

Harvard Medical School.—At the last meeting of the president and fellows of Harvard University, six appointments were confirmed and the award of thirty-five scholarships in the Harvard Medical School was announced. Dr. Francis M. Rackemann was made alumni assistant in medicine, Dr. James H. Means and Dr. Joseph C. Aub were appointed teaching fellows in medicine; Dr. Harry C. Solomon, instructor in psychiatry; Dr. Charles E. Sandos, assistant in psychiatry; Dr. Charles A. McDonald, assistant in neurology.

Personal.—Dr. Joseph Sailer, professor of clinical medicine, University of Pennsylvania, delivered an address at the New York Academy of Medicine, Thursday evening, December 21st, his subject being Clinical Aspects of the Diseases of the Ductless Glands.

Dr. Arthur Allen Struthers, of Cliftondale, Mass., sailed from San Francisco, Cal., on December 19th for Melbourne, Australia, where he will take charge of a homeopathic hospital.

Dr. Henry A. Bernstein has been elected obstetrician and associate gynecologist to the Beth David Hospital, Lexington Avenue and 113th Street, New York.

Convocation Week Meetings of Scientific Societies.—The American Association for the Advancement of Science and many national scientific societies will meet in New York during convocation week, beginning Tuesday, December 26th. Among the national societies to meet at that time are the following: American Chemical Society, Eugenics Research Association, American Psychological Association, American Association of Bacteriologists, American Association of Anatomists, American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics, and the American Society for Experimental Pathology. The last named four societies compose the Federation of American Societies for Experimental Biology, whose executive secretary is Dr. Peyton Rous.

St. Nicholas Hospital.—This is the name of a new hospital which is to be erected in the near future in the Washington Heights section of New York. It will occupy a site running through the block between St. Nicholas and Edgecombe Avenues at 148th Street. The first building will be erected as a unit, and, according to plans now being prepared, this unit will be a five story fireproof building, with accommodations for sixty patients. Twenty of the beds will be in wards, wholly or in part free, and forty beds will be in private rooms. The plan and general scope of the institution will be submitted to the Hospital Committee of the American College of Surgeons for approval. This will be the first institution in New York to come under the initial supervision of this committee. The site has been donated and a large part of the necessary building fund has been subscribed. Dr. Harlow Brooks has been appointed supervisor of the medical division, Dr. Seth M. Milliken will have charge of the surgical division, and with him will be associated Dr. John T. Moorhead.

Diet Kitchens in Base Hospitals.—Members of the Seventh New York Regiment who have just returned from the Mexican border brought news of one feature that may prove of interest to medical men. In August, during the time of the 100 mile hike, many men were returned to the camp suffering from gastroenteritis and intestinal indigestion as a result of heat exhaustion and being unable to eat the regular rations. Dr. C. Perley Gray, the medical officer in charge of the camp, felt that something should be done to restore these men to health and enable them to return to duty in the shortest possible time. This need was met by establishing, for the first time in the Federal Army, as far as the men of the Seventh know, a diet kitchen. The Lieutenant Colonel heartily endorsed the idea when it was brought to him and it was carried into effect. The results were most gratifying. Most of the men were restored to health in a remarkably short time and they returned to light duty within twenty-four to thirty-six hours. The idea was adopted at the base hospital later.

A Division of Occupational Diseases at Union Hospital.—At the last meeting of the medical board of Union Hospital, Borough of the Bronx, a department for the treatment of occupational diseases was established, with Dr. Frederick W. Loughran, a member of the staff, as attending physician in charge.

An examination of the history cards at almost any hospital will show that but little attention has been paid to the occupation of the patient, and while deaths from occupational diseases are very rare, it is because a secondary disease terminates the condition brought about by the occupation. Many hospital patients are, no doubt, suffering from diseases partly occupational, and it is to this class of patients that the greatest care will be given in compiling their histories, for with an accurate history, the diagnosis of the specific occupational disease is comparatively easy, and with an intensive inquiry into personal, environmental, and industrial hygiene, it is hoped that the effort to correlate these occupational health hazards with the other etiological factors in the case will be productive of good results. Patients, before their discharge, will be instructed in methods of preventing or lessening the dangers that surround them while at work; and should the opportunity offer, employers will be advised as to the value of industrial hygiene.

American Association for Labor Legislation.—The tenth annual convention of this association will be held in Cincinnati, Ohio, December 27th to 30th. A preliminary program has been issued by the secretary, Dr. John B. Andrews, which provides for seven sessions to be held for the discussion of health insurance and the eight hour day.

Addresses on these subjects will be given by leading scientific authorities and representatives of labor. The Need for Health Insurance is the subject of a paper to be given by the president, Professor Irving Fisher, of Yale University; Miss Julia Lathrop, chief of the Federal Children's Bureau, will discuss the Public Protection of Maternity; Miles M. Dawson, insurance actuary of New York, will discuss The Principles of Health Insurance, while Dr. Alexander Lambert, chairman of the Social Insurance Committee of the American Medical Association, will discuss Medical Organization under Health Insurance, and the Hon. John J. Lentz, president of the American Insurance Union, will discuss the Fraternal Societies under Health Insurance.

Simultaneously with this meeting conventions will be held in Columbus of the American Economic Association, the American Statistical Association, and the American Sociological Society.

War Hospital Motion Pictures.—An exhibition of film views of hospital work on the western war front was held on Saturday evening, December 16th, in Houston Hall, Philadelphia. The program was as follows: Film I. Dr. Alexis Carrel, of the Rockefeller Institute, demonstrated his latest methods at the Hospital Rond Royal at Compiegne. Film II. Plastic surgery of the face and jaw, by Doctor Pont, at Lyon. Film III. Reeducation centre at Vizille, showing corrective exercises devised especially for the cure of functional nervous conditions contracted in the trenches. Film IV. Extraction of a shrapnell ball from the region of the heart, by Professor O. Laurent at the Grand Palais. Film V. Functional conditions contracted from life in the trenches, a common result of the exposure and nerve strain of trench life. Film VI. American method of bone grafting, as performed in European war hospitals, by Dr. Fred. H. Albee, of New York. Dr. Edward Martin, John Rhea Barton professor of surgery, discussed the educational value of the surgical films. Dr. Dudley Guilford, of the staff of the American Hospital Ambulance at Neuilly, France, spoke on the subject of prosthetic restoration of the face and jaw mutilated by gunshot wounds. Major R. Tait McKenzie, R. A. M. C., director of the department of physical education at the University of Pennsylvania, recently returned from active service where he was in medical command of a convalescent camp of 6,000 men, explained methods of physical therapy and results obtained in the salvage of men in these camps.

American Congress on Internal Medicine.—This organization, which is chartered under the laws of the State of New York, will hold its first scientific session on December 28th and 29th in New York, with headquarters at the Hotel Astor. Dr. Reynold Webb Wilcox, president of the congress, will call the meeting to order on Thursday morning, at 10:30 o'clock, with an address on the Domain of Internal Medicine and the Purport of the Congress. The subject selected by the council of the congress for discussion at the afternoon session is The Ductless Glands in Cardiovascular Diseases and Dementia Præcox. Dr. Charles E. de M. Sajous, of Philadelphia, will act as referee, with Dr. Judson Daland, of Philadelphia, as coreferee for cardiovascular diseases, and Dr. Francis X. Dercum, of Philadelphia, as coreferee for dementia præcox. The discussion will be opened by Dr. Harlow Brooks and Dr. Smith Ely Jelliffe, of New York, and Dr. William A. White, of Washington, D. C. On Friday morning, at 10:30 o'clock, a meeting of the council of the American College of Physicians will be held, and the program for the afternoon session consists of a symposium on Duodenal Ulcer. Papers will be read as follows: The Diagnosis of Duodenal Ulcer, by Dr. John B. Deaver, of Philadelphia; The Prognosis of Duodenal Ulcer, by Dr. Max Einhorn, of New York; The Possible Dependence of Gastroduodenal Ulcer in Man Upon a Disturbance of Internal Secretion, by Dr. G. A. Friedman, of New York; Venous Stasis and Colloidal Diffusion as Etiological Factors of Gastroduodenal Ulcer, by Dr. Fenton B. Turck, of New York. On Friday evening, at 8:30 o'clock, the convocation of the American College of Physicians will be held. For further information regarding the congress, address Dr. Heinrich Stern, secretary-general, 250 West Seventy-third Street, New York.

Symposium on Cancer.—In connection with the forthcoming convocation of the American Association for the Advancement of Science in New York, physicians, public health workers, and others interested will be given an opportunity to hear addresses of unusual scientific distinction on various phases of the cancer problem. Section K of the association, which is devoted to Physiology and Experimental Medicine, has given over its entire program to a cancer symposium to be presented at a meeting at the American Museum of Natural History, Columbus Avenue and Seventy-seventh Street, at 2:30 p. m. on Friday, December 29, 1916. The American Society for the Control of Cancer has been invited to cooperate in bringing this important meeting and its results to the attention of the medical profession and the public. A comprehensive program covering the biological, clinical, therapeutic, and educational phases of the cancer problem has been arranged by Professor E. O. Jordan and Professor C. E. A. Winslow, respectively chairman and secretary of Section K. Professor Gary N. Calkins, of Columbia University, will discuss The Stimulating Effects of Protoplasmic Substances on Cell Division. Professor Leo Loeb, of the Medical School of Washington University, St. Louis, will read a paper on Tissue Growth and Tumor Growth. Dr. Joseph C. Bloodgood, of Johns Hopkins University, Baltimore, will speak from the surgeon's point of view on Cancer in the Human Being, with special reference to preexisting lesions which favor the development of cancer. Dr. James Ewing, of Cornell University Medical College, will summarize the latest experience and conclusions regarding the use of radium in the treatment of cancer. Doctor Ewing is director of Cancer Research at the General Memorial Hospital, which through the generosity of Dr. James Douglas is now receiving, together with the Johns Hopkins University Hospital, the greater part of the radium produced by the United States Bureau of Mines in cooperation with the National Radium Institute. Mr. Curtis E. Lakeman, executive secretary of the American Society for the Control of Cancer, will give an account of past and present efforts to combat this disease through the education of the public. Although of special interest to practitioners of medicine and to those concerned with the scientific aspects of the cancer question, the meeting will be open to the public.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Forty-ninth Communication.

NEURASTHENIA.

It is fully as important in medicine to know what not to do as it is to know how and when to use specific measures; in fact, omission can be as specifically indicated in therapeutics as commission; hence the justification for including a consideration of neurasthenia in a discussion of pharmacological therapeutics.

More or less temporary departures from the mental normal, whether shown in neurasthenia or in the more aggravated types manifesting hysterical symptoms, have their immediate origin in an undue irritability of the nerve centres or areas, whether the deeper source is congenital or acquired. These nerve areas may receive sensory impulses from any peripheral area, or they may be the centres of association paths in the intracranial areas. In either case there would seem to be present an impressional activity in excess of the capacity of such structures involved, followed by a depression below par of the functional power of that area, and a presumptive outflow of imperfectly metabolized products, physical or psychical.

Almost any of these cases may prove a challenge to the physician's diagnostic acumen; but the diagnosis must be correctly made or treatment may readily prove injurious. Dr. S. Weir Mitchell shrewdly divined the tremendous advantage to be gained by complete mental and bodily rest as a first step, either of treatment or of diagnosis. The effect of such a preliminary measure is of great importance in any neurasthenic condition.

The next step is to purge the system of accumulated toxins. So far as the alimentary and circulatory systems are concerned, this is accomplished by means of gentle cathartics and a restricted definite diet, but it is not so easy a matter to deal with the mental side. And here a strong word of caution is needed, especially since our aim is to promote rest. Perhaps not infrequently, by means of the hypnoidal state, some mental thorn is discovered, removal of which by mental suggestion serves a highly beneficial therapeutic end; but we must be absolutely sure the mental thorn has a definite reality with the subject and is not merely a fantastic postulate of the operator. Such unwarranted postulates are being disclosed in various pseudoscientific disquisitions of psychanalysis concerning the interpretation of dreams, the method of which seems to consist largely in clothing the soothsayer's ideas with the jargon of science. Apparently the analyst concocts an array of *a priori* predicates into which he aligns such of his subject's dream state reactions as seem most plausibly to complete the phrase, especially if by any conceivable twist of a disordered fancy the operator can imagine a possible pudendal connotation. And this he calls scientific, when as a matter of fact such gypsy dogmatisms are at the very antipodes of rational medicine

Having accurately determined the real nature of the irritant, and having removed it by the most wholesome means available, it becomes necessary to develop constructive activities, both mental and physical; and this requires a careful, comprehensive education of how to employ the faculties most efficiently and hygienically. Deficiencies from earlier training must now be compensated; errors in living and thinking must be rectified; the whole tone of life needs regeneration, the body needs regular exercise and occupation, the mind needs to be freed of morbid introspection and set to broad inspiring tasks. No formal set of rules can be outlined, since each patient is a law unto himself; so the physician will need to exercise his shrewdest ingenuity and his most exalted altruism to discover the hidden springs of action and to get his patient safely started on the highway to recovery.

Excluding such agents as hemic dyscrasias might demand, about the only drug with indications in these cases is strychnine, used here for its indirect acceleration of metabolism. Cerebral depressants of every nature should be tabooed.

Comparative Value of the Methods of Treating Tetanus.—Charles Langdon Gibson (*American Journal of the Medical Sciences,* December, 1916) discusses the treatment of tetanus in the present European war as exemplified in England, Italy, France, and Belgium; and gives special attention to the comparative assertions concerning treatment with antitoxin, magnesium sulphate, and carbolic acid. With regard to the antitoxin treatment, the subcutaneous method of administration is believed to lack efficiency, so it should be used only as an adjuvant to the other methods. The intravenous administration is more efficient and rapid, but still should be considered an accessory rather than the main line of treatment. The intraspinal method seems to comply with the indications, and to locate the antitoxin most directly in the lesion itself. Large doses are indicated in this manner. When intraspinal injections are employed there is little call for intraneural injections, which demand an operation under anesthesia. Intracerebral injections have been abandoned, as they gave poor results. Treatment with magnesium sulphate was originated in the United States by Meltzer and Auer, and Meltzer's summary of the method is given. It can be administered intraspinally, subcutaneously, intravenously, or intramuscularly, but the general impression in New York city is that it has too many dangers and drawbacks, particularly in paralyzing the respiration. Yet in the present war it seems to stand out as prominently as any one method in Germany, and is used to some extent in other countries. The mortality alleged for the carbolic acid treatment, in which a one per cent. solution is injected every few hours, preferably into the muscles along the spine, is the lowest of all, seventeen per cent. It has not come into general use in America. Throughout this paper it is presumed that the wound treatment has been that suitable to the injury, to prevent the harboring or development of tetanus germs. He doubts if we are justified today in performing an amputation to relieve tetanic manifestations. He omits all questions of nursing and of sedatives, except that he alludes to chloretone as having had curative qualities attributed to it. He is also inclined to try atropine to control spasms. Antitoxin treatment should begin immediately on suspicion of tetanus rather than wait on the classical symptoms. It should be given at once, say 1,500 units, into the wound or the region of the wound, and intraspinally, 5,000 to 20,000 units, without an anesthetic, unless this is called for by the treatment of the wound. In the course of the first twenty-four hours 10,000 to 20,000 units additional should be given intravenously in two or three divided doses. The next day from 5,000 to 15,000 units should be given intravenously, no matter whether the symptoms remit or increase. On the third day, if the patient's symptoms continue to be severe, or appear worse, in spite of the treatment, the intraspinal injection should be repeated. This causes a temporary increase of symptoms and a great elevation of temperature, but this fact need not cause alarm. After this the intraspinal injection need not be repeated if the patient holds his own or improves, but the intravenous injection of antitoxin should be made daily until obvious remission or cure results.

Tetanus.—Hugo Pribram (*Medizinische Klinik*, October 22, 1916) summarizes his views of the modern advances which have been made in the treatment of this serious disease. He expresses considerable skepticism as to the theraueptic value of tetanus antitoxin and has employed it but sparingly. The same is true of the use of the serum of persons who have recovered from an attack. The most important elements in the treatment are the general management, and the control of the convulsions. The former demands the most complete quietude possible, with elimination of all forms of external stimuli, including light and even slight noises. Feeding should be carried out in the least disturbing manner and where it is impossible to get the patient to swallow his food rectal administration should replace the use of the nasal tube. Amputation of the infected extremity is not advised, but the wound itself should be treated along general surgical lines so modified that free exposure of it is given to the open air. Oxidizing agents should be used in the dressings, among which the most serviceable are pure oxygen, hydrogen peroxide, bolus alba, and calcium chlorate. Absorptives such as blood charcoal are also very useful. For the control of convulsions ether, chloroform, morphine, and the many fixed narcotics should be used freely. Ether and chloroform are to be employed only for the temporary relief of very severe attacks, and reliance should be placed chiefly upon large and frequent, repeated doses of morphine, combined with alternating doses of hydrated chloral, urethane, or luminal to maintain an adequate degree of narcosis. Magnesium sulphate may be used intraspinally, intravenously, intramuscularly, or by subcutaneous injection, but the first of these methods of administration is the least desirable because the most dangerous. The most suitable for general use is the administration of three or four subcutaneous doses daily of from five to twenty mils each of a twenty-five per cent. solution. For the control of the dangerous effects of magnesium, physostigmine, calcium chloride, and artificial respiration must be employed. The last two are the most certainly effective, and the calcium chloride must be ready for immediate subcutaneous injection in the form of a five per cent. solution, of which five mils may be injected if needed. Phenol, curare, etc., have been recommended, but the evidence in favor of their use is not convincing. Recently the subcutaneous injection of deuteroalbumose has been warmly advocated, but the author has had no experience with its effects. The most satisfactory use of the hypnotics demands their employment alternately, thus insuring the maximum effects with the minimum dangers. Their use should be continued in diminishing doses for some time after the severe symptoms have disappeared to prevent the possible recurrence of violent convulsions.

Gunshot Wounds of Peripheral Nerves.—Byron Stookey (*Surgery, Gynecology and Obstetrics*, December, 1916) concludes as follows with regard to such wounds: 1. With the use of high explosives and bullets with high velocity the frequency of nerve lesions has increased. 2. Peripheral nerves may be injured by direct violence of projectile and by the violence imparted to bits of bone or even foreign bodies. 3. Peripheral nerves may be implicated secondarily by scar tissue, or callus, or both. 4. Diagnosis cannot be made before operation between anatomical and physiological division. Diagnosis can usually be made in cases with incomplete division. 5. In war surgery primary suture is rarely possible due to infection. 6. Exploratory operation is indicated when a diagnosis of complete division is made. Delay in operating usually means delay in return of function. 7. Nerve freeing is in many cases to be preferred to excision and suture. When the nerve is widely implicated and there is a large loss of continuity, it is better to do nerve transference or nerve transplantation than tubulization or suture with the nerve under tension. 8. Stretching of the nerve should not be done, as it causes caryolysis of the nerve cells in the anterior horn with subsequent degeneration of the nerve axon in the proximal nerve trunk. 9. Efficient splinting to prevent contractures and overstretching of the muscles is imperative, both before and after operation. 10. The terms epicritic and protopathic tend to be confusing. Greater accuracy is obtained in the use of specific terms as area of cotton wool, area of pinprick, areas of moderate and extreme degrees. 11. Musculospiral nerve injury in its lower third shows loss of sensation on a narrow band or over the dorsum of the thumb, usually only a loss to cotton wool and temperature sense. 12. Injury to musculospiral nerve may cause dissociation of temperature sense in the area on the dorsum of the hand—without loss to cotton wool. 13. The median nerve does not supply any skin on the dorsum of the thumb; it supplies up to a line in continuation of lateral borders of nail. 14. The anterior cutaneous division of the ulnar nerve supplies the skin in the same manner as does the median nerve, i. e., on to dorsum of fifth and part of fourth, middle, and distal phalanges. The posterior cutaneous division supplies the ulnar side of the hand and the proximal phalanx of the fifth and part of the fourth. 15. The action of extensors assists the interossei in separating the fingers. To test for paralysis of the interossei have the patient bend his fingers at right angles at metacarpal phalangeal joints; prevent effort of extensors by holding the fingers across; then have the patient try to separate his fingers gently. 16. Return of motor function begins with the muscles which first receive their supply below the lesion. The return is earlier the nearer the lesion is to the periphery. 17. Trophic ulcers occur only after trauma. Their repair appears to be no different from that in other parts. 18. Functional disorders may be superimposed on organic peripheral nerve lesions. Usually they are readily recognized.

Observations on Tetanus.—L. Sexton (*New Orleans Medical and Surgical Journal*, December, 1916) says that we should endeavor to keep the bowels well open and the kidneys active, in order to eliminate as much of the poison as possible. The irritability of the spinal cord should be controlled by large alternating doses of sedative medicines, including chloroform, to control the spasms. Toxins are prevented from entering the system by thorough disinfection of the wound. He injects two thousand units of antitetanic serum in the vicinity of the wound, or between the wound and the spinal cord. If the wound is upon the hand he makes the injection near the brachial plexus; if on the foot, near the sciatic nerve. Intraspinal injection of fifteen hundred units of antitetanic serum is the best and quickest way to apply the remedy to the spinal cord. The same amount of spinal fluid should be allowed to escape before the injection of the serum. Rectal or nasal feeding may become necessary when it is impossible to get food into the mouth on account of a spasm of the jaws. Sometimes a tooth must be extracted to facilitate the introduction of nourishment.

Alkaline Hypochlorites in Disinfection of the Hands.—Lochelongue and Dubard (*Bulletin de l'Académie de médecine*, October 31, 1916) report bacteriologic tests in which the disinfecting activities of the alkaline hypochlorites were compared with those of tincture of iodine. Surface disinfection with the latter proved uniformly effectual in five tests, but disinfection at a depth proved imperfect, nail clippings giving positive cultures in four out of five cases. Of the hypochlorites, magnesium hypochlorite and a mixture of the hypochlorites of calcium and magnesium were used. Surface disinfection with a solution yielding 1.8 to two per cent. of chlorine was effectual after six minutes' immersion in four out of five trials, and with a solution yielding 2.5 to three per cent. of chlorine, uniformly effectual. Deep disinfection was likewise uniformly perfect with the latter solution, though with the 1.8 to two per cent. preparations, two out of five tests yielded colonies of Bacillus subtilis. In thread tests, sterilization of colon bacilli and staphylococci was obtained by four minute immersion in a 1.8 to two per cent. preparation, and in two minutes in a 2.5 to three per cent. preparation. Bacillus subtilis was sterilized by four to five minutes' immersion in the stronger preparation. Exposure of cotton swabs impregnated with cultures of Bacillus subtilis to vapors of iodine and alcohol liberated from boiling tincture of iodine failed to sterilize any of the swabs in eight minutes. Similar swabs exposed to the chlorine liberated by a solution of chloride of lime were sterilized in three to four minutes. The solution of alkaline hypochlorites containing no protein coagulent, its penetration through the skin is not impeded. In practice, surgical cleanliness of the hands is therefore obtainable by immersion in a 1.8 to two per cent. preparation for eight minutes, or in a stronger preparation for four to six minutes. The results are superior to those obtained under like conditions with iodine.

Treatment of Angina Due to Fusiform and Spirillar Organisms.—M. Favre and H. Dreyfouss (*Presse médicale*, November 2, 1916) point out that while the lesions due to the fusospirillar symbiosis are at times primary, as in Vincent's angina and in certain cases of ulceromembranous stomatitis, they are more often secondary to conditions lowering local resistance such as dental caries, the inflammation resulting from eruption of a wisdom tooth or mercurial elimination, and various buccopharyngeal ulcerations, including the syphilitic chancre. The diagnosis, important because of the rebelliousness of the condition to ordinary antiseptics, is readily made, not only with the microscope, but from the irregular nature of the ulcerations, with bright red margins, putrid layer at the base, removal of which easily excites bleeding, the foul breath, rather intense pain, and functional signs such as trismus or dysphagia. Though the treatment with organic arsenicals such as neosalvarsan and galyl is recognized as specific, the authors find a combined silver nitrate and methylene blue treatment equally efficacious, simpler, and less expensive. The ulcerations are very carefully cleansed every day with small swabs of cotton previously dipped in a ten per cent. solution of silver nitrate in distilled water. The bases of the ulcers must be made quite clean, regardless of the amount of bleeding induced. A one per cent. methylene blue solution is then freely applied. In cases of Vincent's angina the tonsils are carefully examined and the recesses in the crypts, in which the infection often starts, duly explored. By the second or third treatment, improvement is already manifest. The ulcer soon shows healthy, firm granulations. A one in thirty silver solution is thereafter sufficient, the treatment being kept up until complete recovery has occurred. By this method disappearance of the more superficial lesions as ordinarily met with on the internal surface of the cheeks, was procured in three days, and of extensive tonsillar ulcerations, destroying nearly all the tonsillar tissue, in eight days. Where the treatment fails, the authors do not hesitate to affirm that some other morbid factor coexists.

Pubiotomy in Impacted Face Presentations.—Paul Titus (*Surgery, Gynecology and Obstetrics*, December, 1916) believes that the following conclusions are justifiable in cases of mentoposterior face presentation seen after engagement: 1. That a reasonable test of second stage should be allowed the patient in the hope that anterior rotation will take place, either spontaneously or with the assistance of carefully performed manual attempts at rotation. 2. That attempts to rotate by means of forceps are dangerous to both the child and the mother. 3. That Cæsarean section is directly contraindicated because of its high mortality in these cases. 4. That craniotomy is the operation of choice if the child is dead or dying, but that it is by no means as innocuous as is generally assumed. 5. That pubiotomy is the operation to be selected in those cases where the child is alive and in good or even fair condition, and that craniotomy on a living child presenting in this fashion is entirely unjustifiable.

Treatment of Amebiasis by Adrenaline.—Theodoro Bayma (*Annaes Paulistas de Medicina y Cirugia*, August, 1916) after eighteen months of investigation is convenced that adrenaline is of remarkable value in amebic infection whether it is evidenced by dysentery, hepatic localization, or appendicular involvement. Of sixty cases thus treated twenty-eight were acute and thirty-two chronic, and all were cured in from two to thirty days. The treatment was quite without untoward effect even in early infancy and advanced old age. The adult dose was twenty to thirty drops four times daily, and in liver abscess the one to 1,000 solution was injected into the abscess cavity after evacuation of its contents. Tropical appendicitis is the term applied by Fausto to the localization of the entameba in the appendix. This condition yielded to the administration of adrenaline by mouth and the application of icebags to the abdomen. Recurrences are much more rare than under the emetine treatment.

Reduction of the Size of the Heart by Corpuscular Radiotherapy.—E. Zueblin (*Lancet-Clinic*, November 11, 1916) presents a preliminary report of clinical results obtained in cases of acute and chronic cardiac dilatation, and dilatation of the arch of the aorta by brief application of intense radioactive energy over the heart. The patient is placed within the field of radiation of two specially constructed electrodes which receive their energy from the secondary current of a powerful Rhumkorf apparatus. One to five minutes of this treatment, with a current of from five to ten milliampères in the primary coil, breaks up the atoms of the tissues into their component corpuscles or electrons, thereby rendering the tissues radioactive and altering their physical and chemical properties. In advanced cases of cardiac dilatation, even where ordinary therapeutic measures have proved unsuccessful, the treatment causes an immediate, marked reduction in the size of the heart, which continues to contract well for some days and remains small thereafter for a prolonged period. Subjectively and objectively, a rapid improvement in the patient's condition is noticed. The treatment has also been successfully used in local edema, and in arthritis, neuritis, and pleurisy.

Treatment of Epilepsy.—William Held (*Maryland Medical Journal*, December, 1916) avers that epilepsy is a toxemia in which the first essential condition is the proneness of the blood to absorb and store up toxins derived from waste products. Epilepsy cannot be acquired by a person whose blood lacks this affinity for toxins. Thus the serum treatment of the disease holds out the brightest hope at this time.

Vaccines in Respiratory Diseases.—B .F. Stout (*Texas State Journal of Medicine*, December, 1916) as a result of his experience states that vaccines are of value in all forms of respiratory infection, especially in the subacute and protracted infections. They are less successful in the very acute and very chronic cases. Success depends upon the use of strains which are capable of producing an immunizing response. Where an autogenous vaccine fails trials should be made with a vaccine of proved value in a similar infection.

Treatment of Chronic Ulcers.—E. Alvarez Sainz de Aja (*Revista de Medicina y Cirugia Practicas*, November 14, 1916) recommends the application of a lead plate to chronic ulcers, especially of a varicose nature, as first advised by Ledo in 1909. A thin plate of lead is cut to approximately the shape of the ulcer and is firmly bandaged thereto. This plate is removed daily and the ulcer washed with permanganate solution, and then the plate is reapplied after washing in hot water. In the final stage of healing, the plate may be put aside and dressings of one half per cent. picric acid, one in thirty scarlet red ointment, or one per cent. ichthyol used.

Surgery in Intestinal Toxemia.—Jerome M. Lynch and John W. Draper (*Medical Record*, December 2, 1916) take up the advantages and disadvantages of the various operations for this condition. Ileosigmoidostomy benefits a number of cases, but because of anastalsis ten per cent. of such cases require a subsequent colectomy. Cecosigmoidostomy is deficient both theoretically and practically, as its employment leaves out of consideration the law that intestinal contents tend to follow the normal direction of the canal irrespective of lateral stomata. Appendicostomy is safe, but insufficient in most cases; while ileostomy is of benefit in severe colonic infections but of limited indications. Plication of the cecocolon is unreliable as to permanency of results. A new operation just described by Strauss of total colonic exclusion has not yet proved its worth. Colectomy is indicated in diffuse polyposis, papillomatosis, diverticulitis, and in certain malignant tumors, but the mortality is high and elimination is interfered with by the removal of omentum and the terminal colon. The best operation in selected cases is what the writers call developmental reconstruction, which is the resection of the terminal ileum, the cecocolon, and the oral part of the transverse colon. This operation reconstructs the colon to the primitive or developmental type as seen in the adult dog, and in the human fetus just following rotation. The use of colonic vaccines is safe, it is usually of service, and it places the patient in the best possible condition for any necessary later operation.

Salvarsan in the Treatment of Double Infections, Tuberculosis and Syphilis.—Nathaniel Bowditch Potter (*American Journal of the Medical Sciences*, December, 1916) gives his opinion that the prompt employment of salvarsan or neosalvarsan is indicated in latent, chronic, and moderately active tuberculosis as soon as the nature of an added infection is diagnosed with reasonable probability to be syphilis, or whenever a previous luetic infection is strongly suggested, and the patient is not improving under usually successful treatment. But active, acute, and diffuse miliary tuberculosis usually are definite contraindications to their use. The careful use of one of these drugs is indicated when tuberculosis infects a syphilitic. The more active the tuberculosis the smaller should be the initial dose, the slower the increase, the longer the interval, and the greater the care and watchfulness required.

Recent Experience with Ipecac and Its Alkaloids.—Sidney K. Simon (*New Orleans Medical and Surgical Journal*, December, 1916) reports his investigation of the influence upon amebiasis of cephaline, an alkaloid closely resembling emetine, and like it derived from the ipecac root. Cephaline seems to possess an amebicidal action upon the free living entamœbæ to a degree equal to that of emetine in the same dose. Its destructive effect upon the encysted organism appears to afford more promise of success than that induced by emetine. Its subcutaneous use causes considerably more irritation and pain. Gastric disturbances with nausea and vomiting are more frequent and greater with cephaline than with emetine, but there is less tendency to diarrhea in the course of treatment. The employment of a combination of the two alkaloids by hypodermic injection would seem to promise a greater amebicidal effect than is obtained with emetine alone. No evidence of toxemia was observed following the employment of comparatively small doses of cephaline.

Treatment of Pellagra.—J. D. Perdue (*American Medicine*, November, 1916) employs the following as remedies in pellagra: Thirty drops of dilute nitric acid four times a day in a glass of water; copper arsenite, beginning with 1/100 grain and increasing it to a very large dose. As a routine method of treatment he allows meals six times a day if the stomach can tolerate them; the food is given in a semisolid form. The following foods are given: Field peas and soup of the same, lima beans, soft boiled eggs, beef juice and broth, fruits of all kinds, crackers, and loafed bread. The patient receives the following medicines in one teaspoonful doses six times a day if full doses are given, and three times a day if half doses are given: Elixir lactated pepsin, tincture of nux vomica, and Fowler's solution. For the stomatitis an alkaline mouth wash and gargle is used. The nervous symptoms are controlled by morphine or chloral hydrate well diluted. In cases where diarrhea is present bismuth in large doses with tincture of camphorated opium are given. For vaginitis potassium permanganate douches twice daily are prescribed. For skin lesions a local dressing is used consisting of two parts of iodine in 100 parts of castor oil.

Further Report on Thromboplastin as a Hemostatic.—Alfred F. Hess (*Journal A. M. A.*, December 9, 1916) states that since the introduction of thromboplastin it has been very extensively employed in various conditions for the control of obstinate hemorrhage, and he reviews the results of its use. They show that it is of great value in any form of bleeding in which it may be brought into direct contact with the bleeding area. Such conditions are found after the removal of tonsils and adenoids, in nasal work, circumcision and other operative procedures, the extraction of teeth, and for the local hemorrhages encountered in hemophiliacs. For the latter group of cases it is almost a specific. In certain cases of local hemorrhage where its topical application does not prove effective in controlling the bleeding it may be injected into the immediate region of the hemorrhage with the best results. For this purpose the one per cent. solution should be boiled for a brief time, which does not materially diminish its hemostatic properties. Experiments are also reported to show that the one per cent. solution is quite as effective as stronger ones. Further, it has been observed that the substance, either in the form of a solution, the dry powder diluted with lactose, or as an ointment has a marked power of stimulating the granulation and healing of wounds, even of the chronic and indolent type represented by old varicose ulcers.

Treatment of Tuberculous Peritonitis.—C. R. Hyde (*American Journal of Obstetrics*, September, 1916) reports two fatal cases of this condition, in one of which appendicectomy was followed by fistula formation; while in the other the patient grew progressively worse after panhysterectomy. He laments the insufficient attention given the disease by gynecologists. As diagnostic points he lays stress on persistent progress of the condition, without periods of improvement, on painful urination, and on variability of the abdominal physical signs. In the treatment, authorities agree that hygienic measures should be instituted at once, and that laparotomy is the only choice in the way of operative measures If a suspected case improves under hygienic means, we should not operate. In operating, a small incision about seven cm. long should be used. If a focus of disease can be found and removed without too much traumatism, this should be done. Thus, with no great peritoneal disturbances, slight adhesions, few or no tubercles, we are justified in removing one or both tubes if involved. With extending peritoneal involvement, however, he believes nothing should be removed. Unless there is a band shutting off a loop of intestine, or a distinct obstruction, no intestinal adhesions are to be disturbed. Where intestines are matted together in one mass, under no circumstances must any attempt be made to separate them. All serous or bloody fluid collections should, however, be sponged out, after dropping the foot of the table so as to cause all fluid to gravitate toward the pelvis. The leaving of four grams of iodoform in the peritoneal cavity is advised, and McGlynn has reported seventeen cases cured in one year with the introduction of oxygen into the peritoneal cavity. Important as a final step is the closing of the abdomen without drainage.

Miscellany from Home and Foreign Journals

Cystography.—Herman L. Kretschmer (*Surgery, Gynecology and Obstetrics,* December, 1916) concludes thus: 1. Cystography is a valuable adjunct to our present diagnostic methods. 2. Cystography will always have a limited field of usefulness. 3. Great care must be exercised in interpreting cystographs. 4. Because of its limitations and possibilities of misinterpretation, cystography can never hope to take the place of cystoscopic examination, but should be used as an adjunct to it and not instead of it. 5. Cystography may be of aid in determining whether resection or fulguration should be employed in a certain percentage of papillary tumors. 6. For outlining the number, size, and position of diverticula, cystography is certainly the method of choice. 7. That regurgitation of fluid from the bladder into the ureter is possible in normal persons has been demonstrated in some of the cases embodied in this report. 8. It has also been possible to demonstrate a regurgitation of fluid from bladder into ureter in the presence of bladder infection though the ureteral orifice appeared normal.

Diagnosis of Active Pulmonary Tuberculosis.—E. Sergent and G. Delamare (*Bulletin de l'Académie de médecine,* October 31, 1916) report observations made in a hospital in which six hundred tuberculosis suspects were kept temporarily, to differentiate between those available for military duties and those deserving of release from such service. The diagnostic methods used comprised repeated physical examinations, radioscopy and radiography, bacteriological observations, the endermic tuberculin test, and systematic studies of the body weight, temperature, blood pressure, and pulse rate. Of the six hundred subjects eighty-nine were dismissed as nontuberculous, having merely instances of anemia, dyspepsia, emaciation, mitral lesions with hemoptysis, syphilis, pulmonary hydatic cysts, or nasal disorder. Eighty-three other cases showed tubercle bacilli in their sputa; in only thirty of these had the symptoms first appeared since the beginning of the war. The remaining 428 cases were labeled "suspects" and subjected to further observation. The essential x ray evidence of tuberculosis in such instances was taken to be a veiled appearance of the lung—at the apex in two thirds of all cases—generally with a more or less evident tracheobronchial adenopathy. The veiled condition, usually bilateral and varying greatly in density, did not permit of determining whether an existing tuberculous condition was active or in a cicatricial state. The conclusion was reached that actual lung tissue change predominates where there exist manifest dullness, exaggerated fremitus, crackling rales, hemoptysis, fixation of the apical veils, absence of change in these veils on coughing, and a striated or dotted condition. Pleural changes predominate where there are slight dullness, normal or diminished fremitus, and friction sounds, together with pupillary inequality and supraclavicular adenitis. The pleural type of apical shadow, different from the pulmonary type, permits some illumination of the apex to persist after coughing. Differentiation of active from healed lesions was accomplished, not by physical examination, but by general and functional observations on the patient, and by inquiry into his family history and the day of initial appearance of the disease. In doubtful cases, the iodide test was resorted to, one gram of potassium iodide being given on five successive days, and a rise in temperature of one half to one degree signified that the cicatrix was not an old one. This test was applied, however, only where a favorable result was anticipated, the danger of lighting up a quiescent focus or inducing hemoptysis from a still active lesion being thus minimized. Of the 428 suspects, 216 were by these methods shown to be active cases and 212 healed cases. Adding to the latter the eighty-nine subjects classed as nontuberculous, 301 out of the 600 soldiers examined were shown to be undeserving of relief from military service from the standpoint of tuberculosis—a not inconsiderable saving to the armed forces and finances of the nation.

The Present Status of Blood Extract Coagulants and Blood Transfusion.—Charles G. Levison (*Military Surgeon,* December, 1916) concludes as follows: 1. The indications for blood transfusion are now fairly well defined. 2. Intravenous injections of gelatin and gum acacia afford excellent substitutes for the blood lost in hemorrhage and should be more generally employed. 3. Transfusion in advanced carbon monoxide poisoning and advanced surgical shock is valueless. 4. Transfusion is recommended as a preoperative measure in chronic jaundice and in patients that have suffered from slow hemorrhages as in carcinoma of the uterus, stomach, and intestines. 5. Local applications of horse and rabbit serum may at times be effective in controlling bleeding if human serum is without effect. 6. In chronic and pernicious anemias blood transfusion has achieved no important results. 7. In hemorrhagic blood diseases such as purpura hemorrhagica, hemophilia, and melæna neonatorum, transfusion is at times very effective. 8. Injections of whole blood from ten to thirty c. c. are almost a specific in melæna neonatorum. 9. In the chemistry of coagulation Howell's theory is the one that offers an excellent working basis in the study of coagulation. 10. Injections of whole blood intramuscularly are more effective than horse serum in controlling bleeding. 11. Kephalin and coagulen are of great importance for their local effects as hemostatics. Kephalin acts almost specifically when applied locally to the wounds of hemophiliacs. 12. Unger's method is given first place, as far as simplicity and ease of employment are concerned, as it obviates the necessity for incising the tissues. 13. Lewisohn's method is next recommended, as it requires no special apparatus and can be readily carried out. 14. A very serviceable technic is that performed with the aid of the Kimpton-Brown tube.

A New Syndrome.—Siegfried Block (*Medical Record,* December 2, 1916) describes a new symptom complex occurring in women between puberty and menopause, mostly between twenty-five and thirty-five years of age. The symptoms are sleeplessness, a melancholic tendency, attacks of crying, nervous irritability, sexual hypersensibility, loss or gain in weight, lassitude, and pigmentation. Block considers that this condition is due to an improper functioning of the ductless glands, especially those of the adrenal system. Treatment is best pursued by the use of extracts of ductless glands which in proper combination are specific. Ovarian, adrenal, and thyroid extracts combined make a good combination, and sometimes the addition of pituitary extract helps.

Streptococcus Infection as a Cause of Spontaneous Abortion.—Arthur H. Curtis (*Journal A. M. A.,* December 9, 1916) reports two cases of spontaneous abortion. From the urine of one of the women, and the heart blood and placenta of the fetus in the other streptococci were isolated. These organisms were grown and injected into pregnant rabbits, with the result that they either produced abortion or led to death and beginning absorption of the fetus in every instance. One of the women seemed to be in normal health at the time of her abortion, the other was suffering from a pyuria due to the organism in question. These observations indicated that the particular streptococcus isolated in these cases had a special selective affinity for the genitourinary passages and was capable of causing abortion. This adds one more definite infectious agent to those known to cause death of the fetus.

Cerebrospinal Meningitis.—W. J. Denehy (*Brit. Med. Jour.,* November 18, 1916) states that in every suspected case of this disease lumbar puncture should be performed at once, since it is impossible to make an accurate diagnosis without its aid. Cloudiness or turbidity of the fluid may be due to slight contamination with red blood cells, and this is the commonest source of error when the diagnosis is made primarily on the gross appearance of the fluid. The fluid should then be examined at once before centrifugation and again after sedimentation or centrifugation. The presence of appreciable numbers of polymorphonuclear leucocytes is a positive indication of an acute meningitis, but does not show the type. Cocci can often be seen in such fresh smears and add to the probability of the disease being meningococcal. The presence of fibrin should next be noted and the globulin content roughly determined by the ammonium sulphate ring test. Then the permanganate test should be applied. Cultures should be made to isolate the organism, and for the purpose of increasing the proportion of positive cultures the best plan is to incubate the spinal fluid alone for twenty-four hours before sowing it. The tests mentioned, other than the cultures, are scarcely necessary in the face of a definitely purulent fluid, but the potassium permanganate test may be employed in a roughly quantitative manner and then serves as an index of prognosis. In the very serious cases permanganate may be added to the amount of seven to ten times the volume of the spinal fluid before reduction ceases to occur.

Natural History of Septic Wounds.—Kenneth Goadby (*Lancet,* November 18, 1916) reports that an extensive study of the infected wounds of military practice has taught him that these differ considerably from those encountered in civil practice. In the first place the damage done the tissues about the gross wound is extensive in the case of the high velocity missiles and greatly militates against prompt reaction to infection. Repair and degenerative processes occur simultaneously in the different portions of such wounds, the former usually being in the more superficial layers, the latter in the deeper tissues which have been damaged, though not visibly so. The degenerative processes taking place in the depths of such wounds are commonly associated with infection by Bacillus perfringens, Bacillus malignant edema, or Bacillus hibler IX. The growth of these anaerobes is associated with direct tissue digestion, and the production of acids by these organisms also plays an important role in the determination of gas gangrene. The leucocytic reactions, both local in the wound and general in the blood, are influenced very largely by the degree of infection with the ordinary pathogenic cocci. Thus, about these there is marked accumulation of polymorphonuclear leucocytes, while about the region infected with one or another of the anaerobes the predominating cell is the lymphocyte. The leucocytosis in the blood is made high by the anaerobic organisms which also raise the proportion of polymorphonuclears.

Blood Pressure in Typhoid and Paratyphoid Fevers.—D. Olmer and R. Voisin (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* July 27, 1916), from observations in seventy-six cases, assert that diminution of the arterial pressure, especially the diastolic pressure, in the typhoid affections, is so constant as to be of diagnostic value in some instances. In the presence of a typhoid condition, a marked fall in pressure, especially the systolic pressure, generally presages some complication and leads one to apprehend weakening of the myocardium. A sudden rise in pressure, on the other hand, may indicate an imminent intestinal hemorrhage, or, if defervescence has already occurred, a relapse. Where the pulse weakens in typhoid fever, prognostic and therapeutic indications should be sought in blood pressure examinations. Beside the cases complicated with myocarditis there occur hypotensive forms of the disease, running a latent course, without high fever, apparent complications, or alterations in the pulse rate or rhythm. These cases should be carefully watched, as they are the ones in which the patient is most exposed to sudden death. They constitute an incomplete syndrome of adrenal insufficiency, and the observation of a marked descent in blood pressure indicates treatment with adrenal gland or adrenaline. Subcutaneous injections of 0.00025 gram of the latter are of the greatest value in urgent cases, but oral ingestion of twenty or thirty drops of a one in one thousand solution is also effective. In two illustrative instances the systolic pressures rose from 100 and 105 mm. Hg., respectively, to 125 and 150 mm. Hg. in one and a half hour after subcutaneous injection of 0.00025 gram of adrenaline; the diastolic pressures in both cases rose from 50 to 55 mm. Hg.

Proceedings of National and Local Societies

NEW YORK NEUROLOGICAL SOCIETY.

The 349th Regular Meeting, Held at the New York Academy of Medicine, Tuesday, November 14, 1916, at 8.30 p. m.

Dr. WILLIAM M. LESZYNSKY in the Chair.

President's Address.—Dr. W. M. LESZYNSKY said that a committee of the society, consisting of Dr. Frederick Tilney, Dr. B. Sachs, Dr. C. L. Dana, Dr. W. Timme, and the speaker, was appointed in October, 1916, to ascertain the general plan and scope of the management of the recent epidemic of poliomyelitis, and the various clinics where these patients were receiving treatment had been visited. One large orthopedic clinic was found to have a special department, but the facilities and equipment were inadequate, owing to insufficient funds. At another the poliomyelitis cases were treated in the general clinic. At a third a special department had been organized with elaborate equipment. In the first, where 200 patients were treated by braces and massage, no neurological observations were made; in the second, where 300 patients were recorded, the treatment consisted of social service, braces, and massage, and though the disease was considered surgical, the aid of neurologists was welcomed; in the third 200 children received electrical examination, baking, massage, electrical treatment, braces when required, and muscle training, but there was no neurological supervision. At Bellevue Hospital and Cornell Medical School they were under the cooperative care of the neurologist and orthopedic surgeon. At Mt. Sinai and the Neurological Institute they were under the direct supervision of the neurologist. At all other dispensaries where these patients were received, they were sent to the orthopedic department.

As a result of these inquiries and for the purpose of expressing the views of the neurologists as to the best management, observation, and treatment of this type of disease affecting the nervous system, the meeting would be devoted to addresses and to discussion of the subject.

Through lack of foresight in the management of the recent epidemic, an unprecedented opportunity for clinical neurological observation was irretrievably lost. The value of cooperative neurological study was entirely forgotten or ignored. This was shown unquestionably by the New York health department suggesting or requesting the cooperation of neurologists, and by the omission of the names of neurologists from the lists of committees appointed, either by the city administration, or among those announced as the Committee on the Aftercare of Infantile Paralysis Cases, which was formed last August. There were twenty-five physicians on this list and of the three neurologists one was appointed four weeks ago, one was not aware of his membership, and the third merely had the privilege of attending the meetings of the committee.

Furthermore, the health department issued printed instructions with lists of hospitals and dispensaries where only orthopedic treatment could be obtained. Hence the entire supervision and control of these patients had been officially relegated to orthopedic institutions.

It was universally admitted that poliomyelitis was practically confined to the central nervous system, that its symptomatology, such as paralysis, atrophy, and trophic changes, was due to a spinal cord lesion, and that its infectious origin had no direct bearing upon the subsequent developments. Therefore, in the modern classification of disease, poliomyelitis had heretofore been assigned to the province of neurology. That the orthopedic institutions were placed in exclusive charge of the aftercare of these patients might have been more a matter of expediency than of medical selection or preference.

In the solution of a therapeutic proposition of this magnitude, standardization of treatment should be adapted to individual requirements, and the best interests of these patients would be conserved and scientific progress be promoted by the harmonious cooperation of the orthopedic surgeon with the neurologist and pediatrist. The disabled children should have every advantage that might develop from such associated service, and all available means should be used for their benefit.

Some Points in the Diagnosis and Treatment of Poliomyelitis.—This paper, by Dr. B. SACHS, appears on page 1225 of this issue of the JOURNAL.

The Present Management of Poliomyelitis in New York City.—This paper, by Dr. FREDERICK TILNEY, will be found on page 1221 of this issue of the JOURNAL.

Resolutions Concerning Poliomyelitis. — Dr. WALTER TIMME read the following resolutions adopted by the society:

Whereas, Anterior poliomyelitis and its concomitant polioencephalitis were intrinsically neurological diseases, and

Whereas, Anterior poliomyelitis and polioencephalitis had been managed in all stages in the recent epidemic practically without the supervision and control of neurologists in the institutions of greater New York, and

Whereas, Faulty diagnosis, inadequate treatment, and poor methods of gathering important statistics resulted not only in detriment to the present patients but also in a final loss to scientific medicine of valuable data of great service in future epidemics; it was

Resolved, That it was the sense of the New York Neurological Society that anterior poliomyelitis and polioencephalitis being neurological diseases, the sufferers from such diseases ought at an early period to come under the care or supervision of neurologists, with the cooperation of orthopedists, and other specialists as the cases might require. And, in consideration of the unprecedented number of cases in the recent epidemic, in all public institutions and clinics where these diseases were treated, there should be a standardization of equipment and method. And it was further

Resolved, That the New York Neurological Society petition the Committee on Public Health of the New York Academy of Medicine that it consider the advisability of appointing at once a commission on poliomyelitis which should take into consideration the ways and means best calculated to meet and combat a future epidemic similar to the one just experienced and make definite recommendations. This commission should consist of four subcommittees as follows:

1. A committee on communicability and quarantine comprised of bacteriologists and epidemiologists.

2. A committee on the criteria of diagnosis and clinical management to consist of neurologists, pediatrists, and orthopedists.

3. A committee on pathology and serology to consist of pathologists who should devise the best means of caring for such pathological material as was obtained as a result of the epidemic.

4. A committee on treatment and immunization to consist of neurologists, orthopedists, pediatrists, and bacteriologists. This committee should consider the therapeutic means best adapted to the acute stage and also the aftertreatment.

Dr. Charles L. Dana said that with regard to the general management of the late epidemic it was only fair to remember that nobody knew exactly what to do at its inception. He thought that the authorities did the best they knew, acting on the best advice they could get. They made some mistakes and one was undoubtedly that of ignoring the work and possible help of neurology. It was not now too late to introduce this service for the therapeutic work since the victims of this epidemic would require treatment for a long time.

The public and perhaps some of the faculty did not realize that a considerable percentage of these victims would not need much treatment any way. They had had the infection, but no, or very slight, paralysis, and promptly got well. Another percentage of the cases, those with single and moderate paralysis involving only one segment of one limb, did not require elaborate treatment or the cooperation of specialists. Most of them improved under simple treatment. There was another and small percentage of cases in which the patients suffered severely, having quadriplegic and triplegic paralysis often with involvement of the trunk. These required the most careful supervision and humane attendance, but were hopeless so far as cure was concerned. There was a fourth group of cases which included thirty or forty per cent. of the whole, in which the paralyses were of considerable or moderate severity and distribution. These were cases in which the very best treatment of every possible kind should be employed. It was this phase of the question that was largely being debated tonight.

There were two phases of the subject to be considered: 1. The general management and organization of the institutions and individuals concerned in treatment and, 2, the technical methods of treatment. With regard to the first, the New York Committee on Aftercare of Infantile Paralysis Cases was working earnestly and would undoubtedly gradually bring matters into an efficient state. In regard to treatment, every one agreed that warm baths, exercises, muscle training, and educational methods in general were definitely helpful. Some doubted the value of electricity, others acclaimed it. The speaker was not expressing his opinion, but rather his experience when he said that it was definitely helpful in properly selected cases, and he considered it not only wrong but rather thoughtless to take the position that it was always useless, even when properly applied. He had never seen any direct benefit from massage, but thought it might be useful indirectly if done carefully.

There was no question of the value of warmth or of the utility of exercising in warm baths. The same was true of the measures which gave support to the paralyzed muscles by approximating the ends and relieving tension. There was a distinct difference of opinion between some neurologists and some orthopedists as to how much support by braces should be given and as to its extent and duration. Neurologists believed in allowing as much as possible normal physiological movements, allowing the child to lie on the bed or the floor and kick about rather than to lock up the joints in positions of perfect anatomical adjustment. Practically, however, there was never any difference of opinion when it came to individual cases between himself and the orthopedist.

Referring to prognosis, a physiological fact, perhaps not generally known, but of hopeful significance, was that the motor cells of the spinal cord increased in number from birth to adult life. Kaiser showed that in the anterior horn of the spinal cord at the time of birth there were about one hundred thousand cells and at the age of fifteen years two hundred thousand cells. This did not mean that nerve cells actually divided and multiplied, but that minute nucleated nerve cells developed into full sized function cells. Thus there was always hope in young children that nature was going to assist enormously the work of the therapeutist. It was better to take the position that all these therapeutic measures be allowed under wise supervision. No one knew enough to stand up and declare that massage was of no use, electricity was of no use, vibration was of no use, or braces were of no use. This attitude would be unjust to the child and to their art. The essential thing was a sane judgment of what should be used in each case. One thing only was absolutely certain: good came from wisely applied treatment and bad came from neglect or stupid and unintelligent treatment, whether this was boluses or braces. It was certain also that the general profession which both looked on and took part in this discussion would eventually pass final judgment, and care of poliomyelitis would be taken to or stay with the pediatrist, the neurologist, or the orthopedist, in accordance with the final test of experience. Cases should be assorted to each department in accordance with individual indications and the stage of the disease. But now, while waiting, it was only wise for the neurologists to urge upon those who had authority in dispensary therapeutics, that the child be given all the measures known to be probably helpful when wisely applied, and surely this meant that they should secure the cooperation of good and soundly grounded neurologists trained in dealing with paralyses, familiar with the anatomy and physiology of the disease, and able to give help in diagnosis and prognosis as well as in therapeutics. The qualification "good" was made because of the neurologist who dealt with the delicate mechanisms of the soul as well as of the body; it was especially true what Horace had said of poets and poetry; in some specialties mediocrity and tolerable endowments might properly be allowed, but neither gods nor men gave any indulgence to mediocre neurologists.

Dr. M. **Allen Starr** approved every suggestion made by Doctor Tilney and Doctor Sachs. In treating poliomyelitis they should not be confined to any one method; every known therapeutic measure should be resorted to. He was in favor of electrical treatment, though not of its unintelligent and indiscriminate use, but it was invaluable for exercising a muscle which could not be exercised by will. Many children had lost the power of voluntary muscular movement, and it was the duty of the attending physician to see that these muscles were exercised by electrical current for at least two years after onset, and galvanism only should be used. The sinusoidal current was the most efficacious. It could be given by any one properly trained; six careful lessons to any intelligent mother would enable her successfully to use a small galvanic battery of thirty cells. In the tenements and among people of mediocre intelligence those caring for the child could not be trusted and it would have to be brought to the clinics. The idea of visiting nurses was to be applauded in directing massage, proper bathing, electrical applications, and educational exercise; those who were contributing money for this purpose should be commended by the medical profession.

The next point of interest was in regard to graduated exercises under proper supervision. When Doctor Fraenkel gave instructions some time ago in regard to a carefully regulated series of movements which were beneficial in locomotor ataxia, the result was good; but when the matter was left in the hands of the patients alone they lost interest and found the continuance of the movements monotonous. When a trained instructor went to the patient day after day and helped and encouraged him, the results were remarkable. With education of muscles and exercise it was necessary to have an instructor who was capable; some one who understood it and carried it out with the cooperation of the patient. Massage could be done by the mother. The Zander movements were also important. All these measures could be applied at the clinics or by a nurse at home.

Out of 404 cases of infantile paralysis in the epidemic of 1907, in 280 one or both legs were affected; in eighty-four the arm, and in forty the neck and face. Orthopedic apparatus could have been put on 280, but there remained 124 where orthopedics were of no avail whatever. Orthopedics strengthened a leg, but there were many cases not open to orthopedic treatment, and this the public did not understand. Large amounts of money were being used to buy braces; in fact the mind of the public seemed to be focused on braces. Apparatus was valuable to keep a limb in proper position, but a brace which kept a child from exercising its limb did harm instead of good. Braces should be removed occasionally and not kept on all the time.

Dr. **Edward D. Fisher** said that there was no antagonism between orthopedists and neurologists apparent to him. He had seen many of these cases during the summer and any neurologist could also have seen as many as he wished. In regard to treatment, certainly neurology had nothing to do with the early stage. Etiology belonged to the laboratory and, if possible, a remedy, either for prevention or cure. The health department had worked faithfully on these lines. It was with the future of these children that what had been said by Doctor Tilney and Doctor Sachs applied. Any one with experience in this disease must agree to this. There was a distinction between the treatment of the orthopedist and neurologist, and there should always be cooperation between them.

Dr. **Virgil P. Gibney**, as an orthopedist among so many neurologists, felt out of place. But while he was listening to the criticism he was reminded of the story of the young man who went out and committed suicide by hanging. Some one asked why and was told that he had done it because he had been criticised. If that was a good reason, said the curious one, then the woods would be full of doctors, lawyers, clergymen, artists, and others hanging from the trees; if a professional man was not criticised, he would do well to commit suicide, as he was a dead one already. For thirteen years the speaker was an intern at the Hospital for the Relief of the Ruptured and Crippled; here he employed galvanism, faradism, and franklinic electricity in infantile paralysis, day in and day out; many cases were recent, but the majority were of patients who had been paralyzed from one to four or five years. He measured the limbs from time to time and kept full records, but was unable to see that electricity in any form helped except in diagnosis; he learned early that by galvanism a fair test could be made, but as far as treatment was concerned it yielded no permanent results. Doctor Gibney said that he had referred many cases of poliomyelitis to neurologists for their opinion and had carried out their treatment faithfully, but had come to the conclusion that electricity was valuable only in diagnosis.

The speaker agreed with Doctor Dana in believing that nothing should be omitted that would give hope of recovery or relief from pain or deformity; he used braces that could be taken off, put the patient in warm baths, and moved the limbs from time to time. After deformity had been corrected and the muscles were capable of support, the apparatus was discarded until deformity recurred. Although they were called orthopedic surgeons, they practised neurology as did the neurologists. If the neurologists proposed to work with orthopedists, they would find no methods of treatment opposing them.

In reply to Doctor Starr's remark about braces not being applicable to the upper extremities, he would reply that he had had occasions to adjust apparatus to give rest to the deltoid and relieve it of strain. This consisted of a brace with arm pieces to keep the arm and forearm in extension above the head or at right angles from the side. He was sure that neurologists would agree with him that paralysis of the deltoid on one or both sides was of frequent occurrence in the recent epidemic. The muscles must not be overtired or overexercised; when the muscle was weak it should be supported and joints should be protected from strain and consequent relaxation. Deformity should be corrected, but it took from one to two years for the muscles to regain strength and tone. In spite of treatment, many cases from the 1907 epidemic were still *in statu quo ante* and were in the hospital for orthopedic surgical operations; they all had had electricity, massage, and apparatus. The present epidemic was the worst experienced and in the aftermath the neurológists would find that the orthopedic men were willing to cooperate in every way.

Dr. Reginald H. Sayre said that orthopedics had been defined by Audry, who first used the term to describe the art of correcting or preventing deformities in children. It seemed to be taken for granted that an orthopedist tied the patient up in an apparatus and left to the Almighty any other improvement, taking no other therapeutic measures. He wished to assure the neurologists that they were mistaken, as orthopedists used every known measure of cure or relief.

Dr. Arthur H. Cilley would like to know whether the strictures laid on the health department in not consulting the neurologists were well taken. Was it a fact that any neurologist had offered his services to the health department and been refused? The speaker knew personally of only one volunteer, an orthopedist, whose services were quickly accepted, and he personally had approached two neurologists to offer them a share in the work. Their reply was that Riverside Hospital was too far away.

Dr. William M. Leszynsky, in answer to Doctor Cilley's questions, wished to say that the statements made this evening were done so deliberately, being founded on facts and based on thorough investigation.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Stated Meeting, Held November 23, 1916.

COMMITTEE ON MEDICAL ECONOMICS.

(Concluded from page 1215.)

Compulsory Health Insurance (*Continued*).—In the plan outlined by Doctor Kopetzky, the medical referee was a physician as well trained in medicine and surgery as in health matters. He was to be paid by the Mutual Funds and under control of the Mutual Funds, but would have absolutely nothing to do with private practice or the care of patients in any way. Half of the directors who would control and manage the Mutual Funds would be appointees of the employers, and half appointees of the working man. In that way the referee would be responsible to both sides equally; he would not be interested in any controversy and would have nothing whatever to do with the care of patients. All referees should be appointees and officers from the executive departments. They would be administrative officers and the ideal referees would be those appointed by the State as part of the regular administration of the law. This, at present, under the exigencies of politics, might not be feasible in this State. In Doctor Kopetzky's outline, therefore, it was put according to standards set by the medical advisory board. The State Civil Service Board examined the medical referees and they were chosen by the directorate of the Mutual Fund. But the every day care of the patient was divorced from them which could not be reiterated too strongly as the necessary condition.

Another thing that was inherently wrong in the English health insurance was that all men were paid on the capitation basis. That was lodge practice developed to the nth power. There were certain inherent evils in capitation which could not be ameliorated. Briefly the speaker's present opinion was that the payment of physicians should be a matter of executive regulation under the commissioners and not part of organic law. The plan outlined by Doctor Kopetzky was designed to be put in the organic law. It would be difficult to change because it would be necessary to have legislative action to change it. Executive regulations were easily changed and justice could be more easily obtained and injustice more easily remedied. Therefore, medical regulations and all regulations concerning the daily care of the patient should be under executive regulation and not under organic law.

Dr. Emil Altman said there was no one scheme that would please everybody. In the same way that one safeguarded one's property rights, this committee had sought to establish a bill that would safeguard the health of the working man and his wages in such form as to satisfy everybody, but this could not be done, there were so many objections. There was only one thing to be kept in view in passing on a measure of this kind, and that was the greatest good of the greatest number. This measure was not entirely altruistic, but it should not be considered from a money standpoint only.

The speaker wished to take issue with Doctor Warren's suggestion that public health officials had a monopoly on knowledge of sanitation, because any practitioner could acquire it with a little training. They had more experience, of course, with epidemic disease and preventive measures. But the fact that a public health officer was sure of his pay for his services did not always make him ready to demonstrate his professional skill, as was shown recently when they were called upon to examine some of the working people in their department without extra compensation. Their desire was to be of benefit to humanity, but they did not include the poor working class.

Alfred E. Ommen, Esq., ex-judge and ex-president of the Society of Medical Jurisprudence, said that as the meeting had heard the subject discussed from various angles, those of the doctor, the working man, and the insurance carrier, he considered that it was about time somebody discussed it from the standpoint of the public. Doctor Delphey had said that he thought every man, woman, and child should have free medical service under the State or Government whether they paid any part of the cost or not, on the same ground that the State furnished free schooling, free fire protection, and free water. There had been considerable applause when that statement was made, but analysis would show that in the city of New York it cost this year $45,000,000 for free schools, about $12,000,000 or more for free fire protection, and if one did not pay his water bill he would find that he could not get free water. Surely one did not want to class the medical profession with the firemen and policemen, existing only on money obtained from taxing the population.

Mr. Dawson had said that the bill would abolish patent medicines and quackery. The speaker declared that he did not think it would. Many physicians prescribed patent medicines because they contained in exact formula the medication considered advisable for the particular case and would probably always continue to do so. It was also a mistake to believe that this law would abolish dispensaries. There would always be rich people who felt that the poor were not getting proper attention by the paid doctors and that it was better to have dispensaries.

At a hearing on the Mills Health Insurance Bill, at Albany, where Doctor Kopetzky and the speaker were present, James P. Holland, president of the State Federation of Labor, asked by what right the American Association for Labor Legislation used the word "labor" and who had given them authority to do so, as this association did not represent labor and labor was opposed to the Mills bill. The speaker's understanding of labor's point of view in the matter of compulsory health insurance was that it was willing to benefit by it provided that all the expenses in connection with it were paid by the employer and the State and not any expense whatever by labor. Also, that if labor ultimately did decide to pay any part of the expense, it would not permit a deduction of its share to be made from the weekly payroll as provided in the Mills bill.

The entire proposition tended toward State socialism. The time had come when everything tended to be regulated by law; there were laws now when certain people should get up and when they should go to bed; when they should eat and what they should eat. A lot of this propaganda came from social workers and so called uplifters, who had no interest in the thing whatever and not a dollar invested, but were always telling other people how to live and act and have their being.

The individual should be allowed to live his own life and build up his own character. This bill might be temporarily beneficial to the young doctor just coming out of medical school, as he would receive a fixed salary and have immediately an established income, but it would not help the general medical profession. Men developed the best in them through the battle of life. Knowledge of prophylaxis and therapeutics would be discouraged in young doctors, and probably the career of many a competent young man would be checked who if he had to open an office for himself and establish a practice would some day become a great physician. It was not suitable that the medical profession generally become salaried employees of the State or of any associations created for that purpose.

Dr. Samuel A. Tannenbaum said that inasmuch as compulsory health insurance was inevitable, the medical profession should not oppose, but welcome it, and try to get the most out of it for the benefit of the public as well as the profession. Labor was at present opposed because it distrusted the insurance companies, and because it was already getting free medical services in dispensaries and hospitals and from lodge doctors, and because labor had not risen to the dignity of refusing to be treated as a pauper.

Dr. H. L. Winter, of Cornwall, N. Y., said that it was the general impression among physicians throughout the State that some form of State medicine was inevitable. Whether it would take the form proposed in the present tentative bill for health insurance or not, however, was a question which required further time to decide. There was one thing certain, and that was that none of these bills should become a law until the matter of compensation had been decided as satisfactorily as possible to the medical profession. The speaker had the honor to be a member of the Council of the State Society at the time the Workman's Compensation Law went into effect. While a so called tentative fee bill was submitted to the members, they had practically nothing to say about the fees which were to be allowed for medical services. Whether the bill was satisfactory or not, it was the principle involved that counted.

Dr. William S. Gottheil thought it is the greatest pity in the world that Mr. Frayne was not present, because they were all interested in the medical details, and wanted a square deal for the doctor. He thought the fundamental question whether the people wanted a bill of this kind or not was one that interested them still more. If the labor interests and the interests that controlled the votes did not want a compulsory health insurance law, then the gentlemen of the A. A. L. L. had given the administration a great deal of vicious trouble. Some of them had given much time, care, and attention to these medical details and would like to know whether the bill was wanted or not. The object was to see that if a health insurance bill was passed, the doctors received fair treatment. They were going to do decent work without the supervision of the local health insurance officers or the State insurance officers, and he was not much interested in the individual schemes so long as whatever plan was selected was an equitable one. He did not know whether "capitation" or "visitation" was the most desirable method of compensation. They had not yet been able to decide that question, but he did know that the demands, or rather the postulates, which Doctor Delphey had stated in his paper were the ones that they must stand by. They must be in any bill that was to be presented if it was to have the support of the Legislature, because they did not propose to push this or any other. The postulates were those of proper representation on the commission, etc., formation of panels, free choice of doctors, and especially the collective bargaining which was, to the speaker's mind, the basis of anything like a just and equitable agreement between the insurers and the physicians.

In the present instance, the backers of the proposed health insurance wished to give the medical profession every chance, and it would be their own fault if they did not take it. The Committee on Economics of the State Society was doing excellent work and was taking the matter up in the right way by giving it wide publicity from every side. It was, however, impossible for such a committee to do satisfactory work without assistance and the subject should be referred to every county society in the State for free discussion before any steps towards legislation were taken.

Everyone interested in the subject should move slowly and every means should be taken to prevent an inefficient or incomplete bill being presented to the Legislature.

Letters to the Editors

SOME RESULTS OF BIRTH CONTROL.

To the Editors: New York, *December 13, 1916.*

Since the publication of my article on Birth Control in the issue of your esteemed Journal for November 18th, I have been the recipient of many letters from readers of the Journal, a good number commenting favorably on my attitude toward this difficult problem, a few condemning it, saying that it was an economic and not at all a medical question, and lastly, some criticising me kindly on the incompleteness of my contribution.

To those whose criticisms and condemnations of my attitude were rather of a private nature I replied privately, and I hope satisfactorily. To the critics who maintain that with the knowledge of birth limitation many women, whether poor or rich, who should and can bear children, will shirk the duties of motherhood, I wish to reply that I do not believe this. In fact, I feel most certain that it is not true, and I would like to tell my friends that one can no more prevent the desire for motherhood in the normal, healthy woman than one can stem the tide of the ocean. It is inherent in every woman's heart. With more marriages of young people and a rational birth control, I do believe there will not be fewer children, but the same number of better ones. There will be, of course, instances—and there are too many in certain classes of society now—where for purely selfish reasons the marriage remains barren, but it is a question in my mind whether it would be really desirable for society to have such women be mothers.

Again it has been asserted that the enfeebled, diseased, ignorant, and poverty stricken woman in whose case birth control might be justified, will never know about the existence of birth control clinics. In Holland however, there must have been some such ignorant women, yet they seemed to have learned to avail themselves of the service of such clinics. Besides, these classes will sooner or later come under the observation of some physician, either privately or in a hospital. Some opponents to the birth control propaganda say that the measure advocated would not reach the feebleminded, the idiotic, half insane, chronic alcoholics, and chronic criminals. This I will grant, and sterilization of those totally unfit for parenthood will some day have to become a State measure unless segregation is resorted to more universally and more rigorously. Birth control is only one measure toward a saner and happier manhood, womanhood, and childhood.

Finally, I must reply to the almost pathetic criticisms of those of my colleagues who wrote me that this matter was a question not for the medical profession, but for the laity. To such I could only express my regret at their attitude. The physician of the twentieth century who deals only with the purely medical and curative part of his profession, who is indifferent to the measures to prevent disease, and cannot feel with the social sufferings of the masses, is lacking in the highest ideals of his calling and misses the greatest opportunity of benefiting suffering mankind.

S. Adolphus Knopf, M. D.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Medical Lectures and Aphorisms. By Samuel Gee, M. D., Fellow of the Royal College of Physicians, Honorary Physician to H. R. H. The Prince of Wales, and Consulting Physician to St. Bartholomew's Hospital. With Recollections by J. Wickham Legg. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. viii-408. (Price, $2.)

It is a rare pleasure and privilege to have a book of this kind drop into the editorial hands. Fascinating as are the bare facts of medical science, they are as susceptible as other facts to artistic literary treatment, and to acquire thereby additional charm and interest. Fortunate indeed were the students whose first knowledge of the subjects treated in this volume was acquired from the genial and scholarly author; the hours must have sped by quickly and memory must have hardly been aware of a burden as it treasured up the musical sentences in which were embodied the personal experiences that doubtless added much to the dryer details which had been long accumulating in the textbooks. The subjects cover a fairly wide range, beginning with the history of a case of cerebral hemorrhage, going on to brachycephalic and dolichocephalic heads, to catarrh and bronchitis, asthma, enlarged spleen, tuberculous peritonitis, etc. There is a discussion of sects in medicine, and finally a delightful series of clinical aphorisms, 272 in number, each a medical epigram worthy to be pondered. The volume concludes with Recollections of Samuel Gee, by J. Wickham Legg, Hon. D. Litt. (Oxon.), F. S. A. (Lond.), which will well repay perusal. We cannot resist stating, in commending this interesting work to our friends and readers, that it is an excellent book by Gee!

Geschichte der Augenheilkunde. Von Dr. J. Hirschberg, Professor in Berlin. Drittes Buch, Dreizehnter Abschnitt. Die Augenärzte der Schweiz, 1800 bis 1875. Mit 5 Figuren im Text. (Handbuch der Gesamten Augenheilkunde, 2. Aufl. XIV. Band. VII.) Leipzig: Wilhelm Engelmann, 1916. Pp. 273.

This is the third volume of a series entitled The History of Ophthalmology, published by Julius Hirschberg, M. D., of Berlin, on the occasion of the celebration of his jubilee. The foremost ophthalmologists of the different countries enumerated during the period from 1800 to 1875 are listed, together with a short biography and reference to their writings. There is a separate chapter for each country containing two indexes, one for the subject matter and the other for the authors of the different articles. The work is exhaustive and, together with the remaining volumes, forms a complete history of ophthalmology during this period.

Mortality Statistics, 1914. Department of Commerce. Bureau of the Census. Sam L. Rogers, Director. Fifteenth Annual Report. Washington: Government Printing Office, 1916. Pp. 714.

The fifteenth annual report of the census bureau is a compilation of the mortality statistics for 1914, covering the registration area of the United States. The number of deaths registered was 898,059, corresponding to a death rate of 13.6 per 1,000 population, the lowest ever recorded for the registration area. The causes of death are based upon the International List of Causes of Death and the report contains complete summaries and rate tables. It is a valuable reference book for all those interested in the subject.

Proceedings of the American Medico-Psychological Association. Seventy-first Annual Meeting, held at Old Point Comfort, Va., May 11-14, 1915. Published by American Medico-Psychological Association. Pp. 387.

This volume, which has just come to hand, contains the representative work of the members of the medical profession who have to treat the vast majority of the mentally disordered in this country, and naturally contains much valuable matter, from administrative, diagnostic, and therapeutic viewpoints. If there is any fault in this collection of papers, it is in the conservative note struck; the genetic and interpretative side of psychiatry is conspicuous by its absence. On the other hand, the management of mental cases *en masse* receives much attention—the occupation and recreation of the patients—and there is some discussion of such subjects as the treatment of paresis by the newer methods.

Cultivo in Vitro del Plasmodium vivax. Dr. Juan Iturbe, Miembro de la Academia de Medicina. Dr. Eudoro González, Laboratorio Del Dr. Juan Iturbe. Caracas, Venezuela, 1916.

This little brochure describes the authors' experience in the artificial cultivation of Plasmodium vivax after the method of Bass. This method was greatly simplified so as to be readily utilizable in any laboratory. Ten c. c. of defibrinated blood were mixed with ten cgm. of a fifty per cent. solution of dextrose, placed in tubes each containing three c. c., and used as a culture medium. Centrifugation was unnecessary, and the sporulation cycle of the parasite was found to be shortened in proportion to the elevation of temperature, it being only thirty-two hours at 41° C.

Contribución al estudio de los gérmenes patógenos del agua. Dr. Juan Iturbe, Miembro de la Academia de Medicina. Dr. Eudoro González. Caracas, 1916.

This pamphlet gives the results of the examination of thirty-four samples of water taken from various parts of the city of Caracas in a search for bacteria of the typhoid and colon group.

El Paludismo De Las Aves En Venezuela. Dr. Juan Iturbe, Miembro de la Academia de Medicina. Dr. Eudoro González. Caracas-Venezuela, 1916.

Hæmoproteus danilewsky was found by these investigators in 145 of 367 specimens of Venezuelan birds whose blood they examined. Rosenbusch's method of fixation and staining was used throughout by them with uniform satisfaction.

Interclinical Notes

A good joke is probably immortal. On page 844 of the *Outlook* for December 20th is a cartoon from the London *Bystander*, showing an officer on a battleship conversing with a recently acquired midshipman. The officer remarks politely, "Well, my boy, the old story, I suppose—the fool of the family sent to sea?" To which the boy rejoins, "Oh, no sir; that's all changed since your day." This wheeze, practically unaltered, occurs in one of Captain Marryat's best sea stories written about one hundred years ago.

* * *

The *Survey* for December 2nd gives a list of bills to be presented to the sixty-fourth Congress dealing with social hygiene—labor, health, and immigration Several of these bills have been approved by labor. One is a bill to promote efficiency in the public health service. It provides for the appointment of a surgeon general who has been trained in national health administration as well as in hygiene and disease prevention; secures a permanent position for that officer in the service at the expiration of his term of office; simplifies the promotion of assistant surgeons, and makes possible the appointment of five additional professors.

* * *

Do our readers know what Naval Stores are? They would if they had read in *Commerce and Finance* for December 6th an article on the subject by E. S. Nash. Naval Stores are nothing more or less than the products of the pine tree, tar and pitch, once extensively used in the navy for smearing ropes and caulking the seams of ships. As our ships are now of steel, turpentine and rosin have had to find a market elsewhere, but soap makers (and some ointment makers, very likely), paper manufacturers, makers of varnish, paint, and russet shoe polish absorb the supply nowadays. No doubt, too, the now numerous students of the violin account for considerable rosin.

* * *

"Bible!" exclaims *Leslie's* for December 14th. "Thirty Bible societies throughout the world put into circulation annually about 18,000,000 copies of the Holy Scriptures. When to this is added 10,000,000 more, the output of private publishing houses it is readily seen that the Bible is entitled to be called the world's "best seller." It pays to advertise, however, even the sacred scriptures, so the New York Bible Society urged the second Sunday in Advent—this year December 10th—as Universal Bible Sunday." Far be it from us to criticise statements concerning the circulation of the English Bible, but we recently saw forty-five copies of the volume in the cupboard off a bedroom in a big uptown hotel. Perhaps an excessively impious guest had once occupied that room, who needed all that weight of sacred literature to balance his villainy. It is more likely, however, that the system of distribution had broken down at some point.

* * *

Stefansson, the arctic explorer, according to the *Outlook* for December 6th, considers Broadway to be more dangerous than the average trail near the north pole. When his fear of Broadway was commented upon he is reported to have answered: "The streets of New York are more dangerous than the frozen level plains of the Arctic Ocean. In the north, ice can be measured, meteorological conditions studied, and the extent and the imminence of most dangers can generally be determined pretty accurately. But on these streets danger is at every hand and cannot be foreseen. While avoiding a taxicab you step into a subway excavation, and in sidestepping a motor truck you walk under a falling piano."

Meetings of Local Medical Societies

Tuesday, *December 26th.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Dermatological Society; Metropolitan Medical Society of New York City (annual); Buffalo Academy of Medicine; New York Medical Union; New York City Riverside Practitioners' Society; Washington Heights Medical Society; Woman's Hospital Society, New York; Therapeutic Club, New York; Valentine Mott Medical Society, New York; Onondaga Medical Society (annual).

Wednesday, *December 27th.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine; Schenectady Academy of Medicine.

Thursday, *December 28th.*—New York Physicians' Association (annual); Hospital Graduates' Club, New York; Medical Union, Buffalo; Ex-Intern Society of Seney Hospital, Brooklyn.

Friday, *December 29th.*—Academy of Pathological Science, New York (annual); Hospital Graduates' Club, Brooklyn.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending December 13, 1916:

Fricks, L. D., Surgeon. Reassigned to duty at the Hygienic Laboratory, Washington, D. C., effective December 5, 1916.

Goldberger, Joseph, Surgeon. Reassigned to duty at the Hygienic Laboratory. Washington, D. C., effective October 31, 1916.

Harrington, F. E., Assistant Epidemiologist. Directed to proceed to Anne Arundel and Dorchester Counties, Md., to make sanitary resurveys of those counties.

Hasseltine, H. D., Passed Assistant Surgeon. Reassigned to duty at the Hygienic Laboratory, Washington, D. C., effective December 6, 1916.

Irwin, Fairfax, Senior Surgeon. Granted twelve days' leave of absence from December 26, 1916.

Kempf, G. A., Passed Assistant Surgeon. Reassigned to duty at Ellis Island Immigration Station, New York, effective August 17, 1916.

Kolb, Passed Assistant Surgeon. Granted one month's leave of absence from December 23, 1916.

Laughlin, J. B., Assistant Surgeon. Directed to proceed to Talladega, Ala., to investigate the water supplied to passenger trains in interstate traffic.

Moore, Dunlop, Surgeon. Reassigned to duty at Ellis Island Immigration Station, New York, effective October 3, 1916.

Nydegger, J. A., Surgeon. Directed to proceed to Washington, D. C., for duty on the Board on Color Perception.

Oleson, Robert, Passed Assistant Surgeon. Directed to proceed to certain plants of the General Chemical Company, in connection with investigations of industrial sanitation.

Rucker, W. C., Assistant Surgeon General. Directed to proceed to Chicago, Ill., on business relative to the operation of the Interstate Sanitary District of the Great Lakes.

Smith, F. C., Surgeon. Detailed to deliver an address on public health at the meeting of the Seaboard Medical Association, Washington, N. C., December 19-21, 1916.

Williams, C. L., Passed Assistant Surgeon. Directed to proceed to various points in the State of California to conduct the work of the eradication of plague among ground squirrels.

Williams, L. L., Senior Surgeon. Directed to make a sanitary survey of Yosemite National Park.

United States Navy Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the three weeks ending December 9, 1916:

Ames, M. H., Passed Assistant Surgeon. Detached from the *Salem* and ordered to the *Maine.*

Bacon, Sankey, Passed Assistant Surgeon. Detached from the *Panther,* and placed on waiting orders.

Brown, E. A., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7, 1916.

Calver, G. W., Assistant Surgeon. Detached from the *Brooklyn* and ordered to the Yokohama Hospital for treatment.

Carr, E. C., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7, 1916.

Casto, D. H., Passed Assistant Surgeon. Detached from the Marine Brigade, Port au Prince, Haiti, and placed on waiting orders.

Clement, M. T., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from Nocember 7, 1916; ordered to the Marine Barracks, Port Royal, S. C.

Clerf, L. H., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7; ordered to duty at the Naval Hospital, Great Lakes, Ill.

Cornett, H. V., Assistant Surgeon. Detached from the *Villalobos and* ordered to the Canacao Hospital.

Crawford, R. L., Assistant Surgeon Detached from the *Rhode Island* and ordered to the *Smith.*

Donelson, M., Passed Assistant Surgeon. Detached from the receiving ship at Norfolk, Va., and ordered to the *Pennsylvania.*

Dragoo, C. H., Passed Assistant Surgeon. Detached from the naval training station, Newport, R. I., and ordered to navy recruiting station, Detroit, Mich.

Durrett, J. H., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7, 1916.

Farwell, W. G., Passed Assistant Surgeon. Ordered to the navy recruiting station, Brooklyn, N. Y.

Findeisen, W. L., Passed Assistant Surgeon. Detached from the navy recruiting station, Detroit, Mich., and ordered to the naval training station, Newport, R. I.

Foote, O. C, Assistant Surgeon. Detached from the *Delaware* and ordered to the *Sterett.*

Freeman, G. R., Surgeon. Ordered to Navy Yard, Boston, Mass.

Hetfield, W. B., Assistant Surgeon. Detached from the *Monocacy* and ordered to Olongapo, P. I.

Henry, R. B., Passed Assistant Surgeon. Ordered to the training station, Norfolk, Va.

Johnson, M. K., Surgeon. Detached from the *Oklahoma* and ordered home to await orders.

Koebbe, E. E., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7, 1916.

Lawrence, H. F., Passed Assistant Surgeon. Detached from the Naval Hospital, New York, and ordered to duty with the Marine Expeditionary Forces, Santo Domingo.

Lowman, K. E., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7, 1916.

McCullough, F. E., Surgeon. Detached from the *Florida* and ordered to the *Oklahoma.*

McDonell, W. N., Passed Assistant Surgeon. Detached from the *Pennsylvania* and ordered to the *Montana.*

McLean, N. T., Passed Assistant Surgeon. Ordered to Haiti, for duty as sanitary engineer.

O'Brien, C. S., Assistant Surgeon. Detached from the Canacao Hospital and ordered to the *Villalobos.*

Pollard, J. B., Passed Assistant Surgeon. Detached from Naval Academy, Annapolis, Md., and ordered to the Naval Hospital, Norfolk, Va.

Porter, F. E., Passed Assistant Surgeon. Detached from the *San Francisco* and placed on waiting orders; ordered to the navy recruiting station, Portland, Me.

Raison, T. W., Passed Assistant Surgeon. Detached from the Naval Hospital, Great Lakes, Ill., and ordered to duty with the Marine Expeditionary Force, Santo Domingo.

Rhoades, G. C., Passed Assistant Surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the *San Francisco.*

Robertson, G. E., Passed Assistant Surgeon. Detached from the *Memphis* and ordered to the *Arkansas.*

Robinson, A., Assistant Surgeon. Commissioned an assistant surgeon from November 4, 1916.

Sellers, F. E., Passed Assistant Surgeon. Detached from the *Kearsarge* and ordered to the *Panther.*

Smith, A. G., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7, 1916; ordered to the Naval Hospital, New York.

Stalnaker, P. R., Passed Assistant Surgeon. Ordered to the training station, Newport, R. I.

Stein, E. J., Assistant Surgeon. Commissioned an assistant surgeon, Medical Reserve Corps, from November 7, 1916.

Sullivan, A. J., Assistant Surgeon. Commissioned an assistant surgeon from October 7, 1916.

Taylor, S. P., Jr., Assistant Surgeon. Commissioned an assistant surgeon from November 4, 1916.

Taylor, S. M., Assistant Surgeon. Detached from the Olongaco Hospital and ordered to the *Monocacy.*

Weaver, C. H., Assistant Surgeon. Detached from the *Arkansas* and ordered to the *Paducah.*

Wiggs, L. B., Assistant Surgeon. Ordered to naval recruiting station, Columbia, S. C.

Williams, R. B., Surgeon. Detached from duty with the Marine Expeditionary Forces, Haiti and ordered to the *Florida.*

Zalesky, W. J., Passed Assistant Surgeon. Detached from the naval recruiting station, Brooklyn, and ordered to the New York Naval Hospital.

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Births, Marriages, and Deaths

Died.

Cain.—In Sewanee, Tenn., on Sunday, December 3rd, Dr. John Savely Cain, aged eighty-seven years.

Cohn.—In San Francisco, Cal., on Sunday, December 3rd, Dr. Isadore Elkan Cohn, aged sixty-four years.

Ernest.—In Lockport, N Y., on Tuesday, December 5th, Dr J. Glenn Ernest, aged forty-six years.

Huston.—In Hamilton, Ohio, on Tuesday, December 5th, Dr. William C. Huston, aged forty-eight years.

Le Fevre.—In Portland, Ore., on Saturday, December 2nd, Dr. Frank W. Le Fevre, aged fifty-seven years.

O'Neil.—In Providence, R. I., on Thursday December 7th, Dr John Edward O'Neil, aged fifty years.

Reamer.—In Baltimore, Md., on Monday, December 5th, Dr. Howard C. Reamer, of Danville, Cal., aged fifty years.

Richman.—In Philadelphia, Pa., on Friday, December 8th, Dr. Kenneth Charles Richman, aged thirty years.

Smith.—In Glenn Springs, S. C., on Sunday, December 3rd, Dr. William F. Smith, aged eighty-three years.

Williams.—In Mt. Carmel, Pa., on Sunday, December 3rd, Dr. Walter Lear Williams, aged thirty-seven years.

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Original Communications

DENTAL INFECTIONS IN SYSTEMIC DISORDERS.*

Their Röntgenographic Diagnosis.

BY SINCLAIR TOUSEY, A.M., M.D.,
New York.

"The widest publicity should be given to the fact that greatly varying and sometimes serious or fatal systemic diseases and those affecting remote organs are often due to infection connected with the teeth or with the pneumatic sinuses of the face. The infected foci are discoverable by the x rays. Some of these cases are cured by treatment of the oral lesion and some require also autogenous vaccination with a bacterial culture from the pus in the oral lesion." These are the words of an eminent jurist whose wife has been dragged back from the verge of the grave through the discovery by the x rays of a focus of infection in connection with the teeth. Pernicious anemia and general spinal sclerosis were threatening to destroy life. The judge's remark is the occasion for this article.

INFECTIONS OF THE TEETH AND PNEUMATIC SINUSES AND X RAY DIAGNOSIS.

A. *Alveolar abscess.* This is the technical name given to infection about the apex of the root of a tooth with a certain amount of decalcification of bone, but not necessarily with liquid pus. The usual origin is from the death and putrefaction of the nerve or pulp of the tooth. The access of septic microorganisms to the region of the apical foramen is either along the root of the tooth or through the pores in the decayed tooth substance. The root canal once infected has no means of spontaneous cure. Its cavity cannot become obliterated by a process of granulation and cicatrization, but remains as a permanent culture chamber for the germs.

The most dangerous cases are those which develop insidiously, without pain, and whose existence is unknown to the patient and even to the dentist until the occurrence of some severe constitutional or other secondary disorder leads to their discovery by x ray examination. It might be expected from the absence of local symptoms that the x ray appearance in these insidious dental infections would be less striking than of those with pronounced local symptoms, but these are sometimes much more noticeable. Other cases pursue a perfectly frank and recognizable course. There is toothache followed by a painful swelling of the jaw. These cases naturally come for relief to the hands of the dentist, but if they are neglected, an abscess forms in the jawbone surrounding the apex of the root, denuding the latter and sometimes eroding it considerably. In some cases there is more or less necrosis of the jaw. All these conditions are clearly shown with almost microscopic detail in a radiograph. These obvious cases are treated by the dentist, who opens the pulp chamber, removes the nerve, and drains the abscess cavity through the root canal. When an aseptic condition has been secured, a radiographic figure with a wire in the root canal will show whether the foramen has been reached. The dentist then fills the root canal to the apex with nonabsorbent material. Some cases require amputation of the apex of the root. Only extreme cases require extraction of the tooth with or without curettage of necrotic bone.

Very many if not most of the cases of alveolar abscess referred for x ray examination are connected with teeth which have already gone through the history of death and removal of the nerve. The x ray often shows in such a case that the root canal has been only partly filled. A cavity remains in the tooth, lodging germs which keep up infection of the jaw and the general system and on occasion start an abscess in the jaw bone.

Pyorrhœa alveolaris, also called Riggs's disease. This is a disease the symptoms of which point directly to the teeth, and which the dentist is naturally called upon to treat. The name implies a discharge of pus from the alveolus or tooth socket. The gums around certain individual teeth are swollen and usually red and bleeding, but sometimes white and cartilaginous. Pressure upon the gum causes an escape of a drop of pus along the neck of the tooth; and this may be repeated every five minutes. Day and night, this discharge of pus and infected blood is swallowed with the saliva. The pus comes from a pocket extending from the neck of the tooth, perhaps even as far as the apex of the root. The root of the tooth is often covered by dense black calcareous adherent scales. The pocket is formed by greater or less absorption of the alveolar process surrounding the affected tooth. The pocket may be demonstrated by passing an instrument into it, as is done by the dentist for the pur-

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*Read before the Medical Association of Greater New York, New York Academy of Medicine, May 15, 1916.

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pose of removing scales and applying suitable antiseptics. In the presence of the scale covered root of the tooth and under the influence of the constant suppuration there is progressive absorption of the alveolar process until the tooth lies loose in a large painful cavity from which it is an act of mercy to extract it. The pocket is much more clearly demonstrated by the x ray as reported in the author's various papers and clinics before dental conventions during the past twelve years. *In many cases the radiograms reveal the cause of the pyorrhœal pocket.* A famous actress was referred to the author for treatment, by the x ray and ultra violet ray, of pyorrhœa affecting the left upper central incisor. Following my usual custom, I made a radiogram of the affected portion of the superior maxilla and found an unerupted supernumerary tooth pressing upon the root of the incisor and acting as a constant source of irritation. This, far from being an isolated case, is but one of numerous cases of pyorrhœa originating from a similar cause. The discovery of this cause affords the key to successful treatment by removal of the unerupted tooth, and saves the patient fruitless attempts at a cure by other means. An unerupted tooth is clearly demonstrated by modern apparatus and technic. In other cases the x ray shows a root filling extruded through the apical foramen or through a false passage and forming an irritant foreign body. Removal of the offending substance either through the root canal by enlarging the foramen, or, more effectively, by an amputation of the apex of the root, cures such a case, and other methods of treatment must necessarily fail. It used to seem desirable to allow a stump to remain after the crown of the tooth had all vanished through decay. This was on the theory that any kind of a root tended to prevent absorption of the alveolar process and so would preserve the contour of the face. Recent cases have shown that this is sometimes dangerous. In one case an alveolar abscess of such a root was the seat of infection producing cardiac and arthritic lesions. In another case infection from such a retained root started up pyorrhœa in a neighboring tooth and neurasthenia.

Pyorrhœa alveolaris makes the teeth very sore and in the first case treated with the x ray the patient, a medical student in London, had to warm his beer and cool his tea. The dental treatment also is exceedingly painful. The suffering and the inevitable loss of the affected teeth and the constant absorption of pus both through the local circulation and also from the discharge that is swallowed, make a cure extremely important.

The treatment of pyorrhœa will naturally be discussed by the dentists. But I may mention that cases which do not yield to ordinary dental measures or to emetine are often referred to me for treatment by the x ray and the ultra violet ray from high frequency vacuum electrodes. These measures as an adjunct to the dentist's treatment have cured at least one case. Very extensive pyorrheal pockets were present about several teeth, and pain and discharge and looseness of the teeth had persisted in spite of dental treatment by Dr. Van Saun. A course of twelve treatments resulted in a cure and at last accounts, three years later, there had been no recurrence. The fact that restoration of the lost alveolar process cannot be expected renders it desirable to cure the disease while there is still enough of the bony socket left to hold the tooth firmly when a healthy condition has been restored.

One of the worst cases of dental infection the author has ever seen was referred for x ray examination by Dr. M. H. Brown. There was a cavity in the lower jaw opening in the mouth behind the last molar tooth. A yard of the foulest gauze packing was drawn out and it seems as if nothing short of cancer could possibly produce such a mass of corruption. The radiogram showed a large thin walled cavity in the lower jaw, at the bottom of which was an unerupted supernumary tooth. The latter lay far from the ordinary tooth bearing area.

Another case, referred by Dr. Fellowes Davis, presented swelling and a fistulous opening. Into this was injected a bismuth paste by means of which the radiogram showed the path of the fistulous tract and its origin in a root at a distance from the swelling.

Several years before the discovery of the x ray, a case was referred to the author, a fistula, which had been discharging externally under the angle of the jaw for seven years in spite of treatment by the best physicians. I was asked to recommend a good skin specialist. It seemed desirable to introduce a probe which led up through the jawbone to the root of a tooth. And it was a simple enough matter under a general anesthetic to extract the tooth and curette the bony socket and the entire length of the fistulous tract. The latter was permanently healed in ten days.

The foregoing is a brief exposition of some of the local lesions directly affecting the teeth which may form the focus of constitutional infections and produce an amazing variety of secondary lesions and symptoms.

The focus of infection not always connected with the teeth. A case in point was one in which an eye and ear specialist had for two years and a half suffered from pain and had constitutional symptoms for which the ethmoid cells had been scraped out and every upper tooth extracted. The pain continuing, spicules of bone had been cut out of the upper jaw by rongeur forceps. A number of radiograms showed no retained root of a tooth as had been suspected and no alveolar abscess. A radiogram of the whole face, however, showed that one antrum was absolutely opaque. It was operated on by Doctor Cryer, of Philadelphia, who removed a mass of pus and granulation tissue, and the abscess was cured. If the x ray had been resorted to in the beginning, two and a half years of suffering and the useless extraction of all the upper teeth would have been avoided.

The x ray will reveal any source of infection connected with the teeth or the pneumatic sinuses of the face, if these are present. If these were undiscovered and untreated there might follow the most serious consequences, which could easily have been averted. A case in point is described later, in which the author discovered the cause, but the teeth seemed perfectly sound to the dentist with the usual means of examination. The patient, himself a physician, had terrible neuritis and high blood pressure, and eventually died of apoplexy, apparently from neglect to remove the cause in time.

CONDITIONS FROM WHICH ALVEOLAR ABSCESS AND PYORRHŒA ALVEOLARIS MUST BE DIFFERENTIATED.

Pulp stones. These are calcareous concretions in the pulp or "nerve" of the tooth. They cause pain, and the patient comes for a radiogram which is expected to show the site of an alveolar abscess. The picture, however, shows an area of density in what should be the perfectly transparent contents of the pulp chamber. The "nerve" is more or less irritated, and there is in the figure a slight departure from the normal appearance of the bone surrounding the apex of the root. Such cases are treated by removal of the "nerve."

Pain similar to that of chronic abscess and very slight radiographic indications of apical irritation may occasionally be simply the result of constantly repeated pressure: this tooth alone making contact with the opposite teeth when biting or chewing. The dentist can remedy the cause by regulating the teeth slightly or by grinding the surface of this tooth or the one it collides with. This explanation of the case should, however, be accepted with more than the traditional grain of salt. If the pain ceases and the radiographic appearance becomes normal, that is all that can be desired. But if more or less discomfort remains and the radiographic appearance continues distinctly abnormal, the case should not be temporized with, even though the usual tests by the dentist indicate a vital and healthy tooth. The symptoms and radiographic appearance in such a case at the start were as described above. Grinding the surface of the opposing teeth did away with their collision, but the discomfort and abnormal radiographic appearance persisted for years. Then there was an attack of intense pain necessitating the use of morphine and accompanied by swelling and suppuration. This required months of treatment through the root canal. A year later the root was filled to the apex and surrounded by healthy bone.

The treatment of just such a case should, according to the author's views, consist in drilling into the tooth and removing the dead or chronically irritated nerve. This should be done before putrid decomposition has poisoned the alveolar or bony socket almost beyond recovery. The very serious subsequent developments in this patient are described on another page.

Cysts. A cyst in either the upper or the lower jaw may cause symptoms resembling those of alveolar abscess, and the radiographer should be careful to differentiate between the two. In a recent case treated by Doctor Clawson there was a large area of transparency between the roots of the lateral incisor and the canine. Both these teeth had healthy "nerves." The cyst contained a clear straw colored liquid and was successfully treated by incision, curettage, and packing, without disturbing the two neighboring teeth. A large, thin walled, clearly defined cavity without local symptoms is frequently a cyst; while an alveolar abscess is often evidenced by decalcification, gradually shading off into healthy bone without a distinct line of demarcation.

A dentigerous cyst commonly shows as a hard swelling upon the jaw and is essentially a cavity in the bone wherein lies an unerupted and usually supernumary tooth. Exceptionally the x ray shows that such a swelling is an *odontoma*, a tumor of almost stony hardness and consisting of a conglomeration of nodules of dentine covered by enamel.

Alveolar abscess and unerupted tooth combined: In a patient seventy years old with painful swelling of the lower jaw, the dentist could not determine whether the cause was an unerupted tooth or an alveolar abscess. The radiogram showed that both conditions were present. Another patient, aged fifty years, was referred for an examination to determine the presence of an unerupted upper canine. The radiogram showed the unerupted tooth and an unsuspected alveolar abscess of an upper molar.

An impacted wisdom tooth, lying perhaps in a horizontal position concealed in the jaw and growing directly against the root of the second molar, causes pain suggestive of neuralgia or neuritis. It is mentioned in this place because of the misinterpretation that has sometimes been made of the radiographic appearance. The unerupted tooth lies in a natural cavity of the jaw, and if the root is not fully developed a transparent area is seen at that end. This represents soft tissue in which tooth substance is developing and is not an abscess. The flaring foramen of a growing tooth in a young person should not be mistaken for an abscess.

LESIONS AND SYMPTOMS SECONDARY TO INFECTION CONNECTED WITH THE TEETH OR THE PNEUMATIC SINUSES OF THE FACE.

Tuberculosis. It has long been known that one of the common sites of infection in pulmonary, bony, and glandular tuberculosis, is an alveolar abscess. The continued existence of such a pus pocket is therefore a distinct menace to life itself.

Neurasthenia. A man of powerful physique, weighing 220 pounds, was lately referred to me suffering from neurasthenia. He complained chiefly of not being able to stand as much business activity and responsibility as one of his apparent strength would be expected to. There had been no dental, but some nasal symptoms. The radiograms showed pyorrheal pockets, including one of the right lower second bicuspid, due to irritation from the retained and infected roots of the first molar. An anteroposterior radiogram of the head showed the frontal sinus to be solid, either from pus or some other opaque substance or because of congenital absence of the frontal sinus. In another patient with neurasthenia applying to the author for x ray examination, the radiogram showed an alveolar abscess with erosion of a considerable part of the root. The canal was only partly filled and the foramen wide open.

Chorea. One of the most conservative neurologists has just made the statement that eighty per cent. of the cases are due to streptococcic infection. He says that the prognosis is entirely changed by this discovery.

Arthritis has become known within the last few years to be frequently due to toxemia originating and maintained by an alveolar abscess or pyorrheal pockets. Since this discovery, many a case of acute or chronic "rheumatism" has been cured in a short time by treating the focus of infection.

CASE I. *Arthritis, pleurisy, endocarditis, and meningitis.* A patient has been already referred to who had a troublesome lower first bicuspid which the dentist at first thought was simply irritated by striking against an upper tooth. This went on to the formation of an alveolar abscess. Following prolonged treatment through the root canal the tooth was filled. The x ray showed this tooth in an apparently cured condition. The root filling reached about to the apical foramen and the surrounding bone had regenerated. During the latter part of the summer, the patient began to complain of renewed discomfort and wanted to have the tooth extracted, but a radiogram showed it to be all right. Nevertheless a series of fugitive attacks of arthritis, myositis, and neuritis occurred. Each attack lasted a week or ten days and produced severe pain. During these two months the patient lost twenty pounds in weight and at times had a slight rise in temperature. A diet from which sugar and meat were excluded, and medication by aspirin, salophen, and sodium salicylate produced little or no effect. Finally a few applications of high frequency currents from ultraviolet vacuum electrodes seemed to have brought these attacks to an end. On December 5th, however, she was seized by sudden severe pain in the left upper quadrant of the abdomen, with great rigidity of the left rectus muscle. This pain was not relieved by laxatives and enemata and gradually extended to the left side of the chest, where in two or three days the physical signs of pleurisy with effusion developed. The heart was greatly dilated and there were rasping mitral murmurs. Absolute rest in bed, a purin free diet, and an ice bag over the heart, temporarily reduced the severity of the symptoms without much change in the physical signs.

After five weeks of this acute illness, Dr. Harlow Brooks, in consultation, found that she presented the clinical picture of tuberculous peritonitis and tuberculous pleurisy on the left side. There was also flatness at the base of the right lung, which with the onset of meningitic symptoms and constant leucocytosis led to a suspicion of abscess which was disproved by an exploratory puncture. The meningeal symptoms became rapidly worse, the patient was unable to speak a connected sentence. There were several severe convulsions, lasting from an hour to an hour and a half each. A spinal puncture showed a clear fluid under normal pressure and containing no microorganisms, and negative to the Wassermann test. The spinal fluid contained one lymphocyte to about fifteen red cells. The blood contained no microorganisms and was negative to the Widal and Wassermann tests and contained 25.000 leucocytes per cm. The urine contained albumin and casts. A radiogram of the chest, made at the bedside with a portable outfit, showed no collection of fluid in either side of the chest, but some mottling on the right side. It showed a greatly dilated heart and an enlarged thymus gland. The pulse was 120, respiration 34, temperature 102.5° F.

Dr. N. B. Potter and his assistant, Doctor Ordway, had always been suspicious of streptococcus infection, possibly from the teeth shown in my radiographs. And it had been the plan that the first time the patient went out of doors it should be to the dentist's office to have the suspected second bicuspid drilled into and the question of the life or death of its nerve decided. It had now become evident that it was a question of the life or death of the patient to discover and remove the source of infection at once, unless it should prove to be tuberculous and not removable. Dr. Henry Sage Dunning accordingly operated upon the patient in bed under local anesthesia. He extracted the originally infected first bicuspid without difficulty. The hooked root of the second bicuspid broke off, as had been feared, and had to be chiselled out. The operation took about two hours, but was entirely painless.

Improvement in every particular began from that moment. The original tooth was found to be sterile, but a culture of Streptococcus viridans was obtained from the second bicuspid, and on the fifth day after the operation inoculations with autogenous vaccine were begun. After this the improvement was more rapid, and on the thirteenth day after the removal of the teeth the respiration was 24, pulse 74, temperature 98° F.; the patient's strength increasing daily. The physical signs were clearing up. Pneumonia and hemiplegia were later developments, but there was still a prospect of recovery.

Neuritis, neuralgia, tic douloureux, sciatica, constitute a group of cases in which our first thought is to determine the presence or absence of a cause connected with the teeth or sinuses, for no ordinary medical agents will avail if the trouble is due to such a cause. A patient had very severe tic douloureux spasms of pain at a few seconds' interval, feeling exactly as if a tack were driven into the jaw bone. The x ray and high frequency currents from ultraviolet ray vacuum electrodes gave great relief, but the final cure was accomplished through overcoming intestinal autointoxication, which appears to have been the underlying cause. The negative x ray findings saved the patient from needless and ineffective sacrifice of his teeth. A patient of the late William T. Bull had been treated by neurologists and electrologists, in this country and Paris, for trigeminal neuralgia which had persisted for three years. Doctor Bull had arranged to perform an operation for the removal of the Gasserian ganglion, but as a final preparatory step sent her for an x ray examination. The picture showed an unerupted tooth near the angle of the jaw, which Doctor Bull operated upon, with a cure of the disease; the patient was also saved the fruitless suffering and danger of an intracranial operation.

Paroxysmal cough. Such a case in a man who has recently become blind was referred to the author by Doctor Osborn. The radiograph showed alveolar abscess and numerous pyorrheal pockets.

CASE II. *Arterial hypertension,* leading to arteriosclerosis with many distressing symptoms and a prospect of apoplexy and death, calls for an x ray examination of the teeth and pneumatic sinuses. A patient with extensive pyorrheal and abscess areas about the teeth, was professor of laryngology and rhinology in one of our universities, and had been referred to me for treatment of neuritis of the arm. He was under treatment elsewhere for high blood pressure, which I thought was of the same toxic origin as the neuritis. Suspecting dental infection, I made radiographs which showed the area of infection. I most strongly urged treatment, either by extracting the affected teeth or by applications made through the root canals. The dentist, however, found the teeth healthy according to his tests, and refused credence to the x ray findings. It was before the general recognition of this source of systemic infection, and the doctor was allowed to go from bad to worse until he was in a desperate condition in the Battle Creek Sanitarium. There he met a dentist who believed the story told by the radiographs. A number of terribly abscessed teeth were extracted, with immediate and marked constitutional benefit, but on his return to New York the radiograph showed other infected areas in the upper jaw from which all the teeth had been extracted, and in a few weeks he died of apoplexy. Timely extraction of all the infected teeth I believe would have saved this useful life. He was only fifty-six years old.

Cardiac lesions secondary to dental infection with its accompanying rheumatism, nephritis, or neuritis, occurred in twenty-three out of thirty-one cases of Hartzell, Henrici, and Leonard, and were evidenced by valvular disease, usually mitral insufficiency. Four cases had a diagnosis of myocarditis and three of pericarditis. Removal of the causative foci of infection prevented further damage to the heart in valvular cases, and general medical measures were adopted to favor compensation.

CASE III. *A cardiac lesion,* which was the most important result of dental infection. The patient had a mitral murmur, mitral regurgitation with some compensatory enlargement of the heart, but no edema of the extremities or dyspnea. Getting up quickly from a reclining posture would cause him to drop back, practically in a faint, and he had to avoid turning suddenly for the same reason. The urine contained numerous granular casts, calcium oxalate, uric acid, and contained albumin. The recent occurrence of a swelling of one or two finger joints caused him to have radiographs made of all the teeth. Pyorrheal pockets were found about several teeth; and there were three alveolar abscesses with considerable destruction of bone. The three abscessed teeth were extracted. The first two contained no pathogenic microorganisms. The third yielded a culture of Streptococcus viridans from which an autogenous vaccine was prepared.

Exophthalmic goitre. This is a disease in which an x ray examination of the teeth is indicated. Arising at an early stage, as it often does, it might seem unlikely that dental infection should have been an exciting cause. In nearly every family some case of dental abscess with local symptoms may be found to have occurred during youth or childhood. Those with manifest symptoms have usually been treated more or less successfully, but the x ray alone would have disclosed those with an insidious course. In one case there had been alveolar abscesses of two lower molars for a long time. In the other case all the upper and lower teeth, except two or three isolated ones, had been lost through pyorrhea.

Eye diseases. Some cases which were formerly diagnosed as rheumatism or syphilis have been found to be due to dental infection. The uveal tract, including the choroid, the ciliary body, and the iris, is most apt to be affected by this cause. Cases have been known in which even one eye has been lost and this cause of infection discovered in time to save the other. One patient with endocarditis and hemiplegia from alveolar abscess had neuroretinitis as an effect of meningitis, and at another stage episcleritis as a direct effect of the infection or as a reaction from the autogenous vaccine. Another patient became blind and was without perception of light before the infection was discovered, but perhaps not in consequence of it.

Tinnitus aurium was the symptom complained of by the patient referred to me by Doctor Clawson. The radiograms showed no dental lesion. The ringing in the ears may in other cases be an indirect result of high blood pressure directly caused by dental infection.

Spinal cord lesions have recently been recognized to be sometimes due to infection arising from the teeth. A patient of Doctor Solley's, with pernicious anemia and numbness and loss of power in the upper and lower extremities, was in a desperate condition with thirty-five per cent. of hemoglobin and becoming weaker every day. Dr. Pearce Bailey found positive evidence of general, not merely lateral spinal sclerosis, with symptoms indicating a stage of irritation rather than destruction of the nerve fibres and cells, and with a possibility of partial or complete cure if the source of infection was discovered and removed. The radiograms showed alveolar abscesses of several teeth. The teeth were extracted and an autogenous vaccine prepared from the pus was administered. There was immediate improvement in her general condition and restoration of power in the arms, and there is hope of a complete recovery.

Gastric ulcer. The most surprising success has been reported by Hartzell, Henrici, and Leonard[1] in the treatment of gastric and duodenal ulcer. Unmistakable cases were cured so promptly as to indicate a causative relation between the dental infection and the destructive process in the gastric wall. We cannot tell which of the two factors is most destructive. There is the irritation from the infected matter which is constantly swallowed with the saliva and there is the hematogenous infection. The demonstration of this easily discoverable and removable cause of many cases of gastric and duodenal ulcer is a fact of great importance. Consider the number of these cases coming to the röntgenologist for diagnosis after months or years of pain and loss of weight and strength; also the tendency to recurrence after medical treatment, the tendency to produce adhesions interfering with gastric and intestinal digestion and transit, the danger of adhesions following operative treatment, and the ever present menace of a chronic ulcer developing into cancer.

Alveolar abscesses of both roots of a lower molar tooth were one of the lesions in the case of a lady, who for two years had been treated unsuccessfully for symptoms of gastric or duodenal ulcer. After seeing the radiograph, she recalled that three years previously there had been pain about this tooth, the only treatment having been by counterirritant applications. Alveolar abscess was one of the dental foci of infection in a lady who had a large hemorrhage from the stomach, with temporary recovery under absolute rest and suitable diet. Later there were further gastric symptoms, and a large six hour residue as demonstrated by a radiograph. The dentist thought it wise to extract this tooth and two others.

It seems as if x ray examination of the stomach and of the teeth should go hand in hand in cases of suspected gastric or duodenal ulcer. Of course radiographs of the stomach and intestine should be made to exclude the presence of a lesion requiring an abdominal operation.

Cholecystitis and gallstones. Charles H. Mayo, from experience based upon 6,000 operations for these diseases, draws the conclusion that they are due to infection. Septic inflammation of the gallbladder and hepatic duct leads to adhesions followed by stagnation and concentration of the contents of these hollow viscera. He believes that the primary source of infection is most frequently a focus in the mouth. He says that the old statement that many persons have innocent gallstones has been disproved. All gallstones are a source of illness and danger. These observations are confirmed by other abdominal surgeons.

The moral to be drawn is that early x ray examination of the teeth in every case of pain in the upper part of the abdomen will frequently reveal foci of infection, and attention to these may often prevent cholecystitis, adhesions, and gallstones.

Cancer of the stomach and bile duct. Malignant disease of these organs seems to start from inflammation. ulcer, and adhesions. Discovery and remedy of the primary cause at the earliest possible moment will doubtless have a powerful prophylactic influence.

CONCLUSIONS.

A putrescent mass in the pulp chamber of a tooth may exist for months or years because the walls of the cavity cannot collapse and are incapable of throwing out granulations and eventually filling the cavity with healthy tissue, like the natural process of cure in an abscess in the soft tissues of the body. This putrescent mass may constantly poison the bony tissues surrounding the apical foramen sufficiently to produce an effect clearly recognizable in a radiogram. This condition may be unknown to the patient, and sometimes may not reveal itself to the usual tests applied by the dentist. From this long persisting source of infection, secondary lesions and symptoms of the gravest and most diversified character may arise.

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[1] Report of the Minnesota Division of the Scientific Foundation and Research Committee, *Journal of National Dental Assoc.*, November, 1915.

The x ray is to be depended upon to show whether or not the source of trouble is connected with the teeth or the pneumatic sinuses, and if so, whether the trouble is due to malposition and unnatural pressure or to infection. It would be a mistake to regard every case as due to the teeth and proceed to sacrifice the latter without first making a radiogram which may acquit them of any complicity in the matter.

850 Seventh Avenue.

ECZEMA IN CHILDREN.*

By George W. Crary, M. D.,
New York.

Eczema must still be described as comprising forms of dermatitis which as yet have not been assigned to any other distinctly specific entity; only when a dermatitis cannot be classified as belonging to any other group of diseases of the skin may a diagnosis of eczema be made. Only when an existing erythema is determined not to be a simple intoxication erythema, nor one of the acute infectious diseases, not an urticaria nor due to mechanical, thermic, or chemical irritation, nor to belong to any of the other forms of erythema, may a diagnosis of an erythematous eczema be made. Similarly, a vesicular eruption must be determined not to be a zoster or other form of herpes, including dermatitis herpetiformis, the early stage of an impetigo contagiosa, dysidrosis, dermatitis calorica, or any of the other forms of dermatis accompanied by the formation of vesicles or bullæ, before a diagnosis of vesicular eczema may be made, and this same method of diagnosis by exclusion must be pursued throughout in the other forms under which eczema may present itself.

With such a conception of eczema before us, it follows that the etiology of the disease will often be obscure and nearly always varied, and mixed. Such a mixture of causes will most often be found to be internal and external, and the relative potency of the two will vary much in different cases, and in a given case the one may so predominate as to cause us to diagnose the condition as an eczema of external origin, or as an eczema of internal origin, and from the point of clinical therapeutics this is perhaps the important point to establish. In children two years of age, or less, an eczema of extensive distribution, of purely external origin, is rare, though in perhaps nearly all, if not indeed in all, the external cause is present as the determining cause; the predisposition to the outbreak being established by causes of internal origin. The external cause is quite certainly of a bacterial nature, but the specificity of the particular microorganism has not been established, though affirmative statements have been made by a few investigators. If there is an absence of proof by the bacteriologist of the responsibility of any one germ, it is not an unwarranted assumption upon the part of the clinician to assume the activity of more than one form of microorganism. In young children, the site of the internal causation for an eczema is the gastrointestinal tract, and is of the nature of an autointoxication due to feeding which in that particular subject, at that particular time, is faulty in that, for the time, the subject is unable perfectly to digest or to assimilate the food taken, or because there has been developed in the child a hypersusceptibility to certain foodstuffs. Such liability to food anaphylaxis as a cause of outbreaks upon the skin has very recently received much attention. Strichler and Goldberg (1) and McBride and Schorer (2) have given us valuable accounts of their experiments upon the skin reactions to food anaphylaxis, and White (3) reports his study of the effect of this form of anaphylaxis upon the occurrence of eczema in infants. The power of certain foods specifically to cause the outbreak of certain forms of dermatoses or even of certain varieties of eczema, must be considered "not proven." But before the phenomena grouped under anaphylaxis were named or understood, and long before intoxication by foods was included under the heading, it was known that certain subjects, especially infants, would at times manifest a susceptibility to the ingestion of certain foods, and these often of the simplest. Babies have been thrown into convulsions, with even a fatal outcome, by even small amounts of egg albumin, taken by stomach or injected under the skin, and milk has been known to cause similar disturbance. Nearly all authorities, however, admit that there are eczemas in infants which are quite independent of any form of food ingestion, and an intestinal autointoxication may result, as McBride and Schorer have pointed out, from an indifferent food which has undergone change, either within or without the body of the host, through the action of parasites. We have cases also arising from so called reflex causes, and one of the most frequent is that associated with an adherent prepuce, especially in female infants. Undoubtedly dentition may also act as an exciting or predisposing cause of a reflex eczema.

TREATMENT.

Upon approaching the treatment and cure of eczema, we are met, first, with a prevailing belief among the laity, and entertained indeed by many of the profession, that the cure, or at least the rapid cure, of an eczema is fraught with danger to the life of the child. In his report of his fatal cases of eczema, Purcell S. Hichens (4) lends his support to this belief by concluding to give to mothers of eczematous infants the warning that their children may be better off with eczema than without, and that its cure is not an unmixed blessing. In five of these six cases, details of the disease and its treatment are given, and it is of some interest to note that in four, lead, in the form of Goulard's extract or of ointment or emplastrum, was used in the external treatment. In the discussion of the report, Doctor Guthrie suggested that death might sometimes be due to the poisonous nature of external applications, and the extensive application of remedies to the delicate skin of a child which might, if absorbed, prove harmful to the general health or even to the life of the infant, should be most carefully guarded against. An examination of this report would further suggest that it was not the rapid cure of the eczema that had proved fatal, for in none of them was a quick cure obtained. In two cases improvement was noted in two weeks and in thirteen days, respectively, and in one other case a cure was established in four weeks. It would seem more likely that these deaths took place as a result of the intestinal autointoxication, of which the skin manifestation was only one symptom, and not perhaps a very important one, as in two of the cases the eczema was limited to the head and face, in one other the nates were involved, and in still another one arm was the site of the eczematous process. In one of Guthrie's cases which came to autopsy, he found marked congestion of the whole gastrointestinal tract, with raised, swollen, and red Peyer's patches. Whenever this suggestion of the danger of a quick cure has been made to me by an anxious mother, I have been more accustomed to reassure them by remarking upon the unlikelihood of a quick cure than to warn them of the dangers of such a cure. The cause of eczema in infants, the cause of the illness of which the eczema is a symptom in infants, being so intimately connected with faulty feeding, it seems to be the duty of the pediatrist to assume direct control of the case, and for the dermatologist to assume the position of consultant. Certain general guides may, however, be indicated. Freeman (5) advises that the food be cut down to the caloric requirement, that the ration be balanced, and that digestion be aided. He advocates the introduction of malt soup into the dietary to maintain the proper caloric balance, and he prohibits stewed fruits and cream. Southworth (6) also finds malt soups to be a valuable aid in the nutrition of infants who do not properly digest and assimilate other forms of modified or unmodified milk feeding. Ochs (7) likewise believes in cutting down the amount of food and the number of feedings. Varnot (8) in nursing infants recommends a change of milk, believing this to be less dangerous than the external treatment. I am accustomed to forbid eggs and sugars in the diet of the older babies, a position founded largely upon clinical experience. In the choice of external dressings, protection is first of all to be sought, but the dressing itself should be capable of absorbing moisture from the skin, and should not be impervious to it. For this reason pastes rather than ointments should be the base, and such a paste is better than a lotion when a large surface is to be covered, as under such circumstances the application of lotions as wet dressings is sure to be depressing to the vitality of the little patient. Again I have so often found that the application of any fat to the skin of an eczematous infant proves irritating, that I now invariably use an Iceland moss jelly, either to dilute the petrolatum base, or alone as the base for whatever medicament I wish to apply. I believe in the introduction of a mild antiseptic into the external treatment, and I generally employ a resorcin, as euresol, the monoacetate according to the manufacturers of the preparation I use. This I introduce into the paste in the proportion of one, two, or even three per cent. With this may be combined small percentages of ichthyol, up to five or ten per cent. Where a purely protective dressing is required, the preliminary application of the Iceland moss jelly, followed by thorough dusting on of an indifferent powder, composed usually of zinc oxide and powdered talcum, and allowed to dry, has oftenest proved of value. Where such an application is made, the flexures, as in the cubital triangles and popliteal regions, must be softened when dry by the application of petrolatum, to prevent cracking or a milder irritation of the skin upon movements of the extremities.

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*Read at a meeting of the Medical Association of the Greater City of New York, April 17, 1916.

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535 PARK AVENUE.

INFECTIONS OF THE BONES AND JOINTS.*

By PERCY W. ROBERTS, M. D.,
New York.

It has seemed to me that it might be of more interest to give some impressions gathered from every day work in the orthopedic clinics on joint involvements, than to prepare a studied paper, as I assumed that the symposium would cover the general phases of the subject. Arthritis, however, is of very great importance. The orthopedic clinics are crowded with cases of joint lesions in all stages. We see them in the early and late stages. It would seem that there were two general types of the condition, the subacute, and what simulates a metabolic form such as we see in senility. The question arises, What may be the origin of these cases? Personally, I believe it is at one time or another an infection, despite the observations to the contrary. Undoubtedly, subacute forms result from infections, and unquestionably the teeth and tonsils are prominent portals of entry for the bacteria.

I am somewhat of a conservative, however, in regard to the dental and oral infections generally. That does not mean any lack of enthusiasm for the work that is under way at present and which has taken such a strong hold on us, but I am conservative because of my experience. Undoubtedly, the teeth are often the cause of chronic multiple arthritis, but when we see patients who have had all their teeth removed and their tonsils taken out, and still the arthritis goes on, is it fair to assume that the cause lies in the teeth or tonsils? There are various sources of infection, and we are too apt to regard those most accessible as being the most probable. Very often the accessible parts, although they contain cocci, are not the source of the offending organism—for joint troubles, as is well known, are not due to any one type of organism, or any one strain. They follow infections of any sort—staphylococcus, streptococcus, gonococcus, scarlet fever, grippe, typhoid, etc., and it is seldom that the organisms themselves are recovered from the joints.

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*Read before the Medical Association of the Greater City of New York, May 15, 1916.

That means that it is some irritant or toxin which disturbs the joint, and it is not always possible to determine whence that toxin arises. The throat is probably even more important than the teeth as a matter of consideration in determining the cause of joint infections, for numerous organisms find lodgment there and autogenous vaccines frequently give most brilliant results—although quite as frequently they fail.

To diverge for a moment or so from the dental and oral infections to say a word or two about treatment, because many of the cases which come to us have been the rounds of the hospitals and clinics, springs, and baths, and have spent time and money without results—one of the most common errors in the treatment of multiple arthritis is the assumption that joints should be kept in motion or they will be sure to have ankylosis. There is nothing more fallacious. If I had to choose one form of treatment for acute or subacute arthritis, it would be absolute rest. We frequently see joints which are enlarged, tender, and extremely painful on motion that need immobilization, and yet when plaster of Paris is suggested as the treatment—this applies particularly to the knee—not only the patient, but very often the physician hesitates and says No; and it is only by considerable urging that such treatment is permitted. As a matter of fact, nothing is better. Joints which are enlarged and tender and have been painful for months, or perhaps years, often improve remarkably after three or four weeks in plaster of Paris. It is very seldom that a knee joint of the subacute type will not come back nearly to normal—provided, of course, that there have not been extensive bone or cartilage changes. Therefore, I say, that if I had to choose one form of treatment it would be immobilization.

The best illustration of the innocuous nature of immobilization in plaster of Paris is seen in cases of hip disease in which the knee is kept at rest for two, three, four, or five years, and yet ankylosis never follows. The knee joint is stiff when first released from its splint or brace, but restoration of function always occurs.

Inasmuch as the matter of dental and oral infection has been pretty well covered, may I say another word about chronic joint cases—that is, the early diagnosis? It is a little difficult to make a correct diagnosis in the early stages; in the later stages, it is very simple, but when a patient comes in with a stiff finger or a painful knee we cannot always be sure whether it is a local or a progressive condition. In going over a very large number of these cases, one point that has been of some service in determining the nature of the trouble has been the tenderness of the bones at the point of insertion of the long muscles—such as the tuberosities of the condyles of the femur and the humerus, the great trochanter, and the head of the fibula. These are nearly always tender in osteoarthritis, and yet the patient is quite unaware of that fact until pressure is made upon them. In following up cases of this kind, which in after years have gone on to a chronic multiple arthritis, I feel convinced that this finding is of some value in arriving at an early diagnosis. I have seldom seen it in other diseases, syphilis excepted. It is not, I think, present in acute infections of the joints.

I believe that the teeth should be x rayed in every chronic joint condition. I have so often seen relief from the proper treatment of the dental lesions that it seems very wrong in the light of our present knowledge to let a patient go on suffering without attention to the teeth. Again let it be said, however, the teeth are not always wholly responsible. Very often in chronic cases, where there is exacerbation, a pus pocket at the root of the teeth will be found to be the cause of that exacerbation, and relief of that will relieve the symptoms. I believe, therefore, that radiography of the teeth is one of the fundamental principles in the treatment of chronic arthritis.

576 FIFTH AVENUE.

DIATHERMIA.*

Its Technic and Its Indications,

BY HEINRICH WOLF, M. D.,
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Diathermia consists in the induction of a higher temperature in the body, in an area between two electrodes, by the electric current. The importance of increasing the temperature of the tissue in a given area has been recognized for many years, we may say, for centuries. Up to 1907 we had no reliable method of doing so. It is true that Bier, through his splendid work on hyperemia, has helped greatly to popularize the use of heat, but we were obliged to restrict ourselves to the employment of conductive or radiant heat. Whether we use electrically heated radiators or gas apparatus, fango mud, hot water bag, or other agents, the object is always to produce a higher temperature in the body.

Diathermia is based on an entirely new principle. We know that electricity produces heat by passing through a conductor in proportion to the resistance offered, still the use of the galvanic, faradic, or static current was not possible on account of their strong chemical and stimulating action. Long before the current was strong enough to produce appreciable heat, either the chemical action of the current would have destroyed the tissue, or the stimulation would have become unbearable.

The problem was solved when Tesla discovered that it was possible to pass electrical currents of great strength through the body, without causing reaction, provided that the current changed direction very frequently; that is, if we employed a high frequency current. The French school had long before realized the possibility of producing heat by the high frequency current, but considered it rather a disadvantage, and it was left to Zeynik and Bernat, in Vienna, in 1906, and independently to Nagelschmidt, in Berlin, to realize the importance of this fact.

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*Read before the meeting of the Medical Association of the Greater City of New York, June 5, 1916.

As far as the theory of diathermia is concerned, it can be explained in a few words. Every electric current, direct or alternating, passing through a conductor produces heat. The high frequency current is an alternating one caused by the discharge of a condenser in the secondary coil. The duration of this spark is only about 1/50,000 of a second. Now suppose we have 500 such sparks in the second, it is evident that the current is passing during only 1/100 part of the time unit, while ninety-nine parts are without current. The problem was to increase the number of discharges to such an extent that the amount of current passing through the body would be considerably greater. This has been accomplished in more than one apparatus. It is quite impossible to enter deeper into the description of the theory of this method, and I have to refer my readers to the textbooks which deal with the treatment.

Up to a short time ago, the ordinary high frequency apparatus was used exclusively in this country with the ordinary or the multiple spark gap. The trouble with such apparatus was that the currents produced by them had a very high tension, the electrodes sparked, when strong currents were used, and the amperage was correspondingly small. Since then an apparatus has been manufactured, according to my suggestions, combining simplicity with efficiency. The older apparatus, which I have been using a number of years, has the disadvantage of being too complicated, and only men well acquainted with electrical technic can use it without trouble.

I wish to discuss the theory of the action of diathermia. All that we positively know is that it increases the temperature of the tissues between the two electrodes. We have no proof whatever that electric energy in itself has a curative effect, but we can safely say that the effect of diathermia is identical with that of local heat.

Physiology tells us that heat relaxes the tonus of the tissues, and by the relaxation of the muscular fibres of the blood and lymph vessels it dilates them. The arteries of the neighboring parts not being affected, the blood rushes in the direction of least resistance, and hyperemia in the treated part results.

The question can be asked as to the difference between hyperemia produced by hot applications of any kind, and diathermia. It is this: By hot applications we increase the temperature of the skin and the underlying tissue; experiments having shown that heat so applied does not penetrate to any degree, although we know that a strong hyperemia of the skin results. A change in the local blood supply of such a degree as produced by hot applications, cannot exist without a corresponding dilatation of the afferent vessels. We can assume that these become dilated by reflex action.

The difference between these two forms of treatment lies in the fact that we can increase the local blood supply better by means of diathermia than by external heat application, as it increases the temperature of the tissue itself, causing dilatation by direct influence and not by reflex. We know much less about the influence of heat on the local metabolism. It is true that an increased temperature quickens the chemical processes, but to what extent, and in what direction, we are not able to say, as it is not permissible to draw conclusions from hyperpyrexia in infectious diseases. We can safely say that diathermia acts by causing an increase of the blood supply in the area treated, thus aiding nature in the cure; it also softens the tissue, making it susceptible to other mechanical treatments, like massage or gymnastics. It probably increases metabolism; chemical processes being enhanced by increase of the temperature. The fact that diathermia is dangerous in acute infectious conditions, might indicate that, and in spite of its bad effect on microorganisms, it should not be used where the local metabolism is abnormally increased.

A great deal has been expected from the influence of increased heat on bacteria. We know that the increased body temperature in infectious diseases is to some extent a curative action, but opinions are divided as to the value of increasing the temperature in an infected area. When diathermia was first tried, it was hailed as an ideal method in the treatment of acute gonorrhea, as it was known that the gonococcus was harmfully affected by an increase of the temperature. I shall discuss this point later, when speaking of the contraindications to diathermia.

INDICATIONS.

The indications for the treatment with diathermia are numerous. I have had very good results in the treatment of intermittent claudication, a condition due to occlusion of the arteries. There are two forms of this disease, the senile gangrene and thromboangitis obliterans. While in the former diathermia gives very good results in most cases, the latter is much harder to treat. In the senile gangrene we know of only one contraindication to diathermia, and that is thrombosis of the veins. This is quite plain. If we dilate the arteries increasing the blood supply without allowing the venous blood to flow on, we must face a venous stasis; the circulation will become stagnated and the result will be disastrous. In thromboangiitis obliterans, we have to deal most likely with an infectious condition, which is frequently associated with phlebitis migrans. I noticed that the patients with phlebitis always became worse if the treatment was repeated two or three times a week, and I decided not to treat these cases any more with diathermia, except when the disease was confined to the arteries. I have a number of cases on my records which have improved under this treatment, but we must be careful not to expect too much. A number of these cases do not progress quickly; some of them terminate favorably without treatment, and only after a long period of time can a definite conclusion be reached.

In cases of increased blood pressure, diathermia has given excellent results. I do not wish to enter into the discussion whether lowering of the blood pressure is desirable. We can accomplish it in the prearteriosclerotic stage in cases where the etiology is unknown. I do not consider it indicated in patients with kidney disease, nor in cases where marked arteriosclerosis has developed, neither do I hold that we should be satisfied with the result accomplished.

It is necessary to regulate the diet so as to eliminate the etiological factor; but I say that it would be wrong to expose a patient to the danger of a hemiplegia only for the sake of principle, instead of lowering it to a reasonable degree. The results are fairly permanent; at least I treated some patients years ago, and the blood pressure stayed low (relatively) for many months. I never try to lower the pressure below 160 mm. On two occasions I noticed weak spells during the treatment. Examination showed that the blood pressure had gone down considerably. Treatment was stopped, and the strength of the current as well as the duration were diminished. I very rarely go higher than 900 milliamperes and twenty-five minutes at each treatment.

I know that in using the ordinary high frequency machine we consume considerably more current, but it seems that with the diathermia machine no higher temperature can be tolerated, and the results are better.

In the treatment of trifacial neuralgia and tic douloureux the results are very good, but not all forms react equally well. Cases which had been operated in or injected are often refractory, and so are those where pain is continuous, but patients who have the real form of tic, and the neuralgia in old people which is evidently due to arteriosclerotic changes in the vasa nervorum, respond splendidly to diathermia. It is difficult to describe the technic in detail, and I only wish to bring out the fact that the diseased nerve must be placed between the two electrodes. I have to refer my readers to my publication on this subject.

The results of this treatment in pain after fracture as well as in chronic myositis (lumbago), in tenosinovitis, and in trigger finger are surprising. In the short space at my disposal it is impossible to describe the technic in every case, but it is necessary to state that the most important point is to make a correct local diagnosis. We cannot expect results if we apply the current in the wrong place. This holds true in every method of physical therapy. Let me give an instance. In a case of lumbago, the whole muscle is very seldom involved. It is necessary to determine where the pathological process exists and to treat that spot in order to obtain the desired result. I believe that the poor results obtained by some physicians and laymen are due solely to improper diagnosis.

Lately, much has been said about sacroiliac disease. I have seen a number of these cases, and must say that there is no treatment, except fixation, which will give such good results as diathermia.

Little is known of the great value of diathermia in the treatment of certain heart diseases. I have used it in stenosis of the aorta. The pulse was typically small, the pulse wave long, the systolic pressure ninety mm. Hg. Immediately after the treatment the pulse became much better, and the blood pressure rose to 110 mm. Hg. Naturally the electrodes had to be placed so that the aortal valves were lying between them. In another case there was a distinct change in the region of the coronary arteries as shown by the x rays. The patient was suffering with real stenocardiac attacks. During the treatment the improvement of these subjective symptoms began, and the patient lost her pain completely for hours. The pain returned at times the next day, but I was informed that there was considerable improvement, though naturally not permanent.

A few words about the contraindications to diathermia: Of these, I know two very important ones; the acute and subacute infections, and venous thrombosis. When diathermia was first tried, physicians expected a great deal. It was known that the gonococcus was very sensitive to heat; that it stopped growing at 41° C. As we could easily increase the temperature of the tissue to any degree, at any rate to 44° C., without hurting the body materially, the possibilities were obvious. Unfortunately the results did not come up to expectation. My friend, Doctor Eitner, who was one of the first to use diathermia in gonorrhea, told me, when I saw him in Vienna, "that he had given up this method." The reason for this failure seems to be the fact that we cannot easily reach all the affected parts. Granting that we can destroy most of the microbes, the remaining ones developed quickly, as microbes do in infected pasteurized milk. There are some authors who state that by prolonging the single session to three quarters of an hour or more, their results are very good; I have had no personal experience, and shall therefore not discuss this point. What I have tried has taught me not to use diathermia in acute and subacute infections of joints. This experience has been quite general as far as the baking was concerned, and I cannot see the difference as far as the result goes.

In arthritis of long standing, especially in old people, the results are often surprisingly good. As many joints are affected at the same time, the treatment is limited in private practice, as it is necessary to treat each joint separately, which means a long session.

I cannot cover the entire field in the restricted space at my disposal, therefore I must content myself if I have aroused your interest in this remarkable therapeutic agent.

161 WEST EIGHTY-SIXTH STREET.

Treatment of Osteomalacia.—Alfred C. Crofton (*American Medicine*, November, 1916) recommends phosphates administered in codliver oil in doses of one mgm. of phosphorus to the teaspoonful, two or three times a day. It may also be given in the dose of 0.01 gram in pills or in chocolate coated tablets. Calcium phosphate may be given in capsule form, one gram two or three times a day. Saturation with atropine is recommended by some authors. It is best to begin with 1/200 grain two or three times a day and increase. If of long duration, cachexia develops with diarrhea, extreme wasting, and marasmus. In these cases iron and arsenic should be used.

EYE STRAIN.*

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Why is eye strain the least talked of subject in medicine, and why does the subject seem to excite little or no interest when presented? Perhaps it is partly because eye strain is the result of one or more anatomical anomalies; a condition and not a disease; a physiological malfunction which cannot be cured, i. e., cured in the sense of removal without more or less permanent mechanical assistance. Perhaps, also, because the general practitioner has so much else to attend that he obtains only a small knowledge of the mechanism and physiology of vision. Yet fully ninety-five per cent. of the work of the ophthalmologist is either directly or indirectly due to eye strain. And to this may be added all the fitting of glasses done by optometrists and opticians and the mercantile distribution of glasses by advertising quacks and the five and ten cent stores.

As the slogan of modern medicine seems to be "Cooperation for the sake of Prevention," the excuse for this contribution is an effort to direct the attention of the general practitioner to a field of helpfulness on the part of the ophthalmologist.

The function of the ocular system is to receive impressions of objects in space and to transmit those impressions to the brain for interpretation. These impressions are produced by stimulation of the retina by that form of energy we call light. The ciliary muscle, or muscle of accommodation, is in almost constant activity during waking hours, in the effort to clarify retinal images. This activity is particularly marked in the hyperopic eye where no retinal image is clearly defined except through action of the ciliary muscle. Myopes cannot aid vision through ciliary activity, and consequently all retinal images in myopes are blurred. Fully ninety-five per cent. of all persons have more or less astigmatism, i. e., irregularity in the curvature of the refractive media producing irregularly shaped retinal images which are extremely irritating to the retina itself and also to the cerebral centres of interpretation. Low hyperopic errors are easily overcome by action of the ciliary muscle, and the effort to see better being stimulated by fair vision, results in muscular fatigue or hypertrophy, or both; so that the patient with 20/15 vision is often suffering greatly from eye strain; whereas in high errors of refraction the ciliary muscle soon learns that it cannot overcome the defect, and the poor vision which results is associated with blurred images of irregular diffusion which persist in irritating the retina. As the great majority of both hyperopic and myopic eyes are complicated with astigmatism, we can readily see that in most cases we are dealing with a combined effect of muscular fatigue and retinal irritation.

Twelve muscles are required to balance the two eyes so that all images will fall on corresponding retinal areas and thus maintain binocular vision When one or more of these muscles is weaker than the others, our sense of fusion requires it to keep up with the stronger muscles in the effort to maintain binocular vision, thereby calling forth an abnormally large amount of nerve force to the weaker muscles.

To quote from my previous article on this subject (1): "It becomes evident, therefore, that the reasons for eye strain are hypertrophy, fatigue, and congestion of the ciliary muscles in their constant effort to produce clear vision; retinal irritation from circles of diffusion, made worse by irregularity in the presence of astigmatism; and extrinsic muscular hypertrophy and fatigue in the struggle to maintain binocular vision."

As I wish to draw attention particularly to the effect of eye strain on the eyes themselves and also on other organs of the body, I should like to go over the nerve elements involved in the ocular mechanism, with special reference to the part played by the sympathetic system. This I take mostly from Gray's *Anatomy*.

Of the twelve pairs of cranial nerves, the second, third, fourth, and sixth are devoted wholly to the eye and its appendages, while the fifth plays the important part of sensory function.

The second or optic nerve, after entering the orbit, pierces the scleral and choroidal coats of the eyeball and expands to form the retina. Its function is purely visual in that it transmits to the cerebral centres of vision the exact impressions made upon the retina through the refractive media of the eye.

The third nerve, or motor oculi, sends voluntary motor fibres to all the extrinsic ocular muscles, except the superior oblique and the external rectus. While passing through the cavernous sinus, it receives a few sensory fibres from the ophthalmic division of the fifth nerve and a definite anastomosis from the cavernous plexus of the sympathetic. The branch of the third nerve which supplies the inferior oblique muscle, gives off a twig which is the motor root of the lenticular ganglion.

The fourth nerve is the motor nerve of the superior oblique muscle, and like the third nerve has an anastomosis with the sympathetic from the cavernous plexus, and also receives sensory fibres from the first or ophthalmic branch of the fifth nerve.

The sixth nerve supplies the external rectus muscle and receives its sympathetic fibres from the carotid plexus.

The first division of the fifth nerve given off from the Gasserian ganglion is purely sensory and is called the ophthalmic nerve. It receives sympathetic fibres from the cavernous plexus and has three branches:

1. The lacrymal enters the lacrymal gland and has anastomoses with the orbital branch of the superior maxillary and with the facial nerves.
2. The frontal divides into the supratrochlear and the supraorbital, which are distributed to the forehead, eyelids, and scalp, and communicate with the infratrochlear and the facial nerves.
3. The nasal has several branches. Those of importance in this discussion are the *ganglionic*, which enter the lenticular ganglion to form its sensory

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*Read before the joint meeting of the Medical Association of the Greater City of New York and the Richmond County Medical Society, at St. George, Staten Island, June 5, 1916.

root, and the *long ciliary nerves* (two or three) which pierce the sclerotic near the optic nerve and pass forward in the eyeball to be distributed to the ciliary muscle and iris. The nasal also sends sensory fibres to the conjunctiva, caruncle, lacrymal gland, the upper eyelid, forehead, and the root of the nose, and also to the nasal septum and turbinate bones and the tip of the nose.

Please note particularly the ciliary or lenticular ganglion. This small reddish body is in the back of the orbit, external to the optic nerve, and has three roots:

1. A motor root from the motor oculi nerve;
2. A sensory root from the nasal branch of the first division of the fifth nerve; and
3. A sympathetic root from the cavernous plexus.

This ganglion gives off ten to twelve short ciliary nerves which pass forward in two bundles above and below the optic nerve and in close relation to the long ciliary nerves noted above. They pierce the sclerotic and pass between the scleral and choroidal coats of the eyeball to be distributed to the iris and ciliary muscle.

The sympathetic system consists of two great gangliated cords extending the whole length of the vertebral column. The two cords are connected above with two plexuses which enter the cranium and unite with the fifth cranial nerves; below they are joined together in a loop over the coccyx. Each ganglion has an afferent and efferent connection with the anterior primary division of the corresponding spinal nerve. This extensive system, through its ganglia and series of plexuses, provides a switchboard connection between the various organs, and it is supposed that a sympathetic relation is thus maintained between different organs. The chief functions of the sympathetic nerves are vasomotor, trophic, secretory, and control of smooth or involuntary muscles.

I have gone into these neurological details in order to recall the close relations between the motor and sensory supply of the ocular mechanism and the sympathetic system. Much has been written about ocular symptoms complicating aural and nasal diseases, and in May, 1913, Dr. William H. Haskin (2) made a contribution of distinct value in that he brought to light the probability that as the majority of ocular symptoms associated with disease of the nasal sinuses are due to vasomotor disturbances, and as the sympathetic nerves are the vasomotor nerves, hence we have a "most reasonable explanation for most of these manifestations in that they are caused by irritation of the (sympathetic) system."

It is common knowledge that stimulation of the third nerve causes contraction of the pupil, and that stimulation of the sympathetic causes its dilatation. It may also be noted that many patients suffering from eye strain have dilated pupils. The fifth nerve is the sensory means of transit of ocular malfunction, either as pain or photophobia from retinal irritation or from irregular and diffused retinal images, or as pain from fatigue of ocular muscles, both ciliary and extrinsic; and it is through the numerous communications between the sympathetic system and the motor and sensory nerves of the eye, as already noted, that the ocular effort to secure clear vision in the presence of slight refractive errors; or else the distorted retinal images persisting as such through failure of the refractive apparatus to clarify them, result sometimes in headaches as referred pain; or sleepiness as fatigue; or in chronic inflammatory conditions of the lids and conjunctiva—including blepharitis, hordeola, chalazia, etc., as vasomotor and trophic disturbances; and sometimes in the malfunction of distant organs, producing such symptoms as vertigo, indigestion, anorexia, insomnia, constipation, car sickness, nausea, and vomiting.

Epiphora is quite a common eye strain symptom, which is doubtless due in part to irritation of the sympathetic secretory function; and can it not be argued that the secretory function in other glandular organs may be similarly affected by the same source of irritation? Epiphora, as an eye strain symptom, is also at times due to chronic inflammation of the lids and conjunctiva in the region of the tear duct openings producing a mechanical obstruction to the outflow of tears. This is due to a vasomotor and trophic disturbance—again a sympathetic irritation.

Dr. W. W. Kahn (3), of Detroit, recently published a paper entitled The Systemic Diseases Caused by Eye Strain, in which he has interestingly tabulated the percentage of recoveries from various symptoms of systemic malfunction after accurate correction of the refractive error of the patients coming to him in one year. The value of this paper by Kahn is that it has grouped several symptoms of the malfunction of various organs evidently produced by some ocular malfunction, as evidenced by the definite relief given by correct glasses. The every day work of those attempting to do therapeutic refraction is so regularly attended by experiences similar to those reported by Kahn that we often forget that the ocular cause of much systemic malfunction may have been passed unnoticed by the general practitioner.

While mastering the field of pathology and studying the benefits to be derived by the patient through the mechanics of surgery, let us remember the assertion of Dr. Richard Cabot, that four fifths of human ailments are functional and only one fifth organic. Let us also remember that probably most functional disorder is at least partly due to some irritation of the sympathetic system. That ocular malfunction is a definite and frequent source of sympathetic irritation, resulting in symptoms of distant organic disorder, is being demonstrated daily by the careful refractionists. Hence, also, a large part of refraction work may become preventive by correcting the eye strain as soon as the earliest symptom of malfunction appears.

To consider the scientific art of refraction, the proper use of cycloplegics, the various elements that make up an optic prescription, the necessity of having the prescription accurately filled and carefully fitted to and worn by the patient in the effort to secure the results suggested, would require a separate paper.

Therefore, in conclusion, and to quote again from my previous article on this subject (1): "When symptoms of malfunction of one organ or system persist after treatment of all obvious disorders, we have no right to lay it to nervousness or idiosyncrasy, or even to call the condition obscure, until the function of every other organ has been carefully tested and corrected. The constant use of the eyes during waking hours, and the demand for and frequently great waste of nerve force in their use, call for a careful ocular correction in all cases of functional disorder possibly due to some reflex irritation or leakage of nerve force."

REFERENCES.

1. HARTSHORNE: Eye Strain Symptoms in General Practice, *New York Medical Journal*, October 5, 1913. 2. W. H. HASKIN: Ocular Manifestations in Nasal and Aural Diseases Which Probably Indicate Involvement of the Sympathetic Nervous System, *Annals of Otology, Rhinology, and Laryngology*, June, 1913. 3. W. W. KAHN: The Systemic Diseases Caused by Eye Strain, *Detroit Medical Journal*, March, 1916.

105 WEST FORTIETH STREET.

A NEW METHOD FOR INTRASPINOUS TREATMENT OF NEURAL SYPHILIS WITH MERCURY.*

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A PRELIMINARY REPORT.

Intraspinous therapy now occupies a well established position in the treatment of syphilitic affections of the central nervous system. Since Swift and Ellis, in 1912, demonstrated the possibilities of intraspinous medication with the serum obtained from patients shortly after the intravenous administration of salvarsan, various preparations have been used, such as serum to which small quantities of salvarsan have been added, neosalvarsan in small doses and weak concentration, and mercurialized serum. These methods have met with varying degrees of success, but, in general, reports show that successes have been attained with the intraspinous treatment of cases of nervous syphilis which had not yielded, in the slightest degree, to systemic specific medication.

It is too soon to draw definite conclusions concerning the permanency of the results. Our standard for measuring the efficacy of any treatment for nervous syphilis must therefore, for the present, be gauged by, 1, the apparent extent of clinical improvement; 2, the arrest of further progress of symptoms; as well as, 3, the reduction in the number of cells, the quantity of globulin, and change of a positive Wassermann to a negative in the spinal fluid, and conversely any method which produces a negative serology in addition to improvement or arrest of the clinical symptoms, may, in the light of our present knowledge, be deemed efficient.

A brief review of the methods now in use shows that in the case of autosalvarsanized serum the amount of specific medication introduced intradurally is so extremely intangible that it requires a large number of injections to produce results. And the same holds true for the use of serum to which small quantities of salvarsan have been added, or the use of neosalvarsan in weakly concentrated solutions. The direct applications of mercury is theoretically of value, although it would seem from the reports on the method as it is used today that the effects on the Wassermann reaction are not as brilliant as could be desired.

The method about to be described offers nothing startlingly new, inasmuch as it embodies three more or less well known principles. It is to the simultaneous employment of these three principles, however, that I ascribe the excellent results to be related.

1. The first principle requires recognition of the known fact that the serums of patients under mercurial treatment contain infinitesimal though determinable quantities of mercury, the mercurial content being more or less proportional to the intensity with which the drug is pushed. To this serum I have given the name of automercurialized serum.

2. The second factor is more or less theoretical, though to me it seems quite plausible. It assumes that the reason that remedies or dyes administered into the general circulation do not reach the intradural space is because the cerebrospinal fluid is formed by a process of osmosis through the choroid plexuses. The osmosis takes place very slowly or not at all when the pressure in the two systems is equal, but the formation of a negative pressure in the spinal canal by removal of the cerebrospinal fluid would favor the osmosis of drugs from the general into the spinal circulation. This probably accounts for the beneficial results in the treatment of mild syphilitic central nervous involvement, in which lumbar puncture was regularly performed following the intravenous administration of salvarsan.[1] Animal experiments are now in progress in an effort to demonstrate this point.

3. The third principle rests on the supposition that a soluble organic salt of mercury would be less irritating and possess better penetrative powers than an inorganic preparation. As Byrnes[2] points out, when an inorganic salt of mercury comes in contact with protein matter a coagulative process takes place with the formation of the insoluble albuminate of mercury. In order to obviate this I decided to employ a mercurial salt which in solution would be miscible with blood serum without being changed into the albuminate. I found the benzoate of mercury admirably suited to fulfill this requirement.

Mercuric benzoate is the mercuric salt of benzoic acid, having the formula $Hg(C_6H_5COO)+2\ H_2O$, which is readily soluble in normal saline in the quantities necessary for intradural administration, this solution being miscible in any proportion with blood serum without the formation of a precipitate. For the past six months I have been using this salt intramuscularly and have obtained apparently good results in some cases.

To summarize briefly then at this point, the method consists in pushing mercury to the point of tolerance, obtaining the blood serum, reinforcing this by the addition of a solution of mercuric benzoate in normal saline, removal of as much spinal fluid as can possibly be obtained by lumbar puncture, and injecting intradurally the serum mercury preparation. The quantity of fluid injected should be less than the amount of spinal fluid withdrawn so as to create a negative pressure within the dural cavity. To saturate a patient with the mercury I give daily inunctions of one fourth of an ounce of fifty per cent mercurial ointment, supplemented by triweekly intramuscular injections of any one of the mercurial salts. These procedures are continued until the first evidences of ptyalism appear (foul breath, gingivitis, cramps, etc.), when thirty c. c. of blood are removed by venipuncture. The rest of the technic is similar to that used in the Swift and Ellis method:

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*From the Department of Research of the Leo N. Levi Memorial Hospital.

[1] Gilpin and Early. The Drainage of the Cerebrospinal Fluid as a Factor in the Treatment of Nervous Syphilis, *Journal A. M. A.*, January 22, 1916, lxvi, 41.

[2] C. L. Byrnes, The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis, *Journal A. M. A.*, December 19, 1914, p. 1165.

1. The blood is allowed to clot and the ten or fifteen c. c. of serum obtained is pipeted off and
2. Centrifugated to remove all the blood cells.
3. One c. c. of a solution of one grain of mercury benzoate in twenty-five c. c.[3] normal saline and is placed in a clean test tube and boiled. If on cooling this solution becomes turbid, it should be discarded and another c. c. of the solution boiled up in the same tube.[4] If this remains clear on cooling,
4. The clear serum is added and the preparation is mixed well.
5. It is then heated at 56° C. for half an hour and
6. Administered, by gravity, at body temperature.

The method of administering the serum is essentially the same as that recommended by Swift and Ellis. The puncture is performed with the patient lying in bed with the knees drawn up, and head flexed as far as possible, and as much fluid removed as can be obtained.[5] The patient is then instructed to extend the head and limbs and the serum is administered. After the injection the patient should lie flat on his back (without a pillow) for three hours, and the foot of the bed may be elevated for the first half hour.

RESULTS.

I have used the method in eighteen cases, though the present writing contains the report of the first ten cases which completed the course of injections. I admit that this number is extremely limited to furnish any positive conclusions, but owing to the fact that the cases are unselected and that the results have proved so uniformly and rapidly favorable, I have not the slightest hesitation in recommending the procedure for the treatment of syphilis of the central nervous system in cases where intensive systemic antiluetic treatment has failed to influence the nervous symptoms or the spinal serology.

Case I. Tabes dorsalis. Mrs. F. S., was forty-one years old, widow and housewife. No knowledge of date of infection. Denied initial lesion, secondary or teritary manifestations. Shooting pains in legs for sixteen years. Gastric disturbance for twelve years. Eight years ago, suddenly lost use of legs and was in bed for two years. After this patient walked with difficulty, legs and feet were numb. Girdle sensation for past eight years. Gastric crises every week for past two months. Intensive systemic treatment for past eight years. Argyll Robertson, contracted unequal pupils, fissured tongue, marked ataxia of upper and lower extremities, absent deep reflexes, marked Romberg. Hypesthesia of legs and soles of feet. Serology on admission: Blood Wassermann negative. Spinal fluid Wassermann four plus to 0.4 c. c. fluid, globulin one plus, thirty cells per c. mm.

Treatment: Received four intraspinous injections in nine weeks. Two weeks after last treatment spinal Wassermann was negative with one c. c. of fluid, nine cells per c. mm., globulin negative.

Note on discharge: Spinal fluid normal, sensation normal, shooting pains and gastric crises stopped, walked without cane, and up and down stairs with a little support, felt the ground underfoot and could walk in bare feet. Felt better than she had in eight years.

Case II. General paresis. Mr. I. M., was fifty-three years old, married, plumber, initial infection thirty years ago. For past two years patient was irritable and slovenly, neglected business, felt weak and tired easily. Insomnia and bad dreams for past four months. Lost twenty-five pounds in weight. One day before admission, while on his way to Hot Springs, patient had an epileptiform seizure lasting an hour. Facial contortions, hesitating speech, apathy, grandiose ideas, defective recent memory, slovenly attire, tremor of tongue, face, and extremities. Incoordination. Gait very unsteady, marked Romberg. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to 0.2 c. c., globulin three plus, thirty-two cells per c. mm.

Treatment: Received five injections in six weeks. After the third injection the spinal Wassermann was negative with one c. c. fluid, seven cells per c. mm., globulin one plus. The additional two treatments were given for the sake of thoroughness. Ten days after the last treatment the fluid Wassermann was negative, globulin negative, and showed five cells per c. mm.

Note on discharge: Spinal fluid normal, ate ravenously, sleep undisturbed, memory and mentality apparently perfect. No tremors or incoordination. Could walk a straight line, even with eyes closed. No Romberg, speech good. Felt and acted normally in every way.

Case III. Tabes dorsalis. Mrs. R. W., was forty years old, housewife, and widow. Date of infection could not be elicited. Shooting pains for eight years, numbness, paresthesia, and feeling as if walking on rubber for past four and a half years. Difficulty in walking in the dark and up and down stairs. Walked with cane and had occasional urinary incontinence. Gait ataxic. Incoordination in upper and lower extremities. Hypesthesia of entire lower limbs. Marked Romberg. Deep reflexes absent. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to 0.6 c. c., globulin two plus, forty-nine cells per c. mm.

Treatment: Received three injections in four weeks. Spinal fluid, seven weeks after last treatment, showed negative Wassermann with one c. c., seven cells per c. mm., globulin one plus.

Note on discharge: Spinal fluid normal, legs felt much stronger, no shooting pains. Walked much better, though still with cane. Sensation in feet improved.

Case IV. Syphilitic meningitis. Mrs. N. S., was twenty-one years old, married, domestic, infected three years ago. Systemic treatment for the past year and a half, very intensive for past four weeks. Intense nocturnal headaches for three years. Eruption on body for three months, since which time headaches had been continually getting worse. Patient practically moribund. Regressing papular syphilide. Retraction of head. Rigidity of neck. Bilateral Kernig and Babinski. Serology on admission: Blood Wassermann negative, spinal fluid pressure markedly increased, fluid turbid, Wassermann four plus to 0.1 c. c., globulin four plus, 1,220 cells per c. mm., ninety per cent. polymorphonuclears, bacteriology negative.

Treatment: Received four injections in twenty-seven days. After the third injection the cells were 120 per c. mm., globulin one plus, Wassermann negative with 0.2 c. c., but positive with larger quantities. Clinically she was normal in every respect and therefore refused further treatment, nor would she permit a spinal puncture after her last injection.

Case V. Spastic paraplegia. Mr. H. R., was fifty-four years old, peddler, married, no recollection of initial lesion or external manifestations of syphilis. A year ago he noticed itching all over body (paresthesia), and a month later feet and legs became numb. Three months later, lost use of left leg, which regained power after two injections of salvarsan and thirty-five injections of mercury salicylate. Spastic gait, exaggerated reflexes, double ankle clonus, ataxia, and Romberg. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to 0.4 c. c., globulin double plus, fifteen cells per c. mm.

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[3] An accurately weighed out grain of the powdered mercuric benzoate is added to twenty-five c. c. boiling normal saline and boiled until the powder is dissolved. This is placed in a stopped graduate and saline added up to the twenty-five c. c. mark to make up for the moisture lost in evaporation. This solution keeps indefinitely, although if not used frequently, it is best to make up a fresh solution each time.

[4] The turbidity is caused by using a soiled test tube.

[5] When the fluid ceases to run spontaneously, the barrel of a Luer syringe is connected to the needle by a rubber tubing about twelve inches long. If the syringe is now lowered, an additional ten to twenty c. c. of fluid can be obtained. A total of from thirty to fifty c. c. fluid can usually be obtained. I disregard the pressure and have encountered no untoward results from removing all the fluid possible.

Treatment: Received four injections in seven weeks. After the third injection the spinal Wassermann was negative, globulin one plus, seven cells per c. mm. Ten days after the last injection the fluid Wassermann was negative, globulin negative, four cells per c. mm.

Note on discharge: Spinal fluid normal; gait still spastic, though considerably improved. Reflexes normal, exhaustable ankle clonus on left side. No clonus on right side.

CASE VI. Tabes dorsalis (incipient). Mr. F. W., was a cook, thirty-five years old, single. Initial lesion ten years ago; no rash, but had severe laryngitis and was literally covered with ulcers six months after infection. Had been taking mercury pills all this time. Symptoms of three years' duration. Complained of headaches and nervousness. For past year had had stiffness and numbness of legs, with difficulty in walking in the dark. Sight poor. Sleeplessness and sexual impotence for three years. Nystagmus, tremor of tongue, face muscles, and hands. Incoordination and adiadokokinesia. Deep reflexes absent. Distinct Romberg. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to 0.2 c. c., globulin two plus, thirty-two cells per c. mm.

Treatment: Received four injections in thirty-four days. Ten days after the last injection the spinal Wassermann was negative. Globulin negative, six cells per c. mm.

Note on discharge: Spinal fluid normal. No tremors or incoordination. No insomnia or headaches. Felt strong. Knee jerks and Achilles reflex still absent.

CASE VII. Tabes dorsalis and cerebrospinal syphilis. Mr. C. P., was a cutter, forty-one years old, single. Initial lesion nine years ago. Mild secondaries. Treatment begun three weeks after infection and consisted of seventeen intravenous injections of salvarsan, thirty injections of mercury salicylate, mercury and potassium iodide by mouth. Symptoms dated for one year and consisted of girdle sensations, vomiting attacks without apparent cause, diminished sexual potency, pains in legs, failing memory, an attack of diplopia, and impaired hearing. Slight tremor of fingers, absent knee and Achilles jerks, distinct incoordination and Romberg. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to one c. c., globulin one plus, nineteen cells per c. mm.

Treatment: Received four injections in one month. After the last treatment the spinal fluid Wassermann and globulin were negative and there were two cells per c. mm.

Note on discharge: With exception of pains in feet (flatfeet), patient felt and acted normally. Knee jerk obtained under reinforcement; spinal fluid normal.

CASE VIII. Tabetoparesis. Mr. I. H., was a switchman, forty-five years old, married. Initial lesion twenty-three years ago, followed by sores in mouth. No treatment till three years ago, since when had had three injections of salvarsan. Began to tire easily and had lightning pains in legs three years ago, and shortly after, left leg was almost completely paralyzed, but had gradually improved. Failing memory and irritable temperament (avoided company and conversation) for past two years. Had girdle sensations and "head felt like it had a hat on" for two years. Sexual impotence and urinary incontinence for one year. Slept poorly and had several numb areas on body. Noticed difficulty in pronouncing words. Tremor of face and tongue, dysarthria, Argyll Robertson pupils. Incoordination of upper and lower extremities. Absent knee and Achilles jerks; plantar reflex diminished. Tabetic gait. Could walk straight line. Marked Romberg. Hypesthesia of left leg and upper left quadrant of abdomen. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to 0.2 c. c., globulin one plus, twenty-one cells per c. mm.

Treatment: Received six injections in forty-four days. After the last treatment the spinal Wassermann was negative with one c. c.; globulin was negative; four cells per c. mm.

Note on discharge: Spinal fluid normal. Gait still unsteady and deep reflexes absent. No girdle sensations or urinary disturbances. Patient in excellent spirits and felt very well.

CASE IX. Tabes dorsalis. Mr. J. W., was a cook, forty-two years old, single. Initial lesion followed by sore throat, twenty-five years ago. Had no treatment of any kind. No trouble till eighteen months ago, since when had had gastric crises, difficulty in urinating, pains in back shooting into legs, diplopia and failing vision, and sexual impotence. Tired easily and felt weak. Irregular, dilated pupils, did not react to light. Deep reflexes absent. Marked Romberg and incoordination of upper and lower extremities. Unsteady gait. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to 0.4 c. c., eighty cells per c. mm., globulin two plus.

Treatment: Received six injections in forty-eight days. After the last treatment the spinal Wassermann was negative with one c. c. of fluid, globulin negative, and eight cells per c. mm.

Note on discharge: Spinal fluid normal, gastric crises, leg pains, and urinary troubles disappeared. Deep reflexes absent. Felt pretty well, but still a little weak.

CASE X. Cerebrospinal syphilis; double optic neuritis. Mr. H. S., was a peddler, forty-three years old, married. Initial lesion, twenty-one years ago. No secondaries. No constitutional treatment. Ulcers on legs four years ago. Shooting pains in legs for two years. Noticed that left eye was blind, five months ago. Vision failing in right eye for two weeks. Condition progressing rapidly. Left eye had light perception; right eye vision two fifths of normal. Reflex pupillary rigidity. Unsteady gait, Romberg, and ataxia. Knee jerks not elicited. Serology on admission: Blood Wassermann negative, spinal fluid Wassermann four plus to 0.1 c. c., globulin four plus, reduction to Fehling's absent, eighty cells per c. mm.

Treatment: Received four injections in forty-nine days, left the hospital, and returned after three months for two treatments. After the last injection, spinal fluid showed a negative Wassermann, negative globulin, and contained eight cells per c. mm.

Note on discharge: Spinal fluid normal. No clinical improvement, but there had been no further impairment in vision. This patient had been under observation for nine months.

Of the remaining eight cases, four are still under treatment and four would not continue treatment. Three had advanced tabes, two were ordinary tabetics, two had general paresis, and one had cerebrospinal syphilis. These cases showed varying degrees of clinical and serological improvement according to the number of treatments each received, and while all of them showed a lowered cell count and a less positive or negative Wassermann reaction with the usual quantities of fluid, no case is reported as a serological cure unless the cell count was normal and the Wassermann test gave complete hemolysis when one c. c. of fluid was used.

SUMMARY.

This communication describes a method of treatment of syphilis of the central nervous system and a detailed account of the first ten cases in which the method was applied.

The cases were unselected and, happily, embrace almost all the forms in which neural syphilis manifests itself. The diagnosis in all the cases was based upon unmistakable clinical symptoms and a positive Wassermann, increased cell and globulin content in the cerebrospinal fluid. In all the cases, after from three to six injections the spinal fluid was rendered normal. The extent of clinical improvement and the restoration to economic efficiency seems to depend upon the extent of degeneration at the time the treatment was instituted. In no case was there further deterioration during or after the treatment. Neither was there any case in which the spinal serology could not be influenced. In fact, when a case comes under treatment, if the smallest quantity of spinal fluid which gives complete inhibition is ascertained, and then gradually increasing amounts of fluid are used in doing the Wassermann, it will be seen that after each treatment it will require a larger amount of fluid to give complete inhibition.

It is granted that the number of cases treated is so extremely small and the period of observation so short that no definite statement can be made regarding the absolute value or merits of the method. The results in the cases treated were so uniformly favorable, however, and in some cases so brilliant, that I have not the least hesitation in recommending the method for the treatment of syphilis of the central nervous system.

THE FALLACY OF FALLACIES ABOUT TUBERCULOSIS.

A Criticism of Doctor Fishberg's Paper in the NEW YORK MEDICAL JOURNAL *for December 2, 1916,*

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Now and then some one who is outside the great movement against the white plague steps into the limelight and indulges in a few oratorical flings at the "crusaders." The flings do not hurt the crusaders, nor do they materially affect the worldwide crusade; but they furnish some sort of ammunition to the objectors, give courage to a lot of Rips who slumber while dreaming the dreams of the past, and, what is worse, disturb the mind of the layman whose judgment is easily distorted by conflicting opinions and whose natural inclination is to follow the leadership of those who are opposed to restrictive measures of any kind. For such people Doctor Fishberg's article will serve as a pillar of support.

Doctor Fishberg dismisses many a live medical problem by the convenient term "fallacy." To the "fallacies" that he discovered in relation to tuberculosis we will attempt to add one more, and that is the fallacy of his reasoning.

First, let us dispose of the fallacy that "over ninety per cent. of human beings in large cities have been infected during their lifetime," and that "it is difficult to find a person who does not react to tuberculin, or in whom active, latent, or healed tuberculous lesions cannot be found when a careful autopsy is made."

In the first place, this is not exactly correct. The fallacy arose from some European statistics which seemed to indicate that in certain hospitals over ninety per cent. of the autopsies revealed old scars in the lungs. Whether these scars were due to tuberculosis or to some other conditions is not certain, and I am not aware of any statistics based on a careful histological study of these incriminating scars. I do not care to take the time to hunt up statistical data, but my impression is that in this country autopsies show evidence of old tuberculous lesions in from sixty to seventy-five per cent., which is much nearer the truth. Equally fallacious is the statement that almost all children react to tuberculin. My own experience has been that only from sixty to seventy-five per cent. react. And here again we must bear in mind that in a certain proportion of positive cases, the children may possess an inherent or acquired sensitiveness to tuberculin without having suffered a tuberculous infection.

May I say in passing that our knowledge of the large group of acidfast bacilli to which Bacillus tuberculosis belongs is far from complete, and it may well be that certain varieties of this group produce mild infections which are not true tuberculosis as we understand it clinically, and which may induce a sensitiveness to tuberculin? This should occasion no more surprise than the fact that the serum of normal persons who never have had typhoid fever may give a positive Widal reaction in certain dilutions.

If my reasoning is correct then there is a considerable number of people (at least twenty-five per cent.) who are free from tuberculous infection and are in danger of such infection *when exposed to a sufficient number of implantations.*

The impression conveyed, perhaps unintentionally, by Doctor Fishberg is that tuberculosis is a comparatively trivial infection from which a great many persons recover spontaneously without any treatment whatever, and even despite treatment.

I wish it were so, but the 200,000 graves that are filled up annually in this country by victims from tuberculosis do not indicate any such benign character for this disease. In fact, it seems that when the tubercle bacillus has made appreciable inroads into the tissues, the patient has a mighty hard time to manage to live. But let us assume for the sake of argument that every one of us has, as some German savant expressed it, "a bit of tuberculosis," does that carry with it the assumption that we are immune? Doctor Fishberg thinks it does, and gives us the assurance that "adults are safe against infection with tubercle bacilli" (of course, children not being "safe" should still be protected). He assumes that the million or so consumptives in this country have acquired the infection in childhood and the disease later. He stands almost alone in this sweeping assertion. While it is generally believed that in a great many cases the infection is acquired in childhood, no one with authority to speak on the subject would support the doctor's contention. But assuming that the incidence of childhood infection is as universal as Doctor Fishberg maintains, we are still not at all sure that reinfection is impossible. I am unaware that "recent research has shown, however, that tuberculosis is no exception to the rule in pathology, that one attack of a specific disease immunizes against further and renewed infection with the same virus."

In the first place, "the rule" in pathology is exactly the other way, or, what is more correct, there is no such rule. Tonsillitis, influenza, pneumonia, diphtheria, erysipelas, and a host of septic infections do not confer any lasting immunity. Even typhoid fever and the eruptive fevers which do confer a lifelong immunity may attack certain persons more than once. Gonorrhea can certainly be acquired many times during a lifetime, and a recent chancre in an old syphilitic is by no means rare. We are not in a position to make any rule free from numerous exceptions, but were we permitted to generalize, I should say that infections characterized by bacteriemia confer a lifelong immunity, while in those in which the bacteria are localized and the toxemia is the underlying factor, the immunity is of short duration. Tuberculosis being a toxemic infection belongs to the latter group, and clinical evidence as well as experimental data bear out this assertion, Doctor Fishberg to the contrary notwithstanding.

The doctor belittles "the warnings given to consumptives that they must not expectorate indiscriminately because they were likely to infect others, and may reinfect themselves, and thus acquire new lesions in parts of the lungs hitherto unaffected." The warnings are perfectly timely and should be heeded. Tuberculosis spreads by extension, probably through the lymphatics. Successive areas of lung tissue become involved on one or both sides, at the apex, the base, or the roots; the larynx and at times the pharynx become affected owing to the contact with germ laden sputum; tuberculous ulceration of the intestines results from sputum that is swallowed: other organs such as the kidneys, the spleen, and the pelvic organs are frequently infected. If all these pathological changes, dependent as they are on dissemination of tubercle bacilli, are not the result of reinfection, how are they brought about? And if a patient can be reinfected by his own bacilli, is it not reasonable to limit as far as possible the reintroduction of these bacilli? And if a consumptive can reinfect himself, why cannot he infect others? After all, the incidence of infection is, all other things being equal, as much a matter of dose as the introduction of a poison. A person may be able to resist the implantation of a certain number of tubercle bacilli, but when that number is multiplied a hundredfold or the implantation is repeated frequently the resistance is broken down. An advanced consumptive with his half million tubercle bacilli thrown off every twenty-four hours is a greater menace to himself and others than one in early stages who expectorates only a relatively small number of bacilli. Likewise, a consumptive who takes care of his sputum is far less dangerous than one who does not, even if there is still some danger from droplet infection. There is a chance that the fine droplets may contain a few stray tubercle bacilli which have become disentangled from the main mass of sputum and remained in the mouth or nose; there is absolute certainty that the sputum mass does contain these tubercle bacilli in large numbers. There is a chance that tubercle bacilli enclosed in minute droplets of moist sputum will lodge in the mouth and infect the susceptible victim by way of the tonsils or digestive tract; there is a certainty that dried sputum will become pulverized and in the very best state for direct inhalation. There is still another reason why advanced consumptives should take care of their sputum, even in sanatoriums where they are in contact with other consumptives. We know that the worse feature of tuberculosis, the condition that seals the patient's doom, is the mixed infection with pyogenic cocci. They are not the ordinary tame cocci which we find so generally distributed on body surfaces. By virtue of their sojourn in a diseased body and also, perhaps, through symbiosis, they have become highly virulent, giving rise to the marked septic conditions from which the advanced consumptive suffers. It is not right to expose another fellow patient in the earlier stages of the disease to infection with these virulent cocci. So, then, our "crusaders" are not so ludicrous when they advocate the proper care of the consumptive's sputum.

Further to strengthen his case against modern tuberculosis prophylaxis, Doctor Fishberg presents the clinical evidence, to wit: That doctors and nurses who come in contact with consumptives, "do not suffer from tuberculosis more than others," and that conjugal phthisis is "exceedingly rare." Of all fallacies this sort of argument is the most fallacious. We have known doctors, nurses, husbands, and wives who contracted tuberculosis, but we are in no position to assert categorically that they were infected by their patients or mates, or through other sources. Who can say? As to doctors and nurses coming in contact with consumptives in hospitals, their chances of infection are far less than in private practice, particularly among the poor, since in hospitals they come in contact with moist sputum, the least prolific source of aerogenous infection.

Doctor Fishberg accounts for the rarity of infection among doctors and nurses as well as for conjugal infection by the fact that these persons are immune by virtue of a preexisting infection. How will he explain their freedom from tuberculous disease? By immunity? What became of the immunity of the afflicted? It is puerile to juggle with these obscure phenomena in an effort to bolster up a preconceived notion. This sort of reasoning will lead us to the conclusion that pneumonia is noninfectious because doctors and nurses rarely contract the disease while on duty, but do contract it occasionally when they go to a party. In many instances only one case of typhoid fever, scarlet fever, or diphtheria develops in a family, and during the recent epidemic of poliomyelitis there were relatively few family infections. Are the others immune, or have they escaped infection by the same chance by which some lucky soldier on the battlefield escapes being hit by a bullet? Who knows? What we do know is that every bacterial disease is communicable directly or indirectly to persons who are thoroughly exposed and who are susceptible at the time, provided that the virulence and the dose of the infective agent are sufficient to produce disease. This general principle underlies our conceptions of all transmissible diseases. As to the application of the principle to individual cases our ground is not so firm, since many of the factors involved cannot be determined.

Viewed from this standpoint every consumptive with an open lesion is a carrier of infection, and, therefore, a menace to others, to the extent to which he is either a potential or an active carrier. Whether he infects children or adults, whether in his life's journey he comes in contact with immune or susceptible people, is really beside the question, since it is not in our power to predetermine these factors. Therefore, there is every reason to "employ the strenuous measures which have been taken by the authorities, as well as by the members of our profession during recent years," if we are to make any headway in our campaign against the great white plague.

Concerning the "fallacies in diagnosis," Doctor Fishberg takes the astounding position that since in a certain number of cases of tuberculosis a fatal issue will result notwithstanding treatment and in a certain larger proportion patients will recover without medical attention, early diagnosis is unnecessary. Why make a diagnosis at all? Why not resort to the convenient label of "chronic bronchitis," or a "run down system," as our forefathers did and some doctors are still doing? There is certainly much less trouble in such a course. Is such a position reasonable? Let us for a moment forget the favorable results obtained by sanatoriums in the treatment of early tuberculosis. Is it reasonable to assume that in a disease which affects general metabolism as profoundly as does tuberculosis early rational treatment is of no benefit? And if it is, are the patient's chances for recovery not greater when such treatment is instituted at the earliest possible moment? Is not this equally true of other diseases in which the disturbance of metabolism and the resulting toxemia are the chief factors, namely, that the sooner the disease is recognized and proper treatment instituted the better are the patient's chances of either ultimate recovery or prolongation of life? I take issue with Doctor Fishberg when he assumes that the "crusaders" make a diagnosis of incipient tuberculosis on physical signs alone. I know of no authority on the subject who does not insist on the correlation between objective and subjective signs as necessary for a proper diagnosis of early tuberculosis. No one who is at all careful in his work will hazard a positive diagnosis on the presence of impairment, prolonged expiration, or a few rales. But if in addition to these signs there are constitutional symptoms, a diagnosis may be made with reasonable certainty, and in that case the sooner treatment is instituted the better. Deny this and you deny the utility of early rational treatment in nephritis, diabetes, arteriosclerosis, rheumatic conditions, etc.

What is the rational treatment of tuberculosis? Just such as would increase natural resistance of the patient, if he has any. Good food, fresh air, which acts as a tonic, and such symptomatic treatment as may be indicated. If the patient's appetite is lagging, nux vomica before meals will be of considerable help; if digestion is poor, hydrochloric acid will prove of value; if the harassing cough upsets the stomach, disturbs sleep, or favors hemorrhage, a sedative will be of inestimable benefit, and so on. Failure to apply this simple treatment will rob the patient of his chance to get well. The most essential part in the treatment of tuberculosis, however, is the regulation of rest and exercise, a point not generally appreciated. Given a febrile case, even in the earlier stages, exercise will often change an otherwise favorable course to one leading to a fatal issue. On the other hand, in afebrile cases a certain amount of exercise is necessary to stimulate metabolism. A patient with tuberculosis requires the most careful and painstaking supervision, such as can be given only in a well regulated sanatorium. To say that such supervision has no beneficial effect is to deny the value of the practice of medicine in general. As to the use of "creosote, arsenic, iodine, allyl, ichthyol, mercury succinimide, and a host of other drugs," they form no essential part of the treatment, any more than a large number of other drugs employed empirically in other diseases. While here and there a physician may employ them with apparent success, they are not used to any extent in sanatoriums. Even tuberculin is not regarded as a specific, although it has its legitimate place in certain cases.

Sanatoriums are frequently held up to ridicule for assuming to treat tuberculosis in the sense that certain definite remedial agents are employed and unwarranted statements are made. As a matter of fact this is not so, and Doctor Fishberg, as one of our leading authorities on tuberculosis, ought to know that it is not so. The sanatorium, in the first place, takes care of the advanced and incurable consumptive for the same humane reasons which actuate the establishment of institutions for the care of the incurable. In discharging this duty, the sanatorium indirectly segregates the consumptive who would otherwise be a source of infection (to children).

Secondly, the sanatorium places the curable consumptive in the best possible position to get well. No one can tell in any given case whether the patient possesses sufficient resistance to overcome the disease; consequently, when left to himself, with slight resistance, he may lose all chance to make the most of it in his fight against a formidable enemy. The sanatorium helps such a patient to make a successful fight.

Thirdly, the sanatorium is becoming an institution in which advanced work in the study of tuberculosis is carried on to the ultimate benefit of mankind. In this respect it is sufficient to mention the work of the late Doctor Trudeau and his followers to silence the vociferous objectors to these splendid institutions.

In conclusion. I wish to assure the reader that we do not "prohibit school attendance" or institute "prolonged and costly treatment" in the case of the "sickly, underfed child" with "enlarged tracheobronchial glands." We merely suggest open air schools and nourishing food. Just to what "costly treatment" Doctor Fishberg refers I do not know. At the present high cost of food, proper nourishment is perhaps a trifle costly, but less so than subsequent ill health or a funeral. I know of no other "costly treatment."

THE ROLE OF SYPHILIS IN THE INSANE NEGRO.*

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Although syphilis has always been a subject of great interest to the medical man, it has especially occupied the attention of investigators since the advent of the various biochemical diagnostic aids and the epoch making discovery of salvarsan by Professor Ehrlich.

It was only natural that the subject of syphilis in the negro should have received its share of attention, and as a result all sorts of unsubstantiated statements have appeared in the literature. Thus, one writer (1) states that sixty per cent. of the southern negro are infected with syphilis, while another (2) asserts that ninety per cent. of the colored patients who apply at his clinic suffer from this disease. If these statements are to be taken as correct, it is indeed a sad state of affairs for the negro, and evidently does not speak very flatteringly for the so called benefits of the white man's "civilization." It is quite comprehensible that with his gain of freedom the negro should have plunged headlong into so called "civilization," grasping the good and the bad, and so should have fallen a victim to alcohol and syphilis. And, if the latter disease has really laid such hold upon him as the figures lead us to believe, it is time that definite steps were taken to put a check to the evil. This study was prompted by the desire to investigate more closely the prevalence of syphilis in the colored insane.

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*Read before the Washington Society of Nervous and Mental Diseases, May 18, 1916.

The material utilized here consists of 106 colored male patients admitted to the Government Hospital for the Insane, Washington, D. C., between July 1, 1914, and June 30, 1915. Inasmuch as all but twenty of these patients were residents of the District of Columbia, the finding ought to throw some light upon the status of the problem in the city of Washington.

GENERAL STATISTICAL CONSIDERATIONS.

Of the 106 cases admitted, fifty-three, or one half, were infected with lues, the diagnoses having been based, aside from the clinical findings, upon positive serological data. The fifty-two syphilitic cases divide themselves further into two groups:

1. Those in which the relationship between the existing psychosis and the syphilis could not be clearly established, twenty-one cases, and,
2. Those who suffered from distinct syphilitic disease of the central nervous system, thirty-two cases. Of the latter group eleven suffered from cerebrospinal syphilis, so called, while the remainder, twenty-one cases, or 18.86 per cent., suffered from general paralysis. When we compare our findings with those of other investigators, our material shows a considerably higher prevalence of syphilis. Ivey (3) finds that twenty-five per cent. of males and twenty-seven per cent. of females suffered from syphilis among 600 colored people (insane) examined by him, while Hindman (4) found only sixteen per cent. of syphilitics among colored insane patients, compared to five or six per cent. among white insane in 1,194 consecutive admissions.

It is significant that our figures should be so high, notwithstanding the fact that all but twenty of our patients were residents of the District of Columbia, for it is quite definitely established that as a whole the Washington negro belongs to a higher social stratum than the average negro. Of the 106 subjects only eight had no education at all, while of the remainder, four had some high school training, eighty-one had attended public school for a number of years, and thirteen only knew how to read and write. From our knowledge of the negro, we should be inclined to the opinion that a chance for an education or even its acquisition does not materially influence his well known sexual promiscuity.

The negro has invaded certain industrial fields to such a marked extent, fields of endeavor which furnish such great opportunities for the transmission of syphilis by nonsexual methods as to cause us to take special notice of the tremendous prevalence of syphilis among this race. We have only to think of the thousands of colored waiters and barbers throughout the country to appreciate the danger.

Of the fifty-two syphilitics thirty-five were married, seventeen were single, while the conjugal state of one is not known.

CONJUGAL CONDITION.

	Group 1.	*Group 2.*		
		Cerebral Syphilis.	Paresis.	*Total*
Married	11	9	15	35=66.03 per cent.
Single	10	2	5	17=32.75 per cent.
	21	11	20	52

The greatest number of the married patients belonged to Group 2, namely, those suffering from syphilis of the central nervous system.

Age.	*Total admissions.*	*Total syphilitics.*	*Grade I.*	*Grade II.*
1-20 years	7	2	2	..
21-30 years	30	4	3	1
31-40 years	25	21	4	17
41-50 years	20	15	5	10
51-60 years	9	5	1	4
61 years and over	15	6	6	0
	106	52	21	32

While it will be seen that more than one half of our admissions were between the ages of twenty-one and forty years, those infected with syphilis fell mostly between the ages of thirty-one and fifty. This is readily understood when we remember that paresis, at least, which was represented in our material by twenty-one out of the fifty-three, occurs on the average between ten and fifteen years after initial infection. The sins that are committed in the younger days claim their victims in later life, in the form of cerebral syphilis or paresis. All ages are represented. The youngest is seventeen and the oldest is over sixty years old.

History of infection. Only twenty-three of our fifty-two syphilitic patients admitted luetic infection; eight admitted gonorrhea. Four patients who admitted syphilitic infection gave a negative Wassermann. These were treated in the Army and Naval Hospitals, and knowing the danger of the disease, perhaps wanted to get more treatment. It is very seldom that we meet with a patient who is frank about his venereal history. Notwithstanding that many of the objective findings, such as scars on the penis, general adenopathy, scars in the groin from infected glands, are present, the negro patients will always find some sort of an excuse how the thing happened, other than through sexual intercourse.

Serological findings. For some years past all patients admitted to this hospital had the blood examined as a routine, and those patients who show involvement of the central nervous system have the cerebrospinal fluid examined. The diagnosis is in many cases thus cleared up. We encounter syphilitic psychotic disturbances with mental pictures resembling other forms of mental disorder, and considerable depends upon the serological findings for the clearing up of the diagnosis. The following case illustrates a typical alcoholic hallucinosis, but on examination it was found that the patient was suffering from cerebral syphilis.

Case I. J. J. P., was a porter by occupation, aged forty years, married. Medical certificate stated: "Patient heard voices at night and during the day, stated that people were trying to harm him and that he could hear them coming after him. He also stated that he saw dead people who were in front of him, then would vanish as soon as he wanted to talk to them." Status on admission, a poorly nourished colored adult male with irregular pupils, reacting poorly to direct and consensual light and accommodation and diminished reflexes, also suffering from a depressive anxiety state due to hallucinations of a threatening nature both in the visual and auditory fields. History showed that the patient had been married for the past thirteen years, that one stillborn child was the only issue. He gave a history of having had a chancre about twenty-five years ago. He also gave a history of alcoholic indulgence for the past seven years, which he attempted to minimize, but his statement was contradicted by his wife, who stated that he spent most of his earnings on beer and whiskey. A detailed mental examination showed him to be only approximately oriented in all spheres. Comprehended without difficulty what was said to him, but was somewhat retarded in his movements and speech. Was apprehensive and would become lacrymose when relating his hallucinatory experiences. These voices accused him of theft and drunkenness and would call him bad names, curse him, threaten to kill him, etc. His memory for recent and remote events was impaired. Physical examination showed a scar across the neck from a suicidal attempt. The pupils were irregular and reacted poorly to light and accommodation. Tongue was tremulous, face asymmetrical. Aortic sound was accentuated. The liver was enlarged. Diminished deep reflexes. He had a coarse tremor of extended hands. Wassermann reaction with the blood serum was positive; with cerebrospinal fluid the appearance was clear. Wassermann negative, and protein content increased. Cells per c. mm. were fifty-six. With the history of excessive indulgence in alcohol for the past seven years and the mental symptoms, the diagnosis of alcoholic hallucinosis would have readily suggested itself, but the laboratory findings materially aided in clearing this doubtful case, and under active antiluetic treatment in the form of salvarsan and mercury, we were able to reduce practically all the findings to a negative phase, and also to improve his mental picture.

None of the hallucinatory disturbances are manifest now and as a whole he does not display any gross mental symptoms, aside from being a little retarded. He enjoys parole privileges and helps with routine work. Failure to recognize this case in its true light and thus neglect the proper therapeutic measures would have no doubt led to a severer form of cerebral involvement with a worse prognosis.

In spite of so many negative histories we found the following: Forty-five patients gave a complete fixation with their blood to the Wassermann test. In eight cases the fixation varied between a nearly complete positive to weak, thus giving a total of fifty per cent. of our male colored population infected with syphilis. Out of seventy-nine female colored patients we found 30.37 per cent. suffering from syphilis, 20.25 per cent. of whom suffered from syphilitic psychoses. Among our total colored male population, of about 400, twenty per cent. showed syphilitic infection. This great difference in the prevalence of syphilis among the cases reported and the total colored population is to be explained on the ground that so many of those suffering from syphilis of the central nervous system, especially paresis, die within a short period.

In the following cases the blood had to be examined several times in order to clear up the diagnosis. One patient whose blood gave a weak fixation in the Wassermann was admitted for an alcoholic psychosis, during an attack of delirium tremens, and his reaction to the Wassermann tests was weak, but he admitted luetic infection. In another patient a provocative test had to be done in order to clear up the diagnosis. In a young boy, whose Wassermann was negative, but in whom physical examination showed the stigmata of congenital syphilis, the blood became positive after a provocative test was made.

One patient who showed all the physical findings of cerebral syphilis gave a negative Wassermann in the blood, but his cerebrospinal fluid showed that an inflammatory process was going on in the brain. He was placed under antiluetic treatment, receiving mercury and potassium iodide, and his blood continued to remain negative. He acquired a luetic keratitis and therefore received salvarsan intravenously, and his blood became positive and remains so at the present writing. So it will be seen that a negative Wassermann does not exclude syphilis, but means further examinations either by a provocative or a luetin test.

Urinary findings. Although this paper deals with the prevalence of syphilis in the insane negro, I cannot refrain from mentioning that twenty-six cases showed renal involvement. Stengel and Austin (5), in speaking of syphilitic nephritis, mention a chronic form in which syphilis is the etiological factor. It is in the later stages of syphilis that amyloid and interstitial kidneys are common. These authors believe that there exists a parenchymatous type of nephritis due to syphilis, characterized by albumin, hyaline and granular casts, with occasional tendency to produce edema of renal distribution. Out of eighty-four cases of nephritis they found sixty-six with syphilis as a possible cause for the disease. Of the eighteen remaining there existed in eight either an unquestionable history of syphilis or a positive Wassermann, or both. In six no Wassermann was secured, while in four syphilis was definitely excluded. There is no doubt that our cases bear out their statements. The coincidence of syphilis and nephritis in a middle aged man, without apparent cause, suggests that syphilis no doubt is a factor in the chronic form of nephritis, and further study in this direction suggests itself.

As previously stated, the fifty-three syphilitics divide themselves into two groups: Group 1, in which syphilis could not be laid down as the primary etiological cause, twenty cases, and Group 2, in which syphilis played its role in the production of the psychosis, thirty-two cases.

Group 1. The group comprises twenty patients in whom the relationship between the syphilitic infection and the existing mental disorder could not definitely be established. We are unable to state how much syphilis played a role in the production of the mental upset. Two of these patients were imbeciles, in one of whom syphilis was congenital. Here no doubt syphilis played an important part in the causation of the mental defect. In the other it is impossible to state whether the syphilis was congenital or acquired. An important fact in his case is that a half brother was admitted to this hospital some time later suffering from paresis. The diagnosis of dementia præcox was made in twelve out of twenty cases. The causative factor of dementia præcox is still debatable. Although no doubt there are cases in which certain psychic disturbances enter into the causation of the disease, yet it seems that there are cases of the so called dementia præcox group in which biochemical disturbances have a great influence in precipitating the disorders. We see no reason why a disturbance in the vegetative nervous system or an affection in the complex mechanism of the internal secretory glands could not produce a psychosis as well as it produces certain neuroses. That these systems share in the evils of a systemic syphilitic infection is quite plausible.

Group II. Thirty-two, or 30.15 per cent. of our male colored patients suffered from syphilitic psychoses, and since this disorder manifests itself largely after the thirtieth year, the large percentage of married people among them is explained. It is probable that this high ratio of syphilitic psychoses in our admissions depends to a large extent upon the urgency of hospital care in these cases. We admit many dementia præcox patients whose illness has been going on for years without having been recognized by the family. It is not so with syphilitic disorders of the nervous system. If the family fail to take cognizance of the prodromata, they are bound to notice the disorder within a few months in full display. Whether it is cerebral syphilis or paresis, the disorder cannot escape the ordinary observer, though some of our subjects were not admitted until they fell down with a convulsion while at work, became so amnesic that the police picked them up, or so excited that the family were frightened and asked for protection. This accounts for the very few recoveries in cerebral syphilis and high, rapid mortality in the paretic group. In an examination for the cause of admission in our series of thirty-two cases, only six asked for protection by the police from their own delusions, only a few were sent by the relatives because the patients were unmanageable, while the remainder were committed by strangers, and none were admitted at an early stage of the disease. Consequently we were unable to ascertain the duration of the disease prior to admission to the hospital.

The syphilitic psychoses divide themselves into two great groups, viz., the cerebral syphilitic type and the paretic type, although at times no distinct differentiation could be made out. Some observers differentiate between these two disorders by the Wassermann test in the cerebrospinal fluid, calling all cases with a negative Wassermann in the fluid in all dilutions cerebral syphilis, while those that give a positive Wassermann in the fluid are paretics. But this rule is not infallible. In this series several patients had the laboratory diagnosis of cerebral syphilis and the clinical and mental pictures of general paresis, while others whom we diagnosed to have cerebral syphilis, had a positive Wassermann in the fluid. It is obvious that all available facts, clinical and laboratory, should be utilized before making a diagnosis, for the exact differentiation between cerebral syphilis, so called, and paresis is of great importance therapeutically and prognostically.

Cerebral syphilis. In this group we had 11 cases in the following ages:

31 to 40 years,	7
41 to 50 years,	2
51 to 60 years,	2

The youngest patient was thirty-one and the oldest fifty-five years old, the date of infection being so unreliable that it was not deemed of any value to record it.

While anatomically three distinct groups of cerebral syphilis are recognized, namely, gummatous, meningeal, and endarteritic, clinically apathy, stupor, various degrees of confusion, headache, and local palsies are the most commonly met with symptoms. Confusion was the most common symptom in six of the cases, others suffered from a paranoid state, and one patient's clinical picture resembled catatonic præcox, the diagnosis having been cleared up only by the aid of the laboratory.

Neurological disturbances. Pupillary disturbances, such as loss of reflexes or diminished reflexes, were present in all patients, but irregular pupils were present in only five and unequal pupils in only two patients. Nine patients showed disturbances in tendon reflexes, five having exaggerated, three diminished, and one unequal reflexes due to hemiplegia. There are no better danger signals than the pupil and tendon reflexes, and we have to be on guard for syphilis of the nervous system when we encounter these symptoms. Especially is this true of the pupillary disturbances, for at times they are the first objective signs to appear. It is at this time that active antiluetic treatment in the form of mercury and salvarsan is of the greatest import.

DIAGNOSIS.

It seems that with the present up to date laboratory technic the diagnosis of cerebral syphilis should be an easy task, but at times we meet cases that are atypical, not only in the serological findings, but also in the clinical picture. It is most important to differentiate this disorder from paresis. Although the prognosis for either disease is not bright, yet those of cerebral syphilis have a chance of prolongation of life, and "where there is life, there is hope!" In our series of cerebral syphilis only one patient died, while the mortality of general paresis was far greater than was anticipated: only four out of the twenty are now living.

PROGNOSIS.

The prognosis in this disorder is more favorable with treatment, especially so when the disease is recognized in its early manifestations in the so called gummatous or meningeal type. Several of our patients have given negative serological findings and in some the mental disturbances are gradually improving, and while it is doubtful whether we can do anything where destructive brain changes have taken place, it is a fact that excellent results have been obtained when the disease was recognized early, especially the meningeal and gummatous types.

TREATMENT.

All the aforesaid cases were treated with salvarsan, mercury, and potassium iodide. We not infrequently hear practitioners state that about three doses of 0.6 grams of salvarsan are sufficient to cure syphilis. In our limited experience, whether treating syphilis in general or of the nervous system, we seldom obtained a negative Wassermann with the amount mentioned. One patient received as many as nine intravenous injections before his blood became negative. Several other patients who suffered from cerebral syphilis required treatment continuously. Three of our patients showed on two occasions negative Wassermann with the blood serum, but when their blood was tested several months later it was again positive. Continuous energetic treatment is therefore obviously necessary, and those who give their patients only a few injections of salvarsan and believe them cured are doing a great deal more harm than good. We had no complication in our intravenous administration of salvarsan or neosalvarsan. The mercury injections seemed to have a deleterious effect on the older patients only, and these had to be treated with arsenical preparations.

With this treatment we were able to reduce most of the laboratory findings to a negative phase, and the mental picture in several has been gradually improving. To be sure, the question of recovery depends upon the amount of damage done to the brain tissue, and amount of mental deterioration the patient has undergone before coming to a hospital of this sort.

The following cases of cerebral syphilis illustrate how, after active antiluetic treatment recovery at the laboratory level became complete, but no improvement resulted in the mental picture.

Case II. N. R., who was admitted in a marked state of confusion which gradually cleared up. The laboratory findings, as well as the neurological picture, were typical of cerebral syphilis. After some treatment the laboratory picture became negative in all phases. However, mentally he still showed no improvement. He received mercury intramuscularly, salvarsan intravenously, and three injections of mercurialized serum intraspinally. His blood was negative on one occasion and became positive again after several months. He was again placed under treatment and blood remained negative the past five months. We had several others of this series whose blood became negative after treatment and positive when treatment was discontinued. It seemed essential to reduce the findings to the negative phase both in the blood and the cerebrospinal fluid before we stopped treatment.

Another patient whose blood became negative but whose cerebrospinal fluid had been continually positive, showed on recent examination that his blood was positive and remained so in spite of all treatment, although there was some improvement in his mental condition.

In all of our treated cerebral syphilitic cases we were able to obtain some degree of improvement in the clinical as well as in the laboratory picture. However, treatment should be complete. The case cited below shows the error in an incomplete treatment of cerebral syphilis.

Case III. J. W. T., was fifty-five years old on admission. Medical certificate stated: "Present symptoms—marked depression, delusions, mental excitement, and violence." On admission, clouding of consciousness was present; he was confused and totally disoriented. Nothing of importance in family history. Personal history: Patient an ordinary colored man, common laborer by occupation. Was married seventeen years ago, but there were only two stillbirths from this union. Gave a history of gonorrhea about twenty years ago. Stated he was a moderate user of alcohol. Present trouble started when he had convulsions while at work. Mental examination of this patient after his confusion had somewhat subsided, showed him to be approximately oriented in all spheres. Emotionally he was indifferent and had no insight into his condition. No delusions or hallucinations could be elicited. He performed the intelligence tests to the best of his ability. Physical examination showed a well nourished colored adult male. Pupils irregular, but equal and reacted only to light. There was a rough tremor of the extended hands, as well as of the facial muscles. Face was asymmetrical, angle of mouth deviating to the right. Deep reflexes were all diminished. Slight swaying in Romberg test. Uranalysis showed trace of albumin, hyaline casts. Wassermann reaction with blood serum was double plus, with cerebrospinal fluid was negative; cells, sixty-five per c. mm. Protein content increased. Throughout his sojourn here he complained of pain in his head, at times experienced difficulty in replying to questions. He complained of being dizzy and would be seen to throw out his hands spasmodically as if warding off something. Two months after his sojourn here he began to suffer from convulsions, which lasted for several days. He had treatment in the form of salvarsan intravenously and, several months later, the Wassermann reaction with cerebrospinal fluid became positive. However, he continued to get active treatment and his blood became negative to the Wassermann reaction, and his cerebrospinal fluid showed protein content only slightly increased, all other findings being negative. Mentally he showed marked improvement. He was oriented in all spheres and comprehended readily what was said to him, replied to all questions to the point, and was able to conduct a coherent, rational conversation. His wife was very anxious for his discharge, and we discharged him in her care as improved after a year's sojourn.

This case is an example that in some instances treatment materially helps the patient. This patient would have been going on to recovery had he stayed longer with us, but his mental picture was normal and his wife could not understand why we kept him any longer. As a result he was taken out, and about six months later he had convulsions and died.

PARESIS.

General paresis was diagnosed in twenty out of fifty-three syphilitics, or 18.86 per cent. of the total. Out of seventy-nine consecutive admissions to the female colored service eight or 10.12 per cent. suffered from paresis, about ten per cent. less than the male colored. Furthermore, cerebral lues and paresis had the same number of patients, while in the male colored paresis was nearly twice as frequent as cerebral syphilis. It is the consensus that cerebral syphilis is predominant. and we are unable to give an adequate explanation for these findings other than that the negro can go on with syphilis of the nervous system for a much longer period than the average white patient. This accounts for the rapid mortality in this disease. Out of the twenty patients, only four are living.

Involvement of the central nervous system takes place during the secondary stage ~~of~~ this disease, according to recent reports of various investigators who examined the cerebrospinal fluid during the early stages. They assert that in these cases where there is an involvement of the central nervous system during the secondary stage, cerebral syphilis or paresis ultimately develops. They advocate lumbar puncture, therefore, in general syphilis before the patient is discharged as cured.

The symptomatology of paresis in the negro does not vary to a great extent from that of white people The grandiose type was present in nine of the patients. In this form we often meet with the "color complex" (6) of the negro—aside from being very wealthy they are also *white*. Five were in a confused state throughout their entire residence here. Three were in an agitated and depressed state, while in the remainder euphoria alternated with depression. In the last named the symptoms usually changed after a convulsive attack.

The neurological findings were all very marked on account of the advanced stage of this disease. Disturbance in the form of irregular or unequal pupils, or loss of reflexes was present in all cases. The tendon reflexes were lost in eight patients and diminished in four, while in six the tendon reflexes were exaggerated. In only three patients were the reflexes normal on admission.

The diagnosis of paresis with the typical laboratory findings, such as an increased protein content, pleocytosis, and a positive Wassermann in the cerebrospinal fluid, is rather an easy task. We do not always have these typical findings, however. A negative Wassermann in the cerebrospinal fluid is of frequent occurrence, and it is in the latter cases that we have to take into consideration the clinical picture of the disease. In the series reported, two had a negative Wassermann in the fluid throughout their sojourn here, but their mental picture was typical of paresis.

The prognosis in this mental disorder is unfavorable. The treated cases, it seems, share the same fate as the untreated. With the introduction of the arsenical praparations in the treatment of syphilis and the discovery of Spirochæta pallida in the brain, it was thought that a new cure for this disorder had been found. It is true that we are able to reduce the findings in the blood and cerebrospinal fluid to a negative phase, yet it is doubtful if recovery is possible. We meet with remissions in untreated cases as frequently perhaps as in treated cases. In one case we allowed the patient to go for a visit to his home for several months, and in another case—cited below—the patient stayed away from the hospital for nearly a year, and received no treatment.

CASE IV. E. D. M., who was thirty-three years of age on admission. Medical certificate stated: "Unable to give the date, did not know who was President, heard a voice singing beautiful hymns, but thought he could hear them any time. Heard a voice calling him by name. Thought it was his mother's voice. Had to be fed." Status on admission, well nourished colored male, whose mental symptoms were somewhat in subsidence, but whose neurological picture showed distinct disturbances of the central nervous system. Family history showed heart disease in the family. Personal history: Well educated colored man, who earned his livelihood by pressing clothes. Gave a history of excessive alcohol and stated he had a venereal sore about five years ago. Married about ten years ago; one stillbirth from this union. Wife living. Said he had a convulsive attack in 1910, one in 1913 which he attributed to excessive indulgence in alcohol. Present illness had its onset when the patient complained of feeling "funny" and had peculiar feelings in his head. After having made several blunders that day, he finally landed in the police station on his own initiative. On entering, he said, "Here I am, are you looking for me?" While waiting for the ambulance he had a convulsion and was taken to a local hospital, where he remained for several days and manifested the mental picture described in the medical certificate. Mental examination showed him to be oriented in all spheres; had no insight into his condition. Emotionally he was somewhat elated, said he felt better than he ever did in his life. No hallucinations could be elicited. His memory was fair for recent and remote events. Intelligence tests were well performed. Physical examination showed a well nourished man; pupils irregular and unequal, reacted sluggishly to light. Face was asymmetrical. Tongue tremulous and deviated to the right on protrusion. Test phrases were slurred. Deep reflexes were markedly exaggerated. Laboratory findings: Uranalysis showed chronic nephritis. Wassermann with blood was double plus; cerebrospinal fluid—protein content increased, cells ten per c. mm.; Wassermann reaction double plus. This patient continued to improve without treatment. He appeared in court three weeks later and was discharged as not insane.

This patient has stayed from the hospital for nearly a year and as far as we can learn gets along very well. His case illustrates the remission of paresis without treatment. No doubt had we given him treatment we should have become very enthusiastic about a recovery from paresis. On the other hand, the next case illustrates how active treatment in the form of salvarsan and mercurialized serum intraspinally had no beneficial result.

CASE V. J. J., who was thirty-nine years old, was admitted on a medical certificate which stated: "Patient accessible, very peculiar at times, thought he was Jack Johnson, the prize fighter, rolled up his sleeves and pants and said he was a prize fighter." Status on admission showed an excited colored adult male, whose trend of conversation was grandiose, but he showed only a few neurological disturbances. History showed patient was married, had one child living, aged ten years. Gave a history of gonorrhea and chancre. Was a moderate user of alcohol. Mental examination showed him to be euphoric and suffering from grandiose delusions. Intelligence was fair. Memory was impaired for recent events. Physical examination showed a well nourished colored man, pupils equal and regular, reacting to the usual tests. Face was asymmetrical. There was a tremor of the tongue. Inguinal and epitrochlear glands were palpable. Neurological examination showed tremor of the extended hands. Voluntary movements poorly performed. Deep and superficial reflexes were all normal. Thre was slight ptosis of the left eyelid. Slight swaying in Romberg was present. Uranalysis was negative. Wassermann reaction with blood serum was double positive; with cerebrospinal fluid, protein content increased; cells 31.5 per c. mm. Wassermann reaction double plus. This patient received mercurial injections and saturated solution of potassium iodide, also three intraspinal doses of mercurialized serum. The excitement subsided after the second injection, and the cerebrospinal fluid findings showed a reduction of protein content, cells, 14.5 per c. mm. Wassermann reaction was negative, in one in ten dilution single plus in 0.3 and double plus in 0.5. Mental picture continued to improve; he was not so grandiose, but euphoria and elation were still present. About two weeks after the third injection the patient suddenly had an attack of convulsions and died during the attack.

This case illustrates how a paretic received active treatment and died in spite of it. There is no doubt that it reduces the serological findings, but whether the patient's mental improvement coincides with the findings is questionable. The case cited seems to prove that a negative laboratory level has no effect upon the mental picture after the nerve tissues have once been affected and deterioration seems to go on. Several patients whom we treated successfully with salvarsan and mercurial injections to reduce their findings to a negative phase, are still mentally defective and continue to deteriorate.

CONCLUSIONS.

1. Our findings seem to justify the conclusion that syphilis is prevalent to a marked degree in the colored race. We are not able to state positively to what extent these findings indicate an increase of this disease in the colored race.

2. The occupations of waiter, barber, and cook, in which the negro is so widely engaged, offer many opportunities for the transmission of this disease by routes other than the sexual, and a demand on the part of the general public that employees in this field have a physician's certificate that they are free from syphilis, would undoubtedly tend to limit the spread of this disease.

3. Syphilis should be suspected in cases of nephritis where no other definite cause can be found, especially in middle aged people.

4. A negative blood Wassermann does not exclude syphilis, and suspected cases should have a provocative test. Spinal fluid examination should be made in all cases of suspected syphilis of the central nervous system. Moreover, this procedure is justified even in cases of general syphilis, especially in the secondary stage, with the hope of recognizing central nervous involvement in its earliest stages.

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COROZAL. PANAMA CANAL ZONE.

THE LATE DR. CHARLES E. WOODRUFF.*

By THOMAS E. SATTERTHWAITE, M. D., Sc. D., LL. D.,

New York.

Charles E. Woodruff, who joined this society in 1914, and died June 13, 1915, was born in Philadelphia, Pa., on October 2, 1860.

Graduating from the Naval Academy at Annapolis, in 1883, and from Jefferson Medical College, in 1886, he entered the U. S. Navy in the latter year and within twelve months the U. S. Army. On his retirement, in 1913, he held the brevet rank of Lieutenant-Colonel. Two military medals for meritorious service were awarded to him.

Colonel Woodruff will be best remembered in scientific circles as an anthropologist and as a sanitarian Prolonged service in the Philippines furnished him the opportunities for his well known work relating to the effects of a tropical climate on the white race, which was embodied in a separate volume. Out of this was subsequently evolved his *Medical Ethnology*. But *The Expansion of Races* was probably the most important of his books; it is said to have been the most valuable contribution to anthropology since Darwin's *Origin of Species*. Industriously collecting and coordinating scattered data, he brought them before his readers in a simple, intelligible, and entertaining form. Every man, whether physician or layman, who is interested in racial problems as they bear on health, wealth, and good government, should familiarize himself with Colonel Woodruff's broad survey of these topics. Other valuable material that came from his pen was contained in upward of seventy monographs on subjects bearing on military medicine, camp sanitation, and eugenics; of the latter he made a special study.

But devotion to duty was his undoing, for the enervating climate of the Philippines undermined an otherwise vigorous physique, compelling him to resign from the service at the comparatively early age of fifty-three years, after only twenty-six years of army life.

Colonel Woodruff was a broad humanitarian, endowed by nature with a keen, logical, and inquiring mind, bent on finding light where hitherto there had been darkness. Firm in his convictions, he was equally zealous in upholding them, though tolerant of the opposition that confronts new ideas. Those who differed with him were always treated with consideration, even with courtesy. It was easy, therefore, for him to win the admiration and command the respect of his coworkers. In the front rank of the scientists there is now a gap. Unfortunately, his stay in our society was so brief that few of us had the opportunity of knowing him well. His intimates have paid this tribute to him, that he was a sincere and faithful friend.

Contemporary Comment

Need of a National Leprosarium.—On March 25, 1916, the Senate Committee on Public Health and National Quarantine made a thorough inquiry through a hearing on Bill S. 4086, which provides for a national leprosy home. . . . Every one of the witnesses before this committee energetically portrayed the necessity for the government to take measures to prevent the spread of leprosy and to take care of those afflicted with the disease. In other words, they all thoroughly believed in governmental control. The Senate Committee on Public Health and Quarantine, according to the *Journal of the Missouri State Medical Association* for December, 1916, reported the bill favorably and it came before the Senate for unanimous passage, but was thrown into the regular calendar order by the negative vote of the Senator from Colorado. Therefore this bill will have to come before the Senate in its regular order of business. . . . Every thinking physician realizes the absolute necessity for such a home. The statistics compiled by the government on the number of cases of leprosy in this country are obviously erroneous because lepers are not reported on account of the terror the disease inspires in the community at large. Workers in this field believe there must be from 3.000 to 5.000 lepers in the United States, and have observed that the disease has markedly increased since the Spanish-American War, when leprous islands were brought into direct contact with this country through military and commercial intercourse. The writer has observed the disease in many soldiers, who contracted it during their service in the Philippines or other island possessions. These men wander about the country from place to place, homeless outcasts, whose suffering is as horrible as that of the lepers of the Middle Ages.

There are only three States in the Union that provide a home for lepers with humane laws for their control and protection. The many pitiful and dangerous cases that are carried through interstate traffic throughout the country compel us to plead with the government, not only for the protection of the public from this disease, but for the protection and humane treatment of those afflicted with it. This can be accomplished only by the passage of such a bill as is now pending before the Senate; namely, Bill S. 4086.

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*Read at the seventeenth annual meeting of the American Therapeutic Society, Detroit, Mich., June 9, 1916. A tribute to Colonel Woodruff's memory from the JOURNAL appeared in our issue for June 19, 1915.

Editorial Notes and Comments

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THE OPEN TREATMENT OF INFECTED WOUNDS.

The open and open air treatment of infected wounds are practically synonymous terms, signifying that infected wounds are not bandaged but left open to the air, light, and sun. Moreover, the treatment of such wounds in war and of those occurring in civil life is, from a broad point of view, the same, although special circumstances may alter the viewpoint.

This form of treatment was advocated some months ago by Dyas, of Chicago, who advised that infected wounds should not be covered but only protected by a cradle or screen of netting. Crile (*Surgery, Gynecology, and Obstetrics*, October, 1916), of Cleveland, draws attention to the omission of dressings in the treatment of infected wounds, together with the employment of electric light as a substitute for the light and heat of the sun, in conjunction with the use of hypochlorous acid solution, as demonstrated by the Frenchman, Chaput, and practised by Dubouchet and others, with, it is stated, remarkable success. Crile himself introduced this mode of treatment into the Lakeside Hospital, Cleveland, and concludes as follows with regard to the results: Wounds heal best when infection is hindered or destroyed by the agent least harmful to the tissue and without the irritation of foreign bodies in the form of dressings. All these ends are served by the use of hypochlorous acid solution and by exposing the undressed wound to constant light and warmth. Some British surgeons and more French surgeons appear to have convinced themselves that the open air treatment, whenever the conditions are favorable, is eminently rational. Moynihan went so far as to state that the average dressing of a suppurating wound is, in effect, a pus poultice, and this view is approved by Crile and a large number of surgeons who have gained clinical experience in the stern school of war surgery. Some surgeons indeed strongly condemn all impermeable dressings under any circumstances; among them is Primrose, who, while acting as surgeon to a hospital in Saloniki, came to the conclusion that the bandaging or close covering of infected wounds was a pernicious procedure. The sound principles underlying the open treatment of wounds have been amply demonstrated by military surgeons in the United States, who treated gunshot wounds on the prairies and great plains of virgin soil, with the minimum of infection, and these results were corroborated by British surgeons in South Africa. The conditions existing in northern France and Belgium, however, are widely different from those of the plains of western America or the veldt of South Africa, and therefore the general success of the treatment at the French front affords testimony to its effectiveness of an extremely valuable nature.

For infection to establish itself, an invading germ must find lodgment in a susceptible subject and furthermore must be in a position to maintain itself and multiply in its new situation. It has been pointed out in the editorial pages of this JOURNAL on several occasions that not only is the soil of Northern France and Belgium permeated with anaerobic spores, but that all the conditions of trench life tend to favor infection. The soldier is, as a rule, weakened physically and mentally by the life of the dugouts and by the stress and strain of modern warfare, and his clothes become saturated with the soil. No wonder then that anaerobic infection is rampant among the soldiers on the French front. The treatment seems to be to drain freely and irrigate as continuously as possible with a suitable antiseptic or with saline solutions. Unfortunately, so far no suitable antiseptic has been forthcoming; many antiseptics have been called but few chosen, while Wright and his disciples contend that all are equally useless. The French surgeons, from the first, have employed solutions of hydrogen peroxide, and although Dakin's solution and solution of magnesium hypochlorite have now a great vogue, hydrogen peroxide is still considerably used, by itself and in conjunction with these solutions. In the treatment of anaerobic infection, it seems to be especially indicated, as by giving off nascent oxygen it supplies the very lack that permits these spores to flourish, and thereby checks their further development. Infected wound treatment appears to have resolved itself into open air treatment when possible for both superficial and deep lacerated wounds, with the aid of the electric light and the antiseptic best fitted for the occasion.

THE TREATMENT OF CEREBROSPINAL MENINGITIS.

In this country the reports have been in quite general agreement that the early intraspinal injection of Flexner's serum is of great value in shortening the course of cerebrospinal meningitis and in materially reducing the mortality. Thus as recently as 1913 Flexner reported a mortality of only thirty per cent. in a large series of cases so treated, which was a great reduction from the usual mortality of about eighty per cent. Abroad, however, opinion as to the value of this serum has been far less favorable, and many have given up its use on account of failure to obtain good results.

Owing to this failure, European workers have tried other methods of treatment, but opinion as to their values is still divided. Prompted by this state of affairs, C. Worster-Drought (*British Medical Journal*, November 18, 1916) records his own experiences of a combined plan of treatment. He believes that serum is of value early in the course of the infection and that its value decreases with each day of delay. He advocates the immediate administration of a dose of thirty mils intraspinally in every case upon suspicion of its being of meningococcal origin. This dose should then be repeated daily for not less than four days, and longer if the spinal fluid continues to be very turbid. He uses the polyvalent serum prepared by the Lister Institute. If less than thirty-five mils of spinal fluid can be withdrawn at a puncture, the amount of serum injected must be reduced and should always be kept at a point five mils less than the total amount of cerebrospinal fluid withdrawn. The injection should be made by gravity and its flow aided by long and deep inspirations with short and quick expirations on the part of the patient. After the serum has been given for four or more doses the practice of daily lumbar puncture should be continued until the spinal fluid obtained is nearly normal.

Beginning at the same time as the administration of the serum, a vaccine should be employed. The first dose will probably have to be of a stock polyvalent vaccine, but thereafter an autogenous one should be used. The initial dose should be 250 million organisms; the second 500 million, and each succeeding dose should be increased by a like number of organisms until the maximum of 2,500 million is reached. If a rise of temperature of two degrees F., or over, occurs, the next injection should be of the same size. The intervals between injections should be of four days. It will not always be necessary to give the last two doses of the schedule, as improvement may be such as to render further treatment unnecessary.

To this combined plan of treatment the author would add the use of symptomatic remedies such as 1.3 gram of sulphonal for sleeplessness, dilute hydrocyanic acid for nausea and vomiting, and morphine for excitement. By these means he has been able to reduce the mortality in his series of cases to about thirty per cent., which is far lower than that recorded by European observers under any other plan, including the use of serum. The beneficial effects of the vaccine were most pronounced in cases which tended toward a more or less prolonged course. No ill effects were observed from such large doses of vaccine, which far exceeded those recommended in this disease by enthusiasts about this agent.

EUGENICS AND RACIAL DEGENERATION.

The well known fact that inbreeding has a tendency to accentuate desirable as well as evil qualities and thus disturb the normal balance of the progeny, is nowhere so well exemplified as among races that practise strict intermarriage. Strength and weakness, genius and idiocy, endurance and low resistance go hand in hand, depending on the mating of persons with certain propensities and hereditary proclivities. Royal families often exhibit tendencies to neuroses and degeneracy, owing to close intermarriage. Among races, the Jews furnish numerous examples of the evil effects of intermarriage, compensated to a certain extent by the intensified mental development shown by many of that race.

It is certain that diabetes and disturbances of the nervous system, from neurosis to insanity inclusive, are more common among the Jews than among other European races. A rather uncommon nervous affection—progressive amaurotic idiocy, which affects children and occurs as a rule in families—is found almost exclusively among Jews. Falkenheim collected sixty-four cases and of these thirty-seven occurred in thirteen families, from two to five cases in each. In eighty per cent. the disease occurred among Jewish children. Indeed, the first observations were made by Tay and Sachs among the Jewish immigrants from Russia. In Russia twenty-nine cases, all in Jews, were observed by various authors. I. A. Schabad (*Roussky Vratch*, August 13, 1916) observed two cases of this affection in Jewish families residing in Petrograd. In one case a little one year old girl contracted the disease when six months old. In the other, the child, a boy, acquired the disease when nine months old and died a few months later. The author suggests that the reason more cases have not been observed in Russia is because the physicians are not familiar with it, and it is frequently overlooked.

While in the cases reported by the author there was no history of consanguinity, such a relationship was noted by Kovarsky in fifty per cent. of his cases. The very fact that the disease is due to degenerative changes in the central nervous system, and that it has been observed principally among Jews, makes it more than likely that this is another penalty this race pays for its time honored custom of intermarriage.

DIFFICULTIES IN QUARANTINE.

Of the many problems that the public health officer encounters none is harder to solve than that of quarantine. In the larger cities, where there is a well established health board and an efficient police force, the matter can be handled in a fairly satisfactory manner. In the smaller communities, however, there are many difficulties, not the least being the indifference or even open hostility of many to the existing laws. They either can not or will not see the necessity of enforcement.

It is an axiom that childhood is the period of infectious diseases, and unless the infected child can be controlled the disease will spread. As practically all children go to school the point of attack should be the school, but if there is no medical inspection, or an inadequate one, the small flame may become a conflagration. At the present moment, in a community of thirty-five thousand, inspection is inadequate, the teachers are overworked, and there is an epidemic of mild scarlet fever. The cases are so slight that the condition could be easily overlooked by the lay observer, and if the nurse does not happen to get to that particular school early in the day, many other children have been exposed.

To many a mother, rich or poor, the school is a blessed place to which the children may be sent so as to allow rest at home. The consequence is that many a child who should be at home, probably in bed, is sent to school, exposing others to the same disease. The chief idea is personal convenience, duty to the neighbor not being thought of. Another element of difficulty is the desire on the part of the child, usually fostered by the parent, to have an unbroken record of attendance. This is especially the case in Sunday school, where prizes for attendance are given.

There are times when the parent sends in as an excuse for absence that the child has chickenpox, when it may be smallpox, or tonsillitis, or even diphtheria, and does not call in a doctor. Everything is done to avoid having the house placarded and quarantine established. If the city is one in which there is a corps of visiting physicians or nurses who can attend immediately, no harm may result, but frequently this is not possible and the child remains a menace.

It is obvious that there should be no opposition to the energies that are being directed against tuberculosis and typhoid fever, but there is not enough education of the public concerning the commoner infectious diseases of childhood. Physicians, as a rule, are apt to forget that their knowledge of danger of apparently mild infections is not shared by the public at large. The parents should be shown, not only that their children are dangerous to others, but that the reverse is true. Unless each father and mother appreciates the fact that all must do their part and do it quickly, the problems of quarantine will remain as difficult as ever. The only way to solve them is to get the necessary cooperation through constant reiteration of the facts to the parents, and to the children as well.

CONCURRENT MEASLES AND CHICKENPOX.

Dr. A. J. Rice-Oxley, of London, communicates to the *British Medical Journal* for November 25th, what was a unique experience in his practice—which has extended over two decades. His patients were two boys and two girls. Jim began, he writes, with an attack of measles, February 1st. John acquired chickenpox February 6th and measles February 10th, both rash and spots being well out together. Peggy began with measles February 18th and had chickenpox March 3rd. Ermin had chickenpox and measles February 25th, practically simultaneously. John, Peggy, and Ermin were very distinctly ill. John had been exposed at school to chickenpox and Jim to measles.

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News Items

Assistant Physician Wanted at Onondaga Sanatorium.—The Civil Service Commission of the State of New York announces that an examination will be held on January 27th for the position of assistant physician in the Onondaga County Tuberculosis Sanatorium; salary, $1,000 with maintenance. This examination is open to men only who are at least twenty-one years of age and are licensed to practise medicine in the State of New York. Applications should be filed with the Civil Service Commission not later than January 17th.

Cook County Hospital.—According to a report issued by the warden of the hospital, 81,102 cases were treated at the hospital during the year ending December 1st. Two new wings to the administration building are being constructed, and when these are finished the total capacity of the hospital will be 2,700; in an emergency the institution will be able to handle between four and five thousand patients. The immediate erection of a new laboratory and morgue is recommended in the report.

Personal.—Dr. Irving David Steinhardt, of New York, announces that he will deliver a series of educational lectures for women and girls, entitled Ten Sex Talks to Girls, at the Free Synagogue, 36 West Sixty-eighth Street, New York, beginning on Monday evening, January 8th, at 8:30 o'clock, and continuing on consecutive Monday evenings thereafter until the course is completed.

Dr. J. Madison Taylor, of Philadelphia, addressed the College of Physicians, of Pittsburgh, on the evening of Thursday, December 14th, on the subject of the Scope of Reconstructive Therapeutics.

Free Medical Lectures at Harvard.—The faculty of medicine of Harvard University announces the usual course of free public lectures to be given at the Medical School on Sunday afternoons during the months of January, February, March, and April. The program for January is as follows: January 7th, Alcohol and Efficiency, by the Rev. Dr. Francis G. Peabody; January 14th, The Care of the Wounded with the British Expeditionary Force in France, by Dr. Hugh Cabot; January 21st, Infantile Paralysis, Precautions Necessary and Unnecessary, by Dr. E. W. Taylor; January 28th, Shock in the Trenches, by Dr. W. T. Porter.

The Teeth of School Children.—Out of 330,179 school children examined in 1914 in the city of New York, 194,207, or 58.8 per cent., suffered from defective teeth. This exceeded the sum total of all the other defects noted by nearly 80,000. Defective teeth impair general health and impede school progress. Disorders of the digestive tract, tuberculosis, and various other diseases frequently are preceded by diseased conditions in the mouth. There is a direct relationship between dental development and mental development, and it is absolutely essential to good work in schools that children's teeth be maintained in a healthy condition. The United States Public Health Service recommends that a good tooth brush be included in the list of Christmas presents for every American child and that its use be made a part of the daily training.

Chemists Wanted by the Health Department.—The Municipal Civil Service Commission announces two examinations to secure a list of eligible persons to fill vacancies in the Bureau of Food and Drug Inspection of the Department of Health of the City of New York. One of the positions is that of pharmaceutical chemist, and applications will be received up to January 17th; for the other position, that of microanalytical chemist; applications will be received up to January 18th. The duties of the former position will consist of the examination of patent and proprietary medicines, the examination of crude drugs and official pharmaceuticals, and the representation of the Department of Health in the courts as an expert. The duties of the latter position will consist of microscopical examination of foods and drugs, chemical tests on microscopic slides, chemical analysis, and the representation of the department in court. Candidates for the position of pharmaceutical chemist must be graduates of a technical school, of recognized standing, with chemistry as the major subject, and in addition have had three years' experience in pharmaceutical chemistry after graduation, or proof of training and experience recognized by the Municipal Civil Service Commission as equivalent. The compensation rates proposed by the Board of Estimate and Apportionment for both positions are from $2,280 to $3,660 per annum. The existing vacancies are both $2,280. Both examinations are open to all citizens with the required qualifications. For further particulars apply to the Municipal Civil Service Commission, Municipal Building, Room 1400, New York City.

Lectures on Psychopathology.—Announcement is made of a course of six lectures on psychopathology, to be given by Dr. E. E. Southard, professor of neuropathology in the Harvard Medical School and director of the Psychopathic Hospital, Boston, in Schermerhorn Hall, Columbia University. The lectures are as follows: Tuesday, January 2d, Neuropathology and Psychopathology; Wednesday, January 3d, The Brains of the Feebleminded; Wednesday, January 31st, Frontal Lobe Functions; Thursday, February 1st, Analysis of Delusions; Thursday, February 8th, The Unconscious; Friday, February 9th, Psychopathia. The lectures will be illustrated as far as practicable with lantern slides.

Examination for Assistant Epidemiologist in the Public Health Service.—The United States Civil Service Commission announces an examination, open to men only, for assistant epidemiologists in the United States Public Health Service, at salaries ranging from $2,000 to $2,500 a year. The duties of the position include the making of epidemiological and sanitary surveys to determine the prevalence and causation of disease, to conduct laboratory studies in relation thereto, and to recommend measures to prevent and control outbreaks of disease. It is desired to secure persons thoroughly competent in the various branches of sanitary bacteriology, and especially in isolating the typhoid bacillus from infected persons and materials. Graduation from a medical school of recognized standing, and at least three years' experience in epidemiological work under federal, State, or local authorities, and experience in laboratory technic, are prerequisites for consideration for this position. For full particulars regarding the scope of the examination address the United States Civil Service Commission, Washington, D. C. Applications must be filed with the commission at Washington prior to the hour of closing business, January 30, 1917.

The "Safety First" Campaign.—That this campaign, inaugurated a few years ago, has been successful is shown by the figures concerning accidental deaths contained in the summary of mortality statistics for 1915 issued by the Bureau of the Census. For 1913, 54,011 deaths were reported as due to accident; for 1914 the corresponding number was reduced to 51,770, and for 1915 to 51,406; and during this period there was not only an increase in the population of the registration area as it existed in 1913, but an increase in the extent of the area itself. The rate per 100,000 population for accidental deaths fell from 85.3 in 1913 to 78.5 in 1914 and to 76.3 in 1915. There has been a very considerable reduction in fatalities due to railway, street car, mine, and machinery accidents, and the increase in those resulting from automobile accidents has not been as rapid as the increase in the number of machines in use. Deaths due to railway accidents and injuries totaled 6,652 in the registration area in 1915, or 9.9 per 100,000. This number includes fatalities resulting from collisions between railway trains and vehicles at grade crossings. This death rate is the lowest on record and shows a marked decline during the past ten years. Deaths resulting from street car accidents and injuries numbered 1,555, or 2.3 per 100,000. This rate, like that for railway fatalities, is the lowest on record and shows a material falling off during the past ten years. Automobile accidents and injuries caused 3,978 deaths in 1915, or 5.9 per 100,000. There has been an increase in this rate from year to year, but, as already mentioned, the increase has not been so rapid as that in the number of machines in use. The number of deaths from mine accidents and injuries in the registration area in 1915 was 2,009, corresponding to a rate of 3 per 100,000. This rate shows a material decline as compared with the corresponding figure for 1913, 3.6, and a very great decline as compared with that for 1907, 4.8, which is the highest on record. Deaths caused by machinery accidents in 1915 numbered 1,257, or 1.9 per 100,000. This rate also shows a marked decline during recent years, the corresponding figures for 1913 and 1914 being 2.4 and 2, respectively. The highest recorded rate from this cause is 2.5, for 1907.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. Bush, M. D.,
Professor of Pharmacology and Therapeutics, University of Southern California.

Fiftieth Communication.

PHARMACODYNAMICS.

As one reads through the sections on treatment in the various textbooks on internal medicine, or scans the columns on therapeutics in some medical journals, he will ofttimes wonder what can possibly be the pharmacological basis for the sundry drugs recommended; and he will have much curiosity concerning the logic whereby the authors arrive at their therapeutic conclusions. An examination of this logic will reveal all too frequently the hoary fallacy of *post hoc ergo propter hoc.* How many medical writers, and how many practitioners as well, are able to reduce their reasonings concerning treatment to the syllogistic form? Yet how necessary it is in all branches of medicine to attain as high a degree as possible of logical accuracy. What rational justification can Doctor Brown have for using acetphenetidin for toothache because Doctor Smith reports symptomatic alleviation of hemicrania after administering this drug? Yet how much general therapy has no more adequate logic underlying it. The mental processes of Doctor Brown in this instance may be analyzed somewhat as follows: Toothache is painful; acetphenetidin has a general reputation for its analgesic properties; therefore, acetphenetidin is indicated for the relief of this aching molar. The main fallacy here lies in the limitations of the minor premise, whereby the conclusion is vitiated; but the reasoning as a whole involves several possibilities of error. No account is taken of the underlying cause of the ache, or of the path of sensory transmission, or of the possibility of this path being blocked by acetphenetidin. Furthermore, granting that all these points were so conclusively determined as to warrant this coaltar derivative being used, there yet remains the important question whether or not acetphenetidin possesses any adverse potentiality such as might normally cause one to hesitate about preferring this particular drug to some other less dangerous.

The loose reasoning which sorely afflicts therapeutic discussions today arises from several causes, but the three following are among the chief: (1), The excessively overburdened materia medica, the pharmacodynamics of which are known conclusively in but a small percentage of cases; (2), the gullibility of the average practitioner in the reading of quasiscientific literature; (3), intellectual indisposition.

Concerning the first point, consider for example the new Pharmacopœia—how markedly its bulk would be decreased, with inverse effect on its usefulness, if the inert, the worthless, and the superfluous preparations were omitted. Teachers of pharmacology are urged to make use of the Pharmacopœia as a text in their classrooms, but they are largely debarred from so doing by the unpharmacologic nature of the book. What both teachers and practitioners really need is a treatise embodying the conclusions and recommendations of a convention where the guiding spirit would be pharmacologic efficiency instead of pharmaceutic expediency. Such a convention, through its analytic deductions, could furnish scientific medicine with an official guide possessing both the pharmacal definiteness of the present Pharmacopœia and a pharmacodynamic demonstrableness now nearly lacking. Fewer drugs, but with accurate and thorough information concerning those few, is the first need in establishing rational therapeutics.

The only way to cure and prevent general gullibility is to develop the habit of critical analysis; therefore, both personal habits and educational methods that tend contrariwise should be promptly corrected.

Intellectual slothfulness is a question both of temperament and of training. We hope to so elevate and standardize our educational requirements ultimately as to automatically exclude the mentally unfit from the profession of medicine; with less optimism, we hope to so clarify our curricula and our pedagogical methods as to furnish students with assimilable pabula, instead of, as at present, cramming down them a heterogeneous, incoordinated mass of unvaluated data—not a little of which has wheat to its chaff e'en as Bassanio's reasons.

Arthritis deformans.—George F. Butler (*Chicago Medical Recorder*, November, 1916) states that the treatment of this condition should be begun as soon as any definite signs of the disease have become manifest, and it must be so conducted as to retain and increase the patient's strength. It must be treated persistently for many months for lasting effects. The diet is a matter of first importance, but it should not be limited except in being restricted to articles of food which the patient can best digest and assimilate; meat and vegetables should be given freely. The diet should be generous, with the aim of increasing the patient's strength. Gastric acid fermentation is common, and should be combated by restriction of sweet and farinaceous foods, the use of red meat for a few days, and later by milk with sodium bicarbonate, chalk or lime water, junket, and cream. Then green vegetables and farinaceous foods may be added, with the exception of oatmeal. At least thirty mils of olive or codliver oil should be given each night and bacon gravy, fat bacon, cream, butter, and margarine are also valuable. Beef and mutton fats should be avoided. Salt should be used liberally. Acids and acid fruits should not be taken. Glucose and honey are preferable to cane sugar. Grapes, bananas, nuts, and stewed fruits may be given during recovery. Water, especially hot water, is the best beverage. Tea, coffee, or cocoa may be used if cooked for at least fifteen minutes with milk. Milk and soda water (two grams of sodium bicarbonate to the litre) may be used. Sudden atmospheric changes should be avoided, and it is well to send the patient to some warm, equable climate if he can afford it. Thermal baths and baths of peat or mud are helpful in moderation, and vapor baths are often of marked temporary value. Among drugs, guaiacol carbonate, arsenic, iron, and potassium iodide are the most valuable. General tonic treatment is indicated. Acid fermentation should be corrected by the use of a mixture of the following composition:

℞ Sodium bicarbonate, ... 2.0;
Potassium bicarbonate, ... 0.6;
Aromatic chalk, ... 1.0.

This should be given in a glass of milk half an hour before each meal, and twice the amount at bedtime. Calcium chloride, hydrochloric acid, or minute doses of the tincture of ferric chloride may be given after meals as stomachics. Little can be expected from local treatment and the use of stock vaccines does not offer much help. Autogenous vaccines, however, are of value where a focus of infection can be demonstrated, but care must be taken not to cause a marked reaction from their injection.

Paraspecific Serum Therapy by Mouth in Eye Infections.—L. Frozier (*American Journal of Ophthalmology*, October, 1916) calls attention to the fact that in an acute eye infection it is most important to stop the progress of the disease before it has caused irreparable damage, and that it often is difficult to quickly recognize the exact nature of the infection and precious time is lost in bacteriological researches, which often are quite complex. In awaiting the results of such researches it is well if we can strengthen the patient's natural defenses by some help taken from another organism. At the beginning of the infection, when no deep intoxication has yet developed, little will suffice to awake the vital resistance of all the tissues. This can be secured by having the patient take some antimicrobic serum by mouth. Antidiphtheritic serum is the easiest to obtain, and this is given by the following prescription:

℞ Antidiphtheritic serum, ... 10 grams;
Raspberry syrup, ... 30 grams;
Water .... 100 grams.

Misce. Sig.: A tablespoonful to be taken every hour for the first three days; then every two hours for at least a week.

The method of employment by mouth is so simple and agreeable to the patient that it can be prescribed even before there is any indication for an injection, and the dose can be doubled if necessary without inconvenience. It also permits the simultaneous application of all local medication, which must never be neglected. Frozier says that the effects will not fail to show themselves. The organism will react energetically, often the infectious process is stopped, the patient reports a reduction, even the disappearance of pain, and an increase of strength, appetite, and sleep. If a cure is not established the specific serum or vaccine can be employed with accuracy, since by that time the bacteriological examination will have been able to furnish a precise diagnosis. The administration by mouth avoids all danger of serum affections.

Control of Nausea and Vomiting of Pregnancy.—John Cooke Hirst (*Journal A. M. A.*, December 16, 1916) asserts that on the theory that during normal sexual life corpus luteum is being constantly absorbed, while during the first three months of pregnancy such absorption is in abeyance, it was thought possible that this absorption had some influence on the occurrence of nausea and vomiting. The administration of luteum extract was tried in a series of thirty-six unselected cases with control of the symptoms in thirty-two. Doses up to one mil each were given once or twice daily, as many as forty-two injections having been given in one case. Most cases were controlled by about six doses of one mil each, injected every other day. The injections were given intramuscularly and massaged for a few minutes to minimize the pain they caused. No ill effects were observed.

Some Indications for Splenectomy.—William J. Mayo (*Lancet*, November 25, 1916) states that although comparatively little is known regarding the functions of the spleen and its precise role in certain diseases, in which it is evidently involved, we have gained considerable empirical knowledge regarding the effects of its removal. It has been abundantly shown that the presence of the spleen is not essential to life and that its loss is not followed by ill effects. There are, further, certain conditions in which its surgical removal is followed by improvement in the patient's health or even complete cure. Thus splenectomy is curative in selected cases of splenic anemia, hemolytic jaundice and allied disorders, and in certain ill understood conditions simulating pernicious anemia, leukemia, and hepatic cirrhosis. It is also a valuable procedure in certain parasitic splenic enlargements—especially syphilis and malaria—and as a palliative measure in some cases of pernicious anemia. Splenectomy has also found application in portal and biliary cirrhosis with splenic enlargement.

Vaccine Therapy in Septic Gunshot Wounds.—R. H. Jocelyn Swan (*Lancet*, November 18, 1916) reports that in nearly all gunshot wounds there is a multiple infection, but the most constant organisms present are a bacillus of the proteus or colon group, pyogenic cocci of the common types, and one of the anaerobic gas forming organisms. On the strength of recent work done by Goadby a mixed vaccine of proteus and streptococci has been used by him in all septic military wounds with the most gratifying results. His present routine is to give a dose of this mixed vaccine in each case without waiting for a bacteriological examination of the tissues. At the same time the wound is freely opened and drained and its bacteriology determined. This latter forms the basis for the future use of vaccines. Those cases operated in without a preliminary dose of this vaccine provided the instances of high postoperative fever, while this occurrence was usually absent in similar cases which had received the vaccine twenty-four to forty-eight hours before operation. The greatest value of the use of the vaccines was found in cases of septic fractures of the long bones, and those which entered joint cavities. Aided by the effects of the appropriate vaccine, it was possible to plate such fractures, or to excise the infected joints with the best of results.

Treatment of Fracture of the Spine.—Norman Sharpe (*American Journal of the Medical Sciences*, December, 1916) believes that in every case of fracture of the spine with damage to the cord, excepting only complete obliteration of the bony canal, an early laminectomy is urgently indicated to relieve the cord from the damaging effects of bone pressure, hemorrhage, and edema, and to give the nerve tissue the best possible chance for repair. This operation is not dangerous or difficult in skilled hands, and when it is done early it not only relieves pressure, but it provides drainage for the edema and whatever hemorrhage is present, while at the same time it allows more space for the cord if there is fracture dislocation, and relieves the pressure effects of angulation.

Methods of Raising a Low Arterial Pressure.—W. M. Bayliss (*Brit. Med. Jour.*, November 25, 1916) states that the injection of saline solution intravenously will restore the blood pressure only to a limited extent when low from hemorrhage. If, however, the vicosity of the saline solution employed be increased by the addition of gelatine or a gum the pressure can be restored to normal and the effects of the injection will be quite lasting. This is due to the prevention of the loss of water through the kidneys or into the tissues by the osmotic powers of the colloid. In the fall of blood pressure due to shock with peripheral vasodilatation the addition of barium chloride to the colloid saline solution is most satisfactory. The barium chloride should be used in the proportion of one milligram per kilogram of the patient's body weight.

Shock at the Front.—W. T. Porter (*Boston Medical and Surgical Journal*, December 14, 1916), who was sent to the front by the Rockefeller Institute to study traumatic shock in freshly wounded soldiers in search for a means of prevention or cure, reports after recording his observations that the treatment of shock requires: 1. A special position of the wounded; the abdominal vessels higher than the heart and the brain; 2, heat; 3, intravenous injections of normal saline solution; 5, transfusion of blood, in certain cases; 6, the taking of the diastolic pressure every half hour.

The patient should be placed on a special bed, the central part of which is identical with a surgical operating table, the foot raised thirty cm., with a pillow not more than six cm. high. The bed is heated electrically from below. A stand 1.5 meters above the patient supports a bottle of normal saline solution, kept at 39° C. by an electric heater. The heat should be continued until the feet and hands of the patient are warm, and then turned off, at least for a time. When the diastolic pressure is below eighty mm. Hg., normal saline solution should be injected into a vein. It must be at 38° C. when it enters; about 500 c.c. may be injected, but it is not desirable to continue the injection after the diastolic pressure has reached eighty mm. Hg. The injection should be made slowly, lasting about ten minutes. If the pressure falls some time after the first injection a second should be given. If the pressure falls again below eighty mm. a mixture of 0.5 c. c. of a 1 in 1,000 solution of adrenaline in fifty c. c. of normal saline solution should be injected very slowly into another vein, to be suspended at once if the heart becomes irregular. The systolic pressure is a less reliable guide than the diastolic, because it is relatively more affected when the heart beat in low blood pressures becomes frequent and feeble. It is especially upon the diastolic pressure that the nutrition of the nerve cells depends. In every serious wound it is most important that the diastolic pressure be recorded at the earliest possible moment, for the longer a low arterial pressure exists the more difficult is the recovery; yet desperate cases may be saved.

Impregnation of Clothing.—R. J. Willan (*Lancet*, November 25, 1916) states that the frequency with which fragments of clothing are found embedded in military wounds, their production of infection and sepsis, and the difficulty encountered in the efforts to locate such fragments suggest the desirability of the impregnation of soldiers' clothing with some substance or mixture which would be antiseptic and opaque to x rays. Preliminary experiments led to the adoption of the following solution for such impregnation:

Boric acid	15 parts;
Salicylic acid	15 parts;
Sodium borate	25 parts;
Water	500 parts.

Such a mixture is sufficiently antiseptic greatly to inhibit bacterial growth, gives a good x ray shadow and is not irritant to the skin or deeper tissues. Its effectiveness in actual military use has not yet been tested.

Reactions Following the Intravenous Injection of Salvarsan and Neosalvarsan.—B. Barker Beeson (*Medical Review of Reviews*, December, 1916) writes particularly of the reaction termed by Milian nitroid crisis, which is characterized by a flushing of the face, especially of the cheeks and ears, by increased rapidity of the pulse, and by dypsnœa. Severe pain in the chest may be present, especially over the precordium, and syncope occurs in extreme cases. The condition is very similar to that produced by the inhalation of amyl nitrite. These crises usually occur during an injection, but sometimes do not appear until later, even on the second or third day, when they are called secondary nitroid crises. The best vasoconstrictor to use in such a case is a one to 1,000 solution of adrenalin chloride, the minimum dose of which should be one ccm., equal to one milligram of drug. As much as four milligrams have been given in divided doses, but usually one half or even one fourth of this amount will suffice. In cases of coma two to four milligrams may be given within one or two hours. The best method of administration is to inject the solution deeply into the muscles of the gluteal region. When given subcutaneously its effect is more transitory, while the intravenous route should be reserved for urgent cases, such as those of serous apoplexy. Flushing of the face during an injection of salvarsan or neosalvarsan should be an indication for stopping the procedure at once, and the giving of one milligram of adrenalin. When the patient comes for another injection give one or two milligrams beforehand, and there will be no reaction, or a very mild one, in the majority of cases.

Paroxysmal Auricular Tachycardia.—H. Straub (*Münchener medizinische Wochenschrift,* September 26, 1916) reports a case in which during the attacks the duration of the ventricle electrocardiogram (R-T) was less than two thirds. This is not in accord with the generally accepted view as to the formation of the T curve, but seems to support the opinion that the electrogram of the muscular elements of the heart consists of two principal groups, the R group and the T group.

Herpes Zoster after Vaccine Treatment.—Horace Greeley (*Journal A. M. A.,* December 2, 1916) reports that an autogenous streptococcus vaccine was given in doses of 200 millions to a child eight years old for chorea, and after the second dose there developed a typical herpes zoster, which ran the usual course. The zoster was thought to be due to a focal reaction in the region of the affected nerves due to the probable location in their vicinity of the streptococci which were causing the chorea.

Vaccine Therapy in Gonorrhea.—A. Ravogli (*Ohio State Journal of Medicine,* December, 1916) concludes that: 1. Vaccine therapy for gonorrheal affections has a value—not absolute, but relative, to its localization and complications. 2. Vaccination alone is not capable to extinguish the process in the urethra, but it may shorten the process if combined with local antigonorrheal measures. Antigonococcic vaccination seems more active in secondary gonorrheal localizations. 3. The injections given under the skin or in the muscular masses cause no inconvenience, and the reaction is generally accompanied by fever. 4. The biological reaction and the symptoms following the vaccination have no other diagnostic value as they are not constantly in accordance with the clinical symptoms.

Disinfection of Meningococcus Carriers.—M. H. Gordon and Martin Flack (*British Medical Journal,* November 18, 1916) state that the great difficulty of ridding the nasopharyngeal regions of the meningococcus in persons who have become carriers, either after infection or from contact, is well known. The ordinary methods of applying antiseptics have not given very promising results, probably owing to the failure of these to reach all of the infected recesses. The authors have conducted a series of investigations, using medicated steam nebulæ, and have secured very satisfactory results in most cases. They employed chloramine or zinc sulphate, the former having proved much the more effective. One to two per cent. solutions of the former were used and one litre of the solution was liberated in a period of twenty minutes into a room of 750 cubic feet capacity. The patient remained in this atmosphere for a like period of time and practised deep inhalations through the nose. In a series of chronic carriers sterilization was secured after four to thirteen daily exposures. Three similar cases were not cured by fourteen to sixteen exposures. Lightly infected carriers responded about as well to nebulæ containing zinc sulphate as they did to those of chloramine, but zinc was far less efficient in the heavily infected cases. Owing to the climatic conditions during the summer the zinc sulphate, however, proved preferable, as the chloramine became irritating when the wet bulb temperature of the chamber rose too high.

Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis.—W. C. Farmer (*Texas State Journal of Medicine,* December, 1916) concludes that artificial pneumothorax is a safe procedure when carefully and properly performed according to the best technic. In certain cases of pulmonary tuberculosis not benefited by the usual methods of treatment arrestment may occur by the continuous use of artificial pneumothorax. Artificial pneumothorax is entitled to definite recognition in the treatment of pulmonary tuberculosis, but should be undertaken in cases before they have reached a hopeless stage.

The Bacteriology of the Feces in Diarrhea of Infants.—W. R. Logan (*Lancet,* November 11, 1916) states that painstaking bacteriological examinations of the flora of the stools of normal breast fed infants, of normal artificially fed, and of diarrheal infants showed the following results: The flora of normal artificially fed infants differed from that of the normal breast fed mainly in a decrease in the acid tolerant organisms, an increase in the colon group, and in the appearance of members of the group which does not ferment lactose. The flora of infants with diarrhea showed similar changes, which, however, were more marked. All of the infants with diarrhea were artificially fed. Dysentery bacilli were isolated from the stools of three of the diarrhea cases.

Treatment of Acute Alcoholic Delirium.—James J. Hogan (*Journal A. M. A.,* December 16, 1916) gives on the basis of his observation that patients with acute alcoholic delirium were suffering from an acidosis, a form of treatment adopted to control this manifestation along with the control of the delirium. In consists in the intravenous injection of the following solutions, mixed with 850 mils of freshly distilled water or of filtered, boiled tap water:

No. 1.	Sodium chloride (chemically pure)	5.8 gm;
	Sodium bicarbonate (chemically pure)	8.4 gm;
	Distilled water	120.0.

Boil and filter. Reboil before using.

No. 2.	Sodium bromide (chemically pure)	10.2 gm;
	Distilled water	30.0

Treat as above.

The total solution, amounting to 1,250 mils, was heated to 110° F. and given intravenously over a period of about half an hour. In addition to this solution, glucose was also given intravenously, prepared as follows:

Glucose (commercial)	80.0 gm;
Water (distilled)	250.0.

Boil; add 0.25 gram of blood charcoal and let stand for twenty-four hours; filter and reboil.

These intravenous injections were repeated as often as every two hours in very severe cases until the patient was sleeping soundly. The effects of the injections were to neutralize the acidosis, promote the elimination of acids and toxic substances, provide a nerve sedative, and afford some fuel for the tissues. After the initial delirium had been controlled the treatment consisted in active elimination by means of a dose of 0.3 gram of calomel followed by 30.0 grams of magnesium sulphate. The mortality in a series of sixty-four cases treated in this way was 9.3 per cent., and the average stay in the hospital was less than three days.

Miscellany from Home and Foreign Journals

Extragenital Chancres.—H. N. Cole (*Journal A. M. A.*, December 16, 1916) reviews the literature of this condition—that is primarily syphilitic lesion occurring elsewhere than on the genitals—and adds sixty-one of his own cases to those already reported. In forty-three of his cases the lesion occurred on the lips, three on the tonsil, and one on the tongue, making a total of lesions about the mouth of seventy-seven per cent. of the whole number of cases. Ten of the lesions occurred on the hands, five infections were due to bites of infected persons, and kissing caused nine of the cases. Attention is called to the fact that extragenital chancre is often not correctly diagnosed until the occurrence of secondary symptoms and the frequent occurrence of the lesion on the lips or about the mouth is very apt to lead to innocent infection of others. Thus in his series a babe infected her father, he infected the mother and her unborn child; two men with lip lesions infected their wives; and an infant infected its mother who in turn infected her husband. The question of prophylaxis in this condition is of the utmost importance, and every effort should be made to establish the diagnosis at the earliest possible moment to render the victim harmless by prompt treatment. It was further brought out in this series of observations that the common drinking cup and the use of unclean dishes were responsible for not a few infections. Several of the chancres of the fingers occurred in physicians.

Atropine in Diagnosis of Typhoid and Paratyphoid Fevers.—H. Fairley Marris (*Brit. Med. Jour.*, November 25, 1916) states that a comparatively slow heart rate is characteristic of these diseases. Atropine is known to increase the rate of the normal heart by from twenty to forty beats a minute. He observed, however, that in typhoid and paratyphoid infections atropine largely failed to accelerate the heart. Extended observations on the effect of atropine on the heart rate in over 300 proved cases of these infections led to the elaboration of a simple diagnostic test for these diseases. The test is as follows: Not less than one hour after eating, with the patient lying horizontally and perfectly quiet, the pulse is counted minute by minute until the rate is found to be fairly uniform. Then two milligrams of atropine sulphate are injected into the triceps muscle and after a period of twenty-five minutes the heart rate is again recorded as before until its maximum has been passed. This will usually be within about fifteen to twenty minutes. If the increase in rate amounts to twenty or more beats per minute typhoid or paratyphoid is probably absent. Cases showing an increase of ten to twenty beats are uncertain, and those responding by an increase of ten beats or less are probably suffering from typhoid or paratyphoid. The results of this test were found to agree remarkably closely with the bacteriological or serological diagnoses in the cases studied. The test was found positive as early as the fifth day and as late as the hundredth day. Usually, however, the positive tests were found most constantly about the tenth day. Owing to the normally poor response to atropine in persons over fifty years old, the test should be taken with reserve after that age. It also was unreliable in those with cardiac affections. Antityphoid inoculation was found to give rise to a positive atropin test which did not last for more than ten weeks. The test was applied in a number of other febrile affections, in all of which it was found negative.

Diagnostic Value of Agglutination in Inoculated Persons.—E. W. Ainley Walker (*Lancet*, November 25, 1916) directs attention to the fact that the agglutination test for typhoid, paratyphoid A, or paratyphoid B. infection has not lost its diagnostic value as the result of prophylactic inoculation against these infections. The only changes inoculation has produced are the need for the adoption of accurately quantitative agglutination tests, the use of a standardized agglutinable culture, and the necessity for the repetition of the tests to determine the curve of agglutination. No arbitrary figures can be stated as indicating infection in inoculated subjects, but the discovery of a progressive rise, a progressive fall, or of both, in the curve of agglutination is certainly indicative of infection by the agglutinated organism. The maximum of the rise in the curve falls between the sixteenth and twenty-fourth days of the disease, most often from the eighteenth to twentieth days. It usually amounts to several hundred per cent. In a double infection with organisms of the typhoid and paratyphoid group two curves will be found, both rising and falling, but each independent of the other.

Experimental Syphilis.—Mathew A. Reasoner (*Journal A. M. A.*, December 16, 1916) reports on a large series of rabbits inoculated with each of twenty different strains of spirochetes obtained from human cases of syphilis, presenting different clinical features. The animal inoculations were made by different routes, but a uniform method of inoculation was adopted for each route. The results showed that there were certainly different strains of spirochetes, each having fixed characteristics as shown by differences in the lesions produced in the rabbits. Two strains had special affinity for the choroid and retina, others tended to produce keratitis when the infection became generalized. It was possible to produce a generalized syphilis in the rabbit by the repeated intravenous injection of spirochetes but not by local inoculation, which seemed to suggest that the local lesion was in the nature of a defensive response. Involvement of certain of the nervous structures in the rabbit was accomplished without intracranial inoculation. No morphological differences between the strains were discovered and no permanent alteration in the characteristics of any given strain followed prolonged culture and repeated transfers from rabbit to rabbit. Eight injections of spinal fluid from human cases of syphilis gave two positive results in rabbits.

Rhinitis in Infancy.—Roig Raventos (*Revista de Ciencias Medicos de Barcelona,* October, 1916) warns that rhinitis in children differs from that condition in adults from its contagious nature, its seriousness, and its occurrence in diseases peculiar to children. Gonococcus infection is not uncommon in the newborn, while hereditary syphilis and diphtheria are to be suspected in all cases. It must be remembered that syphilis may remain latent in parents and be quite virulent in their children. Erysipelas, hay fever, pneumonia, and meningitis are often accompanied by nasal discharge, and it is possible for cerebrospinal fluid in hydrocephalus to escape through the nose. Washing of the nostrils and nose with bichloride solution immediately after birth followed by installation of argyrol thrice daily into the nares for several days has been shown to greatly lessen the incidence of rhinitis in the newborn.

A Comparative Study of the Kidney Functional Tests.—L. Junius Desha, James Bassett McElroy, and Bryce W. Fontaine (*Southern Medical Journal,* December, 1916) summarize the results of their investigations as follows: 1. The nephritic test meal of Hedinger-Schlayer-Mosenthal has been used in thirty-six cases, about half of these being in private homes. In general, the results have demonstrated its value in diagnosis and prognosis. Care must be exercised not to attach too much importance to a deviation from a single published standard. 2. The results show a general agreement with the findings from the phenolsulponephthalein and nonprotein nitrogen determinations. While the test meal gives more information than either of the other two, it does not entirely replace them. 3. Among blood nonprotein nitrogen values higher than forty mg. per 100 c.c., there is noted an absence of relationship between the magnitude of the value and the prospective fatal determination. 4. The Greenwald modification of the Folin determination of nonprotein nitrogen has been used with satisfaction.

Ability of the Brain Tissue to Take Up Water in Delirium Tremens.—Frank Nuzum and E. R. Le Count (*Journal A. M. A.,* December 16, 1916) state that edema of the brain occurs in a certain proportion of the cases of delirium tremens, although it is absent in others. Certain other conditions are also marked by the occurrence of a similar edema. The explanation for this phenomenon was sought experimentally by a study of the power of a large number of brains, obtained at autopsy from persons dying of widely different conditions, to take up water. The hygroscopic power of normal brains was determined for control. Under the conditions of the tests the normal brain took up an average of 64.5 per cent. of its weight of water; the same figure was obtained for brains from patients who died of a number of general diseases. Brain tissue from persons who died from delirium tremens took up six per cent. more water than the normal, and from patients who died of cerebral hemorrhage, cerebral embolism, and uremia, the water imbibition was even greater. Alcohol poisoning in rabbits showed an analogous increase in the power of the brain to take up water. In all of the conditions in which the brain tissue was found to have an increased property for the absorption of water there had been a condition in the nature of an asphyxia. Asphyxia is known to increase the hydrogen ion concentration of the brain, and this, in turn, is known to be a factor which increases the power of colloids to imbibe water. It is suggested that this is the mechanism of the production of cerebral edema in the conditions mentioned.

Cerebellar Localization.—I. Leon Meyers (*Journal A. M. A.,* December 9, 1916) states that from a study of myograms of corresponding muscles of the two sides of the body in cats, both normal and previously operated upon with the production of various localized cerebellar lesions, he has reached certain definite conclusions in regard to the moot question of cerebellar localization and function. Combined with the methods just indicated was the specific stimulation of the cerebellum by means of repeated small doses of oil of absinthe. The cerebellar function was to inhibit, control, and regulate the activity of the motor cortex of the cerebrum and paracerebellar nuclei, toward which it bore a position somewhat analogous to that of the posterior root ganglia to the anterior horn cells of the spinal cord. The cerebellum was found to be functionally differentiated for the several muscle groups through the various motor centres. Cerebellar deficiency manifested itself by motor hyperfunction. In the experimental animals the cerebellar lesions were too small to produce any evidences clinically and their effects were only to be seen when the cerebellum was artificially stimulated by absinthe. It was suggested that the use of small doses of this agent or of alcohol might prove of considerable value in bringing out the manifestations of slight cerebellar lesions in doubtful cases in man.

Spinal Fluid in Cord Compression.—James B. Ayer and Henry R. Viets (*Journal A. M. A.,* December 9, 1916) review the literature of the findings in the spinal fluid in compression of the cord, showing that this subject has been largely neglected in this country, although studied more or less for some time abroad. In addition to the results recorded in the literature, those observed in twelve cases studied by them are recorded. All the evidence goes to show that the changes in the spinal fluid are fairly constant and quite characteristic in the presence of compression. The chief features are that the fluid is clear, very often decidedly yellow in color, contains a markedly increased amount of protein without corresponding increase in cell content and undergoes massive coagulation. Not all of these features are present in every case of cord compression, and in some small proportion of cases they may be entirely wanting. But in the great majority enough of the characteristics are present to be of much aid in diagnosis. The findings vary with the nature of the compressing agent and with its location. Thus in cases of acute compression the fluid is more likely to be yellow than in other types. The lower in the cord the compression is situated the greater the tendency for the fluid to present the complete syndrome, and the same is true of intramedullary and meningitic lesions. In no case among over 1,000 punctures in the absence of compression was a fluid obtained which presented the characteristics described.

Proceedings of National and Local Societies

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, Held at the New York Academy of Medicine, April 12, 1916.

The President, Dr. Thomas S. Southworth, of New York, in the Chair.

Syphilis of the Bladder.—Dr. James Pedersen, of New York, reported a series of twenty-six tertiary and fourteen secondary cases collected by Duroeux; twelve cases taken from more recent case reports, and five cases of his own, two of which, however, are not absolutely conclusive. Duroeux's thesis began with Morgagni's postmortem specimen (1767) and evidently includes all the cases recorded down to 1913. Reference to it and to the leading textbooks proved both the relative infrequency of the lesion and the frequency with which it had been overlooked hitherto or incorrectly diagnosed. By cystoscopy alone the diagnosis could not be made; it must be supported by at least one of the corroborating essentials; the history; the Wassermann reaction; syphilitic signs elsewhere in the patient, or the somewhat despised but useful treatment test.

The possible lesions of bladder syphilis were: 1. A more or less diffuse hyperemia from moderate to intense. It may be symptomless. 2. Punctate or more macularlike reddish spots—the so called "roseola" of the bladder. They may cause no symptoms. 3. An ulcer or ulcers. When characteristic, they were multiple in clusters; more or less elevated on an edematous mucous membrane; the edges definite and firm; the base grayish with necrotic or hemorrhagic debris. They may be mistaken for simple ulcers at one extreme or for tuberculous ulcers at the other. 4. Papillary growths, indistinguishable from benign papillomata or from the villosities surmounting a malignant base. 5. The gumma. By cystoscopy it could not be differentiated from either an infiltrating or a salient malignant growth. Unfortunately the incidence of bladder syphilis preponderated in the tertiary stage, when it is more difficult to discover signs that will corroborate the cystoscopic findings. Once the diagnosis had been established and proper treatment applied, the prognosis was exceedingly good.

Dr. Eugene Fuller expressed his regret that he had been detained and did not arrive in time to hear the first part of the paper. The subject was interesting. There was no doubt that until very recently the bladder was supposed to be an organ which was wonderfully exempt from syphilitic involvement, and a large exemption can still be claimed for it. At the same time, a careful cystoscopic study such as Doctor Pedersen had been making will show cases with the lesions which he has so carefully detailed associated with a positive Wassermann, and such lesions will disappear under specific treatment. It seemed probable that in a good many of these cases syphilis may be found to act in conjunction with another lesion, perhaps with tubercle or some of the streptococcus infections. Gumma of the bladder was very rare, and when it did occur it was generally in connection with the fundus or prostatic region, extending into the bladder wall. There had been a few cases of a vesicorectal fistulous condition where the opening may have been caused by gumma.

Syphilis really played more havoc with the bladder through the spinal cord than by attacking the bladder itself, and the general practitioner should be on the lookout for the spinal conditions which affect the bladder. The topic was a little beyond the scope of the discussion, but it is such an important subject that a few words on the subject might be permitted. Generally, when there is lack of bladder control caused by syphilis it is due to spinal conditions. He reported the case of a patient who came to him some time ago after having been treated for four years for supposed prostatic disease, when the whole trouble was really with his spine. He was ataxic, as could be clearly recognized, and yet the treatment received had been focussed entirely on the prostate itself and the spinal lesion ignored. That error should be avoided carefully. This case had been so long wrongly treated that nothing much in the late stage could be done for the patient. Of course, after the correct diagnosis had been demonstrated, the man who had been treating the patient for so many years had to do a good deal of explaining; but that could not be avoided. One cannot always cover up a mistake as much as one would like, much as he might try.

Various conditions of the bladder may occur with these spinal lesions. Some twelve or fifteen years ago a man came to him at the City Hospital complaining of excruciating pain in his bladder on urination. That was before the days of the Wassermann test. He was cystoscoped, but nothing could be found to account for the pain. The man was suffering so much distress and discomfort that finally, in an effort to relieve him, Doctor Fuller cut into the perineum and put in a drainage tube, although it was against his principles ever to operate upon any one simply for the relief of symptoms when no tangible causative lesion could be demonstrated. It was a very good thing not to operate in that way, and this case served as an illustration. In this patient the lancinating pains of the vesical neck, of course, continued, and they were finally shown to be due to the lightning pains of ataxia. In two or three months the man developed a great deal of ataxia, although at the time he first came under observation his knee jerks were present, he did not have the Argyl Robertson pupil, and gave no history indicating syphilis.

Many of these early cases of ataxia will have difficulty in urination, and he had seen instances where a supposed stricture had been cut on the supposition that the urinary symptoms were due to that; whereas it was in reality one of the early symptoms of ataxia.

Doctor Osgood said that he had been very much interested in Doctor Pedersen's paper. Every one who has done any amount of cystoscopy has seen a number of these lesions in the bladder, but the diagnosis was always made only by the treatment. These lesions were seen in the bladder, and resembled other lesions; but that was not a diagnosis of syphilitic cystitis, nor was that diagnosis established when syphilis was demonstrated in the body. In all the cases reported the diagnosis had been made because the lesions have disappeared upon the administration of the proper treatment.

Doctor Osgood said that he believed the diagnosis could be made, however, by removing a part of the lesion and demonstrating the spirochæta pallida in it. He had never seen any report of this having been done, and he had never done it himself. Spirochæta pallida have been demonstrated in syphilitic nephritis in one or two cases only, but it was highly probable that spirochæta pallida were present and that the diagnosis could be made by demonstrating them in such lesions.

In a diagnosis of a condition of this kind the cystoscope was necessary, and such a study as Doctor Pedersen had made has always helped the diagnosis, but the demonstration that the condition is syphilitic depends entirely upon the treatment, upon which Doctor Pedersen had cast some aspersions in his early remarks. That, however, was absolutely necessary, for one cannot make a diagnosis upon the appearance of the lesions only.

Doctor **Barringer** said that the members of the association were indebted to Doctor **Pedersen** for bringing this subject before them. He further said, that for ten or twelve years he had been looking for cases of syphilis of the bladder, largely because of the publications which have appeared, and he had had many discussions with Doctor Keyes concerning the subject. Doctor Barringer said that he had seen but one case in these ten or twelve years which he thought might be syphilis of the bladder, but he was so doubtful concerning it that he did not dare report it. He had made a little sketch of the case at the time, and he would be very glad to have Doctor Pedersen's opinion regarding whether or not it resembled his cases of syphilis of the bladder. The patient gave a history of frequent and painful urination, pyuria, and had an indeterminate Wassermann reaction—which at that time did not amount to very much. After that the patient was cystoscoped, and an ulcerated condition was found intermingled with macular congested spots on the bladder wall. This man was put upon intramuscular injections of salicylate, and his bladder condition absolutely cleared up, after which he disappeared from observation. About six months later, he heard from another urologist that the man had tuberculosis of the epididymis, and was not at all surprised, for it was not difficult to confuse tuberculous epididymitis and syphilitic testicle.

This was the only case he had ever seen in which he even suspected syphilis of the bladder, notwithstanding the fact that he had been looking for it for about ten years. It was interesting to know that Doctor Pedersen had seen five cases, although it would appear from the report that there might have been only three. He wished that Doctor Osgood had been less casual in describing the condition and the frequency thereof. These cases must be extremely rare, and specimens should be examined microscopically.

Eczema in Childhood.—This paper, by Dr. George W. Crary, of New York, appears in this issue of the Journal.

Dr. Charles Herrman said that he would limit his remarks to a discussion of the constitutional eczema of infants, which was a congenital anomaly, a disturbance of metabolism manifesting itself in a peculiar sensitiveness of the skin and mucous membranes. This tendency was generally known as the "Exudative Diathesis." Doctor Herrman some time ago had called attention to the fact that some of these infants had sprue shortly after birth as the first visible manifestation of this tendency. It was important to remember that it was the infant, not the mother, that was at fault, so that as a rule nothing was gained by giving the baby to a wet nurse or substituting artificial feeding. He believed that too much emphasis had been laid on the possibility that one particular constituent of the food, as fat, sugar, or salts, was at fault. Treatment based on such a view would fail if followed uniformly in all cases. This would explain the difference of opinion with regard to the value of Finkelstein's method, the view was too narrow. It might be compared with former conceptions in diabetes, where the carbohydrate metabolism was supposed to be solely at fault. Overfeeding was an important factor as we should expect in any disturbance of metabolism, but too great a loss in weight was not without danger. The relation to thyroid insufficiency was not proved. Doctor Herrman had observed a large number of cases of sporadic cretinism over a period of years, some had come under observation during the first six months of life, and he had not noted any special susceptibility to eczema in them. Thyroid extract had a marked effect upon the fat metabolism and possibly its beneficial effect in some cases might be explained in that way. Sudden death occurred in a few cases. Doctor Herrman had such a case in his hospital service some years ago. It was not necessarily associated with status lymphaticus, for in a great many cases the changes characteristic of that condition were absent. Death was probably due to degeneration of the heart muscle similar to that complicating diphtheria. A careful *microscopical* examination had shown such, ~~and~~ degenerative changes were also noted in the kidney. These changes were probably caused by bacterial toxines, indeed Hutinel had been able to demonstrate organisms in the blood during life in two cases. Doctor Herrman had seen a severe facial eczema in an infant in which the eye became infected and perforation of the cornea resulted, the child dying a short time after. A certain number of cases of constitutional eczema resisted all forms of treatment for some time. Most of these showed improvement after months without any radical change in the diet or method of treatment. In acne the same had been noted after puberty. To say that it may be due to a disturbance in the secretion of one or more of the so called ductless glands was merely hypothetical. We do not know. The more imperfect the feeding as to quantity and quality the more likely we are to obtain improvement by regulating the diet. When special idiosyncrasies to certain foods are present, these are excluded.

Stated Meeting, Held at St. George, Staten Island, on June 19, 1916.

The President, Dr. Thomas S. Southworth, in the Chair.

The Technic and Practice of Diathermia.—Dr. Heinrich F. Wolf, of New York. This paper appears in this issue of the Journal.

The Physics of the High Frequency Current.—Dr. Albert C. Teyser, of New York. This paper was published in the Journal November 4, 1916.

Doctor Branth said that he would like to cite a little history. Tesla, in the *Electrical Engineer*, December, 1891, expressed the opinion that high frequency currents might be serviceable in medicine D'Arsonval, in 1892, spoke of warming the tissues by this current, but did not refer to it as a remedy. In 1899, von Zeyneck spoke of diathermia. After that, eight years passed without a reference to diathermia, when Nagelschmidt, in Dresden, September, 1907, demonstrated before the Naturforscher-Verein true diathermia of arms and chest. Subsequently it came to light that von Berndt in Vienna had discovered the same in February, 1907. In our own country Doctor de Kraft, one of the members of this association, discovered the feature of elevated temperature by the passage of high frequency current through the body tissue, as far back as 1904.

The first step, the real passage of the high frequency current was, perhaps, discovered by him as far back as 1901; yet the elevation of temperature was overlooked by him at that time, and when he began to use high frequency current for *diathermia* it was after the aforesaid colleagues had written and spoken about it—and to them belonged the credit of priority.

What can diathermia do in medicine? We can warm the tissues between the two poles—even burn them if the current is strong enough and applied long enough. If diathermia—i. e., warming—only is desired, the bloodvessels will be dilated, more blood will pass, and so remove the debris and waste. During the recent epidemic of grippe, there were many cases of mastoiditis. If you take care that there is no pus in the auditory cavity—if the drum membrane is bulging and you puncture it—then apply the current, filling the ears with a piece of cotton soaked in salt solution, which will form a good conducting medium for the current; you can warm it to its deepest recesses and thus abort many cases of mastoiditis.

There are many cases of infected gallbladder, where there are no gallstones, that can be materially helped by the passage of the diathermic current. It is true that the treatment of gonorrhea by the diathermic current has not been satisfactory. The reason lies in the difficulty of the technic, for if you introduce a sound in the urethra and connect this sound with the current, the greatest density of the current will be at the point of emergence, and not distributed along the canal, and burns may result. If, however, the part is immersed in a cup filled with salt solution, you can distribute the high frequency current—or so called diathermic current—in a fairly equal quantity, and can warm all the parts and give material relief in some of these conditions. One of the most satisfactory uses is in old cases of gout. Kraft said that many of his patients had suffered with this condition for years and had never received any relief until they had a general diathermic current applied. It should be applied with large electrodes or with multiple electrodes, for the more numerous the electrodes the better. The action of radium is purely local (its greatest depth of penetration being from five to six cm.), and that beyond the area of inhibition there is stimulation, the observations on the treatment of neoplasms of the true cancerous type at St. Luke's Hospital having shown that, although the primary growth may be checked or apparently destroyed, the patients subsequently die of metastases.

Because of the lack of accurate means of control in the use of radium and its destructive effect on normal tissue, its use in the treatment of deep seated neoplasms has been discontinued. It is to be remembered that many of the tumors of mucous cavities are gummatous deposits and not true cancerous growths. The Wassermann test may show that the reputed cure was merely a dispersion of a gummatous deposit.

The so called burns, whether from radio active substances or x ray are due to the inhibitory action of the rays on the enzymes of the tissues, the condition produced being a local gangrene. The treatment of these burns consists in restoring the conditions required in the reaction of normal tissue by means of the local application of substances rich in available enzymes, such as white of egg, beef juice, etc. He expressed interest in Doctor Chase's experience in the use of high frequency currents for the relief of pain. In this form of therapy the heat and electrical energy combine to produce a direct acceleration of the normal action of the individual cells of the vascular tissue, thereby relieving pressure, which is so potent a factor in the production of pain.

Stated Meeting Held at the Academy of Medicine, May 22, 1916.

The President, Dr. Thomas S. Southworth, in the Chair.

Pyorrhea alveolaris.—Dr. R. G. Hutchinson, of New York.

Röntgenographic Diagnosis of Dental Infections.—Dr. Sinclair Tousey, of New York. This paper appears in this issue of the Journal.

Infections of Bones and Joints.—Dr. Percy W. Roberts, of New York. This paper appears in this issue of the Journal.

Dr. William H. Haskin congratulated the society on the papers which had been presented, and agreed with Doctor Roberts that the teeth are not always the source of the various infections. He said that in appendicitis, pyosalpingitis, otitis media, etc., innumerable types of bacteria are constantly present, and it is also astonishing to see the changes which take place when the intestinal flora are cleaned up. He did not, however, agree with what Doctor Roberts had said about the teeth and the tonsils. He believed that the teeth were responsible in a hundred cases to one case where the tonsils were at fault.

Many slides and x ray pictures had been shown, and he had a few more representing the actual conditions in these cases. He also had had radiographs made of about 600 extracted teeth in order to study the aspects of these root canals and the fillings, and in all these 600 teeth he had not found one with a complete canal filling, so that the assertion of being able to follow these canals down to the root is very rarely demonstrated. Many of these teeth have two or three apical openings. The angles and curves which they take in many cases, and the peculiar openings almost preclude the possibility of getting through the total root canal. It can be done in many instances, but not very often as compared with the number of failures. Even with the teeth extracted one cannot always tell how many canals there are with the radiographic film. So many questions arise in radiography that the true interpretation of the films is often impossible.

It was absurd to claim that such cases could be treated by instrumentation, or with ipecac, or any other drugs, and the keeping of such teeth in people's heads was a crime. Doctor Haskin then cited the case of a child who had an acute septic anæmia from abscess in the teeth. Three abscesses were found over two teeth in the upper jaw and one in the lower jaw with extensive necrosis of the superior maxilla.

He said he had a beautiful collection of gold work removed from such patients. One patient, a woman, with anæmia, had only twenty-five per cent. hæmoglobin, 1,300,000 red cells, and 4,200 white cells with eighty per cent. of small lymphocytes, all from ten abscessed teeth. She had been sick for two or three months and no one had ever examined her mouth. She had a very close call, and is still under treatment and it was too early yet to say whether or not she would recover. Look at the teeth; study them; they are the source of an infinite amount of trouble.

Dr. E. P. R. Ryan (D. D. S.) said that he had been asked to discuss the subject from the standpoint of the general dental practitioner, and had been wondering whether he could do so without being scared to death by seeing and hearing what was done in dental work and bridge work, but that he had been very much surprised at the manner in which the subject had been treated, more especially by the first paper on dental infections.

He did not intend to discuss the cause of septic disease or the virulence of bacteria carried from one part of the body to another, but rather to call attention to the presence of pus in the large percentage of mouths. While in the army he had examined thousands of recruits, young, vigorous men, and in all the cases examined where there were crowns and bridges pus existed in ninety-five per cent. It was up to the medical profession to say whether the presence of pus in the mouth has anything to do with systemic conditions. It is certainly there in an enormous number of cases, and can easily be demonstrated. Doctor Haskin had made one of the most important points of the evening when he said: "Look for pus."

Pictures had been presented showing that it was the height of absurdity to try to save the teeth in many of these cases. It was impossible to reattach them to the alveolar process, for they became foreign bodies as soon as they became separated from the surrounding tissues.

The dentists are not opposed to this movement. There is an idea that they are antagonistic to it because it will interfere with their work, but many have believed in it for years and have taken it very seriously, and still do so. You cannot, however, always take every tooth out of a patient's mouth. Not every dead tooth has an abscess; the x ray does not show that; but in conditions where there is a question of septic involvement in the mouth, the cause of the infection should be found and eliminated.

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Letters to the Editors

FALLACIES ABOUT TUBERCULOSIS.

Buffalo, *December* 15, 1916.

To the Editors:

There are some points in the very valuable article by Dr. Maurice Fishberg in your issue for December 2nd that seem to warrant further discussion.

1. Granting that necropsies have shown for various European cities a healed tuberculosis in ninety per cent. of cases and that such lesions are common in this country, is it not going too far to hold that adult tuberculosis, apparently developing as a comparatively recent infection, is due to a lighting up of old foci? There are three possible fallacies to be considered in order. The supposedly dormant foci of healed tuberculosis are not actually demonstrated to be such in all or even the majority of instances. We simply induce this opinion by generalizing from a comparatively few accurate observations. Secondly, these foci do not necessarily include living tubercle bacilli. I am under the impression, but not positive, that it has been demonstrated tinctorially and microscopically that certain lesions have been tuberculous while inoculation into especially vulnerable animals has demonstrated the absence of living or at least virulent bacilli. Thirdly, the great majority of adult cases of tuberculosis show no connection with an infantile infection, even if this is assumed as probable or demonstrated *post hoc* at the necropsy. Why should we assume, either academically or to the exclusion of prophylactic measures which are at least harmless to the potential patient and at the worst cause some inconvenience and mental discomfort to the actual sufferer from tuberculosis, that a fresh infection plays no part in the subsequent development of the disease, as has been apparently demonstrated clinically in many instances? Even if we concede that the bacilli introduced *de novo* or their descendants are not the direct cause of the apparently fresh infection, there is nothing far fetched in assuming that they play a positive part in lighting up a dormant focus.

2. Either the analogy to the immunity conferred by smallpox is incorrect, or our beliefs as to different kinds or degrees of immunity require radical change. There is a term formerly used occasionally, that has lapsed into desuetude and that ought to be in common use—semelincident. If this word were kept before the medical profession, it would emphasize the sharp distinction between diseases such as the exanthemata generally which with very rare and usually doubtful exceptions, confer lifelong immunity, and certain other diseases like diphtheria, malaria, etc., which recur, on fresh exposure after what appears to be a complete annihilation of the infection. The immunity of semelincident diseases is apparently sometimes hereditary. At least, if the mother has an attack during pregnancy and does not abort, the child is usually "naturally immune" to the same infection. Whether there is any radical difference between the immunity conferred by different diseases is rather an academic question. The practical fact is that with few exceptions some infections confer a lifelong immunity after an attack, while others leave the patient susceptible after a comparatively brief interval The Schick test leads to the hope that the duration of the period of immunity can be determined for infections in general. Clinical experience has apparently shown that tuberculosis is not a semelincident disease.

3. Where has the author acquired the experience that "city dwellers . . . only exceptionally manifest active tuberculous disease?" Tuberculosis certainly does occur frequently and in severe form among city dwellers, among Indians on reservations where opportunities for infection and whatever immunity might develop, have been afforded for several generations, and in country dwellers in houses and neighborhoods which provide just as good opportunities for the influence of repeated, mild exposures as exist in cities. That constant exposure for many generations does afford a considerable degree of immunity, is well established, but it is scarcely safe to conclude that a given subject, merely because it is assumed as probable that he has had a mild infection with tuberculosis in infancy, may with impunity be subjected to opportunities for massive infection at a later period.

4. The fact remains that tuberculosis is not so common a disease, in recognizable, serious form as it was even a generation ago. Consumptives are not so numerous in our personal acquaintance, in our chance meetings in public places, in our clientele, as they were. Statistics agree pretty generally, that tuberculosis deaths have fallen off at almost the same rate as the general mortality. Approximately we have fifteen in 1,000 general death rate compared with a twenty in 1,000, about one-tenth being due to tuberculosis in either case.

5. Doctor Fishberg's contention regarding the inefficiency of therapeutic measures is largely true. However, hygienic and dietetic treatment have accomplished a great deal. The fact that the majority of the profession agree that, from the practical standpoint, specific treatment with various bacterial products is thus far a failure should be considered, not merely by itself, but in relation to the acquirement of immunity. If men of the highest technical attainments, with ample clinical material and many years' experience, lay claim to only provisional success with tuberculins of various kinds, why do we expect that purely accidental exposure to tubercle bacilli should produce a dependable immunity?

A. L. Benedict, M.D.

Book Reviews

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

Arteriosclerosis. A Consideration of the Prolongation of Life and Efficiency After Forty. By Louis Faugeres Bishop, A.M., M.D., Clinical Professor of Heart and Circulation Diseases, Fordham University, School of Medicine, New York City, etc., London and New York: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1914. Pp. x-383. (Price, $3.50.)

This work is a sincere effort to place before the profession in a condensed form our knowledge of arteriosclerosis. Necessarily it lacks the details of the more ambitious works and bears some evidence of having been somewhat rapidly put together. The author states that arteriosclerosis is much more frequent than formerly. This is hardly susceptible of proof. To be sure, no one within the direct knowledge of man has reached the age of Methuselah, nor does any one of our generation seem destined to do so, but with the evolution of man the intellectual conflicts have for the most part supplanted the physical, notwithstanding the present war. Psychic strain is probably as much, if not more, of a factor etiologically than physical effort. Physical effort admittedly results in cardiac hypertrophy and must have been common among our ancestors, but at the same time exercise results in more perfect oxidation. The sedentary life with mental effort would seem more pernicious therefore than the other. In the following quotation the author sounds a note that must strike a responsive chord in many clinicians: "The author craves the indulgence of protein chemists and bacteriologists whose territory he has invaded in the search for the truth about arteriosclerosis, and hopes they will pardon technical inconsistencies that he has risked in an attempt to explain his experience in clinical medicine. The ever increasing demands of practice have made it impossible to go back, in person, to the laboratory for confirmation. Clinical philosophy has long since yielded the field to the technician, and no real practitioner would dispute ground with the youngest laboratory man when armed with test tube and statistical facts. But sick humanity is clamoring for relief and will not wait for the technicians to slowly complete their tasks and in due time reveal their treasures of knowledge and present them for use. The sick man says, 'Go seize the precious truth and use it now.'"

The work is very practical in its application, numerous case reports being referred to, and illustrations of x rays and pulse tracings with blood pressure records and every evidence of a wide knowledge of the literature. His chapter on the chemistry of proteins should be read with a due recognition of the fact that our knowledge on this topic is changing almost from day to day. The work is concluded by an interesting reference to arteriosclerosis in life insurance.

Interclinical Notes

A new feature of the *Outlook* is announced in the issue of that periodical for December 20th, whereby it will be used in the future as a sort of textbook for both current history and good English in the schools of Providence, R. I., and later, it is hoped, in the schools of other cities. Many people think that English can take care of itself, but it is a fact that many uncalled for changes are due to carelessness in newspaper and other offices. Witness the growing use of "deduct" for "deduce," "lay" for "lie," "due" where "owing" should be used (adverbially). "Disinterested" is becoming confounded with "uninterested." We find that many of our contributors cannot use the word "after;" at least, they invariably write "following," an unwieldy substitute. We wish the carefully edited *Outlook* good luck in its new mission.

* * *

The story of Hopewell, Va., is a feature of the *Survey* for December 2nd. Under the stimulus of the establishment of a powder factory within the town's limits, lots leaped in price from ten dollars to one thousand dollars, until the construction work was completed, when prices fell to about their former level. The only hospital, the story says, is maintained by a doctor who is in constant hot water for lack of a license to practise in Virginia: he has made a notable fight against vice. The powder people have kept typhoid and malaria away from Hopewell, but just outside the city limits is a negro settlement which gets water from a polluted well, and plenty of typhoid, too. The *Survey* says the company has no control over this suburb; why does it not buy the territory? It is thought that soon the powder works will become dye works.

* * *

There is a wonderful picture in *Leslie's* for December 14th of the Yale Bowl, where Yale defeated Harvard at football for the first time in eight years. Another good picture is that of the 50,000 people watching the army and navy game in which the former was victorious. The wonderful Red Cross dogs are shown on page 659; one of them is submitting philosophically to the bandaging of its wounds by a human member of the organization. The pictures of mascots and pets belonging to the soldiers are rather pathetic.

* * *

"Sinapis" in his department, "At the Periphery," in the *Medical Press* for November 15th, remarks as follows concerning some forms of irregular practice: "A correspondent writes: "What is all this fuss about osteopaths, bone setters, and manipulators? Do we not employ mechanical methods ourselves? Are there no such things as masseurs, gymnastic institutes, Zander Institutes, physical exercise establishments and bathing establishments all of which are openly quacked for the pecuniary advantage of their promoters, which are nevertheless recognized and recommended by all the mandarins? And, if the answer is in the affirmative, will you tell me what is the difference in principle between any and all of them?' Although, because it begs the whole question, I must demur to the word 'quacked,' the correct answer is clearly 'in the affirmative'; and the difference in principle is not in reality very far to seek. It is the details which are difficult. The difference, it seems to me, resides in the principles on which these various things are run. If they are run purely as therapeutic institutes, which carry out therapeutic measures indicated by medical men in each individual case, and refuse cases which do not come through a member of the profession, then, though they be run for profit, they are quite free from the reproach of quackery. They are on precisely the same level as a chemist who dispenses a prescription."

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Meetings of Local Medical Societies

Monday, *January 1st.*—West Side Physicians' Economic League; Clinical Society of Nose, Throat, and Lung Hospital; German Medical Society of the City of New York; Clinical Society of the New York Polyclinic Medical School and Hospital; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Niagara Falls Academy of Medicine; Utica Medical Library Association.

Tuesday, *January 2nd.*—New York Academy of Medicine (Section in Dermatology); New York Neurological Society (annual); Amsterdam City Medical Society (annual); Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburgh Medical Association; Oswego Academy of Medicine (annual); Broome County Medical Association; Medical Society of the County of Yates (annual); Medical Society of the County of Cattaraugus (annual).

Wednesday, *January 3rd.*—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatrical Society of New York (annual); Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the County of Genesee.

Thursday, *January 4th.*—New York Academy of Medicine; Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society (annual); Glens Falls Medical and Surgical Society.

Friday, *January 5th.*—New York Academy of Medicine; New York Microscopical Society; Gynecological Society, Brooklyn; Practitioners' Society of New York; Corning Medical Association; Alumni Association of Roosevelt Hospital.

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Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending December 20, 1916:

Bean, W. S., Jr., Assistant Surgeon. Directed to proceed to Spartanburg, S. C., and report to Surgeon Goldberger for duty in investigations of pellagra.

Carter, H. R., Assistant Surgeon General. Leave of absence without pay for two months from October 20, 1916, amended to cover period October 20 to December 10, 1916.

Cobb, J. O., Surgeon. Directed to proceed to Princeton, Ind., for conference relative to suspected case of leprosy.

Derivaus, R. C., Assistant Surgeon. Ordered to report to Bureau, Washington, D. C., en route to station from New York, for conference on malaria investigations.

Edmunds, M. C., Assistant Surgeon. Directed to report to Surgeon Goldberger, Spartanburg, S. C., for duty in investigations of pellagra.

Faget, F. M., Assistant Surgeon. Directed to report to the commanding officer of the Coast Guard cutter *Androscoggin* at Boston, Mass., for duty.

Holt, J. M., Surgeon. Granted ten days' leave of absence from December 26, 1916.

Kearny, R. A., Passed Assistant Surgeon. Granted fifteen days' leave from December 21, 1916.

Miller, K. E., Assistant Surgeon. Directed to proceed via Washington to Edgecombe County, N. C., and other places for investigation of rural health organization and administration.

Pierce, C. C., Senior Surgeon. Granted seven days' additional leave from December 23, 1916.

Prather, D. J., Assistant surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C., upon completion of special duty under Bureau orders of October 27, 1916, and directed to proceed to Ellis Island, N. Y., Immigrant Station for duty.

Roth, G. B., Technical Assistant. Detailed to attend meetings of American Physiological Society and American Society for Pharmacology and Experimental Therapeutics at New York, December 28-30, 1916.

Seidell, Atherton, Technical Assistant. Detailed to attend meetings of Federation of American Societies for Experimental Biology at New York, December 27-30, 1916.

Smith, H. F., Assisant Surgeon. Upon instructions from Surgeon Lavinder, will proceed to Wilmington, Del., to collect epidemiological data necessary in studies of poliomyelitis.

Stimpson, W. G., Assistant Surgeon General. Granted four days' leave of absence during month of December.

Sweeney, A. R., Assistant Surgeon. Relieved from duty at Galveston, Texas, quarantine station; will proceed to St. Louis Marine Hospital for duty.

Wagenbach, W. F., Assistant Surgeon. Directed to proceed to Spartanburg, S. C., and report to Surgeon Goldberger for duty in investigations of pellagra.

Warren, B. S., Surgeon. Directed to proceed to New York City for special temporary duty.

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Births, Marriages, and Deaths

Died.

Buck.—In Cincinnati, Ohio, on Wednesday, December 13th, Dr. Jirah Dewey Buck, aged seventy-eight years.

Burleigh.—In Waverly, Mass., on Friday, December 15th, Dr. Charles Burleigh, aged sixty-one years.

Churchill.—In Reedsburg, Wis., on Thursday, December 7th, Dr. Wesley R. Churchill, aged seventy-one years.

Davis.—In Bakersfield, Cal., on Thursday, December 7th, Dr. Charles Alva Davis, aged fifty-five years.

Deaderick.—In Johnson City, Tenn., on Monday, December 4th, Dr. Eugene L. Deaderick, of Jonesboro, aged seventy-three years.

Dumortier.—In South Norwalk, Conn., on Friday, December 15th, Dr. Jean J. Dumortier, aged fifty-one years.

Eiseman.—In Latrobe, Pa., on Tuesday, December 12th, Dr. Reuben Eiseman, aged fifty-four years.

Fisher.—In Fitchburg, Mass., on Friday, December 15th, Dr. Jabez Fisher, aged ninety-two years.

Gaucher.—In Putnam, Conn., on Sunday, December 17th, Dr. J. A. Gaucher, aged twenty-six years.

Grisard.—In Winchester, Tenn., on Thursday, December 7th, Dr. James W. Grisard, aged sixty-seven years.

Hall.—In Knowlesville, N. Y., on Sunday, December 10th, Dr. Erasmus D. Hall, aged eighty-five years.

Hoisington.—In Boston, Mass., on Thursday, December 14th, Dr. Walter L. Hoisington, aged fifty-five years.

Irvine.—In San Francisco, Cal., on Monday, December 4th, Dr. E. Lloyd Irvine, of Portland, Ore., aged thirty-three years.

Johnston.—In Richmond, Va., on Thursday, December 21st, Dr. George Ben Johnston, aged sixty-four years.

Knapp.—In New York, N. Y., on Monday, December 18th, Dr. John B. Knapp.

Lambert.—In Port Jervis, N. Y., on Friday, December 8th, Dr. Emerson B. Lambert, aged sixty-four years.

O'Neil.—In Providence, R. I., on Thursday, December 7th, Dr. John E. O'Neil.

Palmer.—In Hornell, N. Y., on Monday, December 11th, Dr. William E. Palmer, aged seventy-eight years.

Porter.—In Kansas City, Mo., on Thursday, December 14th, Dr. David Rittenhouse Porter, aged seventy-eight years.

Skinner.—In Chambersburg, Pa., on Monday, December 18th, Dr. William Francis Skinner, aged forty-nine years.

Walker.—In Providence, R. I., on Tuesday, December 12th, Dr. Edward F. Walker, aged fifty years.

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O'Connor, J. V., M. D., Woonsocket, R. I.
Otis, Edward O., M. D., Boston, Mass.

Park, Francis E., M. D., Stoneham, Mass.
Peckham, Frank E., M. D., Providence, R. I.
Pelouze, P. S., M. D., Philadelphia.
Pemsler, A. B., M. D.
Pettey, Orlando H., M. D., Philadelphia.
*Pisek, Godfrey R., M. D.
Pisko, Edward, M. D.
Place, Frank, Jr.
Pottenger, Francis M., A. M., M. D., LL. D., Monrovia, Cal.

Quimby, A. Judson, M. D.
Quimby, Will A., M. D.

Rathbun, Nathaniel P., M. D., F. A. C. S., Brooklyn.
Rector, Frank Leslie, B. S., M. D., Brooklyn.
*Reed, Alfred C., M. D., San Francisco, Cal.
Reed, Charles A. L., M. D., Cincinnati.
Rhodes, William L., M. D., Kansas City, Kansas.
Richter, George, M. D., St. Louis, Mo.
Roberts, Percy W., M. D.
*Robertson, W. E., M. D., Philadelphia.
*Robin, Albert, M. D., Wilmington, Del.
Robinson, Beverley, M. D.
Roddy, John A., M. D., Philadelphia.
*Rogers, James Frederick, M. D., New Haven, Conn.
Rosenzweig, S. Bernard, M. D.
Rubenstone, A. I., M. D., Philadelphia.
Rudis-Jicinsky, J., M. D., Chicago.
Rushmore, Jaques C., M. D., Brooklyn.
Ryan, William J., M. D., Philadelphia.

Sachs, B., M. D.
Saison, Constant, M. D., Paris, France.
*Sajous, Charles E. de M., M. D., LL. D., Sc.D., Philadelphia.
*Sajous, Louis T. de M., M. D., Philadelphia.
Sale, Walter W., M. D., Covington, Tenn.
Saphir, Joseph F., M. D.
Satterlee, G. Reese, M. D.
Satterthwaite, Thomas E., M. D., Sc. D., LL. D.
Sayre, Reginald H., M. D.
*Scarlett, Rufus B., M. D., Trenton, N. J.
Schachner, August, M. D., Louisville, Ky.
*Schamberg, Jay F., M. D., Philadelphia.
Scheinkman, B., M. D.
Scheppegrell, William, A. M., M. D., New Orleans.
Schneyer, Julius, M. D., Philadelphia.
Schoenrich, Herbert, M. D., Baltimore.
Schulman, Maximilian, M. D.
Sharpe, Norman, M. D.
Sheehey, John J., M. D., Brooklyn.
Smith, Allen J., M. D., Philadelphia.
*Solomon, Meyer, M. D., Chicago.
Spangler, Ralph H., M. D., Philadelphia.

*Steinbugler, William F. C., M. D.
Stellwagen, Thomas C., Jr., M. D., Philadelphia.
Stewart, Douglas H., M. D., F. A. C. S.
Stewart, Francis Edward, Ph. D., M. D., Phar. D., Philadelphia.
Stephens, G. Arbour, M. D., Swansea, England.
Stevenson, W. W., M. D., Trenton, N. J.
Strecker, Edward A., M. D., Philadelphia.
Stockton, Charles G., M. D., Buffalo, N. Y.
*Strickler, Albert, M. D., Philadelphia.
Swingle, Leroy D., Ph. D., Salt Lake City, Utah.

*Talbot, Winthrop, A. B., M. D.
Talmey, B. S., M. D.
Talmey, Max, M. D.
Taylor, A. L., M. D., Fort Worth, Texas.
*Taylor, J. Madison, A. M., M. D., LL. D., Philadelphia.
Taylor, Joseph C., M. D.
Theobald, Samuel, M. D., Baltimore.
Thoms, Herbert K., M. D., New Haven, Conn.
Tilney, Frederick, M. D.
*Tilton, Benjamin T., M. D., F. A. C. S.
Todd, John B., M. D., Syracuse, N. Y.
Tousey, Sinclair, A. M., M. D.
Tracy, Martha, M. D., Philadelphia.

Ubel, George B., M. D., Ithaca, N. Y.

Vanderveer, Albert, M. D., LL. D., F. A. C. S., Albany, N. Y.
Vaughan, J. Walter, M. D., Detroit, Mich.
Vedin, Alma, M. D.
*Vedin, Augusta, M. D.
Victors, Ernst Albrecht, M. D., San Francisco.
Voorhees, Irving Wilson, M. S., M. D.

Walscheid, A. J., M. D.
Weingrad, Solomon, M. D., Mountaindale, N. Y.
Weinstein, Joseph, M. D.
Weiss, Samuel, M. D.
Wender, Louis, M. D., Washington, D. C.
Wesson, Miley B., B. S., M. D., El Paso, Texas.
*Wheeler, Claude L., A. B., M. D.
Wiener, Solomon, M. D.
Wight, Lucy Osborne, M. D.
Wilcox, Reynold Webb, M. D., D. C. L.
Wile, Ira S., M. D.
Williams, B. G. R., M. D., Paris, Ill.
*Wilson, H. Augustus, M. D., Philadelphia.
Wise, Fred, M. D.
Wolf, Heinrich F., M. D.
Wood, Alfred C., M. D., Philadelphia.
Wright, Adam H., B. A., M. D., Toronto, Ont.
Wright, Harold W., M. D., San Francisco.
Wright, Jonathan, M. D., Pleasantville, N. Y.
Wyeth, George A., M. D.

Yawger, N. S., M. D., Philadelphia.
Young, James K., M. D., F. A. C. S., Philadelphia.

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Collectanea

The Health Department's Grading of Restaurants.—The health department's inspection and reinspection of the city's restaurants is continuing unabated, and while no figures were given out, it is evident that the grading plan introduced by the Bureau of Food and Drugs is proving a great popular success. In order not to be unfair to the restaurant keepers, the department will hereafter not actually grade a restaurant until after reinspection. This will meet the objection that minor violations have resulted in some of the recent "bad" gradings. But a restaurant which then fails to comply with the department's regulations need expect little mercy in the way of publicity.

The following telegrams from recognized authorities in pure food work approving the department's plan were made public:

Fargo, *N. D., June 20, 1916.*

Department of Health,
New York city.

Grading system and sanitary score card have done more than food law to correct food evils and protect the health of consumers. There is rivalry among business places for best sanitary score and a general cleaning up and clean foods. I know of nothing which will do so much for health of people.

E. F. Ladd, State Food and Drugs Commissioner, North Dakota.

Indianapolis, *June 20, 1916.*

Department of Health,
New York city.

Indiana has graded hotels and restaurants with marked success since passage of sanitary law six years ago. Result obtained meets approval of hotel keepers and public. Know of no other way to secure necessary improvements.

Harry E. Barnard, State Food and Drugs Commission, Indiana.

England Wars on Cancer.—That the policy of "business as usual" applies to constructive efforts for the prevention of disease in England is evident from the publication by the Central Midwives Board as recently as March 16, 1916, of a new circular on cancer of the breast. The practice of midwifery in England and Wales is controlled by this board, and the circular is the newest of a series issued for the instruction of all women practising this profession and registered with the board as required by the law. The leaflet on cancer of the breast was prepared by the chairman, Dr. F. H. Champneys, F. R. C. P., and is distributed to the public as well as to midwives.

Pointing out that cancer of the breast unless treated by early removal always ends in death, Doctor Champneys states that the disease is at first only in the part affected and not in the system. "Every day and even every minute," the circular says, "is of importance and no time at all should be lost. The earliest symptom is a lump in the breast which is usually painless and may be quite small. It may remain without seeming to grow for some time. The only cure is early removal. Although it is often easy to be sure that a lump is cancerous, many lumps which begin by being innocent turn into cancer sometimes after many years."

Doctor Champneys advises that all lumps except those caused by undoubted and recent inflammation should be removed as soon as they are found, and counsels all women who discover a lump in the breast to consult at once a surgeon who is in the habit of dealing with them. If the lumps are not removed and are cancerous, the disease sooner or later spreads through the body and becomes incurable, while if the lumps are not cancerous, they may become so. "The removal of an early lump," the leaflet goes on to say, "is generally simple, and if microscopic examination should show afterward that it was not cancerous, a danger for the future will have been averted and the anxiety of the patient and her friends will be relieved." From such an operation there is generally "practically painless recovery in a few days. If the lump proves to be cancerous, however, a further operation is necessary, which, if undertaken early, saves many lives."

According to Doctor Champneys, if women would follow the foregoing advice, much loss of life, many regrets when too late, and much misery would be saved.

A School for Health Officers.—Sixty courses of study will be given next year in the School of Health Officers conducted by Harvard University in conjunction with the Massachusetts Institute of Technology, according to the catalogue for 1916-17, just issued. The faculty will be composed of fifty members. The principal object of the school is to prepare young men for public health work and especially to fit them to occupy administrative and executive positions, as health officers or members of boards of health. To this end, both Harvard and the institute will offer lectures, laboratory work, and other forms of instruction, and men from national, State, and local health agencies will speak. The subjects embraced in the course of study have been selected to cover a wide range, including medical, biological hygienic, and engineering sciences, together with practical health administration.

The opportunities for the practical study of public sanitation offered to students in the School for Health Officers are exceptional on account of location and the resources of Harvard and the Institute of Technology. The different courses to be given are divided into ten groups dealing with various phases of sanitation problems. The departments of public health administration and sanitary biology and chemistry are among the strongest departments of the school. The certificate in public health (C. P. H.) will be granted to candidates who have satisfactorily completed the studies in their approved schedule, who have spent not less than one academic year in residence, and who have otherwise complied with all requirements.

◆

New Publications Received

A Manual of Gynecology and Pelvic Surgery. For Students and Practitioners. By Roland E. Skeel, A. M., M. S., M. D., Associate Clinical Professor of Gynecology, Medical School of Western Reserve University; Visiting Surgeon and Gynecologist to St. Luke's Hospital, Cleveland, etc. With Two Hundred and Eighty-nine Illustrations. Philadelphia: P. Blakiston Sons' Company, 1916. Pp. xiv-680. (Price, $3.)

Formulaire des Médications Nouvelles et des Traitements Nouveaux. Pour 1916. Par Le Dr. H. Gillet, ancien interne des Hôpitaux de Paris. Chef de Service à la Policlinique de Paris. Dixième Edition entièrement Refondue. Paris: Librairie J. B. Baillère et Fils, 1916. Pp. xx-324.

Rules for Recovery from Pulmonary Tuberculosis. A Laymen's Handbook of Treatment. By Lawrason Brown, M. D. Second Edition, Thoroughly Revised. Philadelphia and New York: Lea & Febiger, 1916. Pp. 184. (Price, $1.25.)

A List of American Organizations for Cripples. Revised to April 1, 1916. Compiled by Douglas C. McMurtrie. New York, 1916. Pp. 7.

Miners' Nystagmus. By Frederick L. Hoffman. Department of the Interior, Franklin L. Lane, Secretary. Bureau of Mines, Van H. Manning, Director. Washington, 1916. Bulletin 93. Pp. 67.

Cerebrospinal Meningitis. Report of the Departmental Medical Committee. Department of Public Health, Victoria. December, 1915. Melbourne: Albert J. Mullett. Pp. 21.

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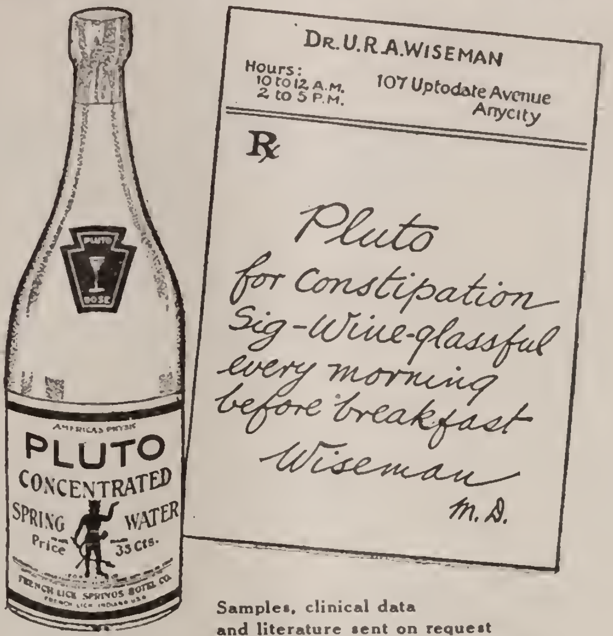

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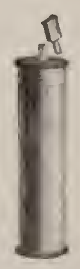

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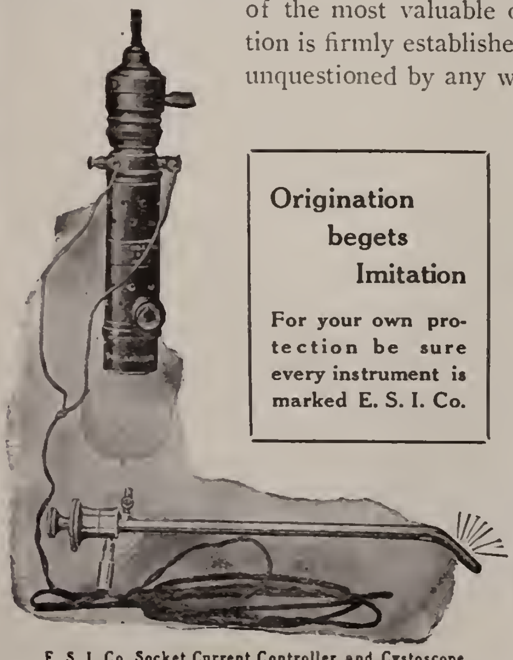

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Collectanea

Infant Mortality Still High.—The enormous waste of infant life which still goes on, although medical science has done and is doing much to arrest it, is shown by the exceedingly high death rates which prevail among infants under one year of age. According to tables prepared by the Bureau of the Census, Department of Commerce, of 100,000 native white boy babies born alive, 4,975, or almost five per cent., die during the first month, and 12,602, or 12.6 per cent., die within one year. The girl baby's chance of life is considerably better, the death rate among native white females during the first month being 3,894 per 100,000 born alive, or less than four per cent., and during the first year 10,460 per 100,000, or nearly 10.5 per cent.

On its first birthday, however, the likelihood that a child will die within the year is only about one fourth as great as it was at birth, the death rate among native whites during the second year being 2,841 per 100,000 for males and 2,610 per 100,000 for females. The rate continues to decrease until the twelfth year of life—that is, the period between the eleventh and twelfth birthdays—during which it is only 228 per 100,000 for males and 198 per 100,000 for females. This, the figures indicate, is the healthiest year of life among native whites. Thereafter there is a continuous increase in the death rate from year to year. During the forty-eighth year of life, in the case of native white males, it is 1,267 per 100,000, or almost exactly what it was during the third year, 1,266; during the sixty-second year it is 2,919 per 100,000, or a little more than during the second year, 2,841; and during the eightieth year it is 12,184, or somewhat less than during the first year, 12,602. Similarly, among native white females the rate during the fiftieth year, 1,120, is a little less than during the third year, 1,144; during the sixty-third year it is 2,548, or somewhat less than during the second, 2,610; and during the eightieth it is 10,901 per 100,000, or a little more than during the first, 10,460. The native white man at the age of 102 and the native white woman at ninety-nine years have approximately the same prospect of dying within one month that they had at birth.

A Splendid Measure of Cooperation of the Brewers' Board of Trade.—In December, 1915, the Division of Industrial Hygiene of the Bureau of Preventable Diseases was informed that two employees working for a certain contractor had become severely ill from wood alcohol poisoning and had died on December 2nd and 3rd respectively, after an illness of twenty-four hours. These men had been employed in varnishing with shellac the interior of beer vats. It was subsequently ascertained that this varnish contained more than fifty per cent. wood alcohol. Upon investigation of these two cases, a third case was discovered in a patient who was being treated under the erroneous diagnosis of lead poisoning, in one of our large hospitals. The third man had likewise been employed in varnishing beer vats for the same contractor, and had shown symptoms of poisoning on December 4th. In common with the others he had severe epigastric pains, anorexia, stertorous breathing, and loss of consciousness. This man, more fortunate than the others, made a slow recovery, but was left with blurred vision.

These are not isolated instances of wood alcohol poisoning, for from time to time cases from the same cause have been reported to the State Labor Department, the National Association for the Prevention of Blindness, and the health department. The cases recently brought to light, stimulated efforts on the part of this department to do away with wood alcohol for varnishing vats in breweries. Accordingly, the commissioner addressed a letter to all breweries with offices in the city of New York, asking their cooperation.

The following letter received from the secretary of The Lager Beer Brewers' Board of Trade of New York and Vicinity, affords great satisfaction to those who realize how frequent and great has been the danger from the inhalation of methyl alcohol in the varnishing of vats:

April 13, 1916.

H. Emerson, Commissioner, Department of Health,
Walker and Centre Streets, New York, N. Y.:

I beg leave to advise that at a meeting of the members of this Board of Trade, held yesterday, the 12th instant, a resolution was adopted prohibiting the use of methyl alcohol in connection with the varnishing of vats in their plants. For your information I herewith enclose a membership list of this association.

(Signed) Chas. J. Warner, Secretary.

Thirty-seven New York city brewers and nine New Jersey brewers, members of the Brewers' Association, have accordingly pledged themselves to exclude methyl alcohol from use in their plants for varnishing purposes.

New Publications Received

Nouvelles Méthodes de Séro-Diagnostic. Syphilis, réaction de Wassermann, méthodes de simplifications, valeur pratique de la méthode, luétine, réaction de l'or colloïdal, réfractométrie, séro-diagnostic de la grossesse, réaction d'Abderhalden, mycoses, kyste hydatique, lèpre, mycosis fongoïde, maladies infectieuses. Par Ed. Joltrain, Ancien interne des Hôpitaux. Préface du Professeur Gaucher. Quatrième Edition revue et augmentée. Avec 7 planches hors texte. Paris: A. Maloine et Fils, 1916. Pp. viii-413.

La Kinésithérapie de Guerre. La Mobilisation méthodique, la Massothérapie, la Mécanothérapie, la Rééducation. Par le Docteur P. Kouindjy, Chargé du Service de Rééducation et de Massage à la clinique Charcot de la Salpêtrière, Aide-major de 2 de classe, Médecin traitant au Centre de Physiothérapie d'Arts et Métiers, V. G. 18. Paris: A. Maloine & Fils, 1916. Pp. 388.

The Aftertreatment of Operations. A Manual for Practitioners and House Surgeons. By P. Lockhart-Mummery, F. R. C. S., Eng., B. A., M. B., B. C., Cantab., Senior Surgeon, St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum: The Queen's Hospital for Children, London, etc. Fourth Edition. New York: William Wood & Co., 1916. Pp. viii-275. (Price, $2.25.)

On Modern Methods of Treating Fractures. By Ernest W. Hey Groves, M. S., M. D., B. Sc. (Lond.), F. R. C. S. (Eng.); Surgeon to the Bristol General Hospital; Consulting Surgeon to the Cossham Hospital, etc. New York: William Wood & Co., 1916. Pp. xii-286. (Price, $2.75.)

Transactions of the Thirty-seventh Annual Meeting of the American Laryngological Association. Held at Niagara Falls, Canada, June 1, 2, and 3, 1915. New York: Published by the Association, 1915. Pp. 402.

Blood impoverishment is seldom corrected by iron alone—or by ordinary forms of iron.

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Health Insurance.—Twenty-five out of every 1,000 employees in American industries, according to recent statistics, are constantly incapacitated by sickness, the average worker losing approximately nine days each year on this account. This "noneffective rate" for the great army of industrial workers in the United States barely suggests the total money loss to employers and employees. The lessened efficiency, the effects of reduced earnings in time of sickness, as well as the cost of medical attention, and the economic loss from deaths, swell the cost to industry and to the Nation to almost incalculable figures. That much of this loss is nothing less than preventable waste and that this waste can be largely reduced by a properly conducted system of governmental health insurance for wageworkers are conclusions set forth in *Public Health Bulletin No. 76*, containing the results of a study of Health Insurance—Its Relation to the Public Health, just issued by the Public Health Service.

The preventive value of health insurance receives especial emphasis in this study. "Any system of health insurance for the United States or any State should at its inception have prevention of sickness as one of its fundamental purposes," says the bulletin. "This country should profit by the experience of European countries, where prevention is being recognized as the central idea necessary to health insurance, if health insurance is to attain its greatest success in improving the health and efficiency of the industrial population."

Such a system, it is pointed out in the bulletin, would

1. Provide cash benefits and medical service for all wage earners in times of sickness at much less cost than is now possible. Adequate medical relief would thus be placed within the reach of even the lowest paid workers, who are most subject to ill health.
2. Distribute the cost among employers, employees, and the public as the groups responsible for disease causing conditions and afford these groups a definite financial incentive for removing these conditions. This can be done by means of small weekly payments from employees, supplemented by proportionate contributions from employers and government at a rate reducible in proportion to the reduction of sickness.
3. Become an effective health measure by linking the cooperative efforts of the three responsible groups with the work of National, State, and local health agencies, and by utilizing these agencies in the administration of the health insurance system.
4. Afford a better basis for the cooperation of the medical profession with public health agencies.
5. Eliminate the elements of paternalism and charity giving by making employees and the public, as well as employers, joint agents in the control of this fund.

"A governmental system of health insurance," concludes the study, "can be adapted to American conditions, and when adapted will prove to be a health measure of extraordinary value."

Committee of American Physicians for Medical Preparedness.—This committee, which was organized in Chicago last April, has carefully formulated and matured plans for the purpose of ascertaining the extent of civilian medical resources and of organizing and utilizing them for national defense. The first duties to be undertaken by the committee are: To aid the medical departments of the United States Army and Navy by making a comprehensive inventory of the special qualifications of individual civilian physicians throughout the country; to cooperate with the National Committee of the American Red Cross in bringing that organization up to the highest standards of medical ideals and to aid in the organization of Red Cross units throughout the country; a practical inventory of all civilian medical resources; research work and careful investigation along many lines relating to the subject of efficient medical preparedness. The Committee of American Physicians for Medical Preparedness consists of a National Committee composed of six ex officio members, thirty members, and a number of associate members representing important subjects closely allied to medicine. Honorary and ex officio members of the national committee are: Dr. William C. Gorgas, surgeon general, United States army; Dr. William C. Braisted, surgeon general, United States navy; Dr. Rupert Blue, surgeon general, Public Health Service. Ex officio members: Dr. Rupert Blue, president American Medical Association; Jefferson R. Kean, colonel Medical Corps, U. S. A., director General Military Relief American Red Cross; and Dr. Samuel J. Mixter, president American Surgical Association. The executive committee consists of the following members: Dr. Albert Vander Veer, Dr. Fred B. Lund, Dr. Franklin H. Martin, Dr. George E. Brewer, Dr. William S. Thayer, Dr. J. M. T. Finney, Dr. George W. Crile, Dr. William J. Mayo, Dr. Robert G. Le Conte, and Dr. Frank F. Simpson. The general committee is composed of the following members: Dr. Frank Billings, Dr. Joseph C. Bloodgood, Dr. Rudolph Matas, Dr. Lewis S. McMurtry, Dr. Charles A. Porter, Dr. Emmett Rixford, Dr. John F. Binnie, Dr. George E. de Schweinitz, Dr. Charles L. Gibson, Dr. Edward Martin, Dr. John B. Murphy, Dr. Albert J. Ochsner, Dr. Charles A. L. Reed, Dr. Hubert A. Royster, Dr. Richard P. Strong, Dr. Victor C. Vaughan, Dr. Charles H. Mayo, Dr. Henry Sewall, and members of the executive committee. Dr. William J. Mayo, of Rochester, Minn., is chairman of the committee, and Dr. Frank F. Simpson, of Pittsburgh, Pa., is secretary.

New Publications Received

The Sex Complex. A Study of the Relationships of the Internal Secretions with the Female Characteristics and Functions in Health and Disease. By W. Blair Bell, B. S., M. D., London, Examiner in Gynecology and Obstetrics to the University of Belfast, and to the Royal College of Surgeons, England; etc. New York: William Wood & Co., 1916. Pp. xvii-233. (Price, $4.)

Skin Cancer. By Henry H. Hazen, A. B., M. D., Professor of Dermatology in the Medical Department of Georgetown University; Professor of Dermatology in the Medical Department of Howard University; etc. With 97 Text Illustrations and 1 Colored Frontispiece. St. Louis: C. V. Mosby Company, 1916. Pp. 251.

Diseases of the Digestive Tract and Their Treatment. By A. Everett Austin, A. M., M. D., Former Professor of Physiological Chemistry at Tufts College, University of Virginia, and University of Texas; Present Assistant Professor of Clinical Medicine, in Charge of Dietetics and Gastrointestinal Diseases, Tufts College; etc. With 85 Illustrations, Including 10 Color Plates. St. Louis: C. V. Mosby Co., 1916. Pp. 552.

Transactions of the College of Physicians of Philadelphia. Third Series. Volume the Thirty-seventh. Philadelphia, 1915. Pp. 1-499.

Alcohol: Its Influence on Mind and Body. By Edwin F. Bowers, M. D. New York: Edward J. Clode, 1916.

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Two Cases of Eclampsia

Dr. Gordon G. Copeland of the Toronto Western Hospital reported these two cases of Eclampsia before the Ontario Medical Association.

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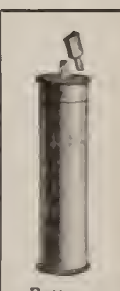

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Collectanea

Sure Cures for Infantile Paralysis.—Benevolent and unquestionably disinterested readers have been offering the *New York Tribune,* says that journal in its issue for July 12th, a great variety of proposals for the treatment and control of poliomyelitis. Hydrotherapy, vegetarianism, sugar and eggs, faith, salt water, and a vast number of other things are suggested with great confidence, the letters usually beginning: "Infantile paralysis, in my opinion, is bred from the same source as summer complaint"; or, "The prevailing epidemic is, I believe, a form of grip"; or, "The present plague can easily be arrested by following these simple rules"; or, "This epidemic is largely psychological," etc.

It is not possible and it would clearly be unprofitable to publish all these interesting opinions or guesses. They come for the most part from well meaning people who make no pretense whatever to the slightest experience and many of whom are quite willing to admit that they have never treated or even seen a case in their lives. It is interesting to observe that the most dogmatic are not at all embarrassed in confessing their ignorance, and the assurance that a great deal of thought and labor has been expended in studying the disease does not impress them in the least. They smile patiently at all doubts about their qualifications and proceed to descant upon the virtues of their invaluable remedies.

Most of these people in ordinary times make up the rank and file of the societies of antivaccinists, antivivisectionists, and so forth. They have a profound distrust in pathologists, bacteriologists, and physicians. They believe that the whole medical profession is in a conspiracy against common sense, and that the doctors are determined to encourage illness in the world because it is by illness they make their living. It is therefore quite natural that they should disregard all professional attempts to solve the problem of poliomyelitis, quite natural that they should be very eager to cure the world in their own way.

Unfortunately, it is impossible to treat them with the consideration they demand. They can hardly express more disagreement with the views of the orthodox than they do with one another, and to let them all have their say would be confusing, even if it were otherwise desirable, which it is not.

An Esophageal Cast.—Dr. F. H. Jacob, of Nottingham, reported to the *Lancet* for May 13, 1916, an unusual case. The patient, who had recently enlisted in the army, went to see him on account of a sore throat. The pharynx presented a gray, sloughing appearance. He brought with him some stuff which he had vomited on the previous day. On floating this in water the doctor found it to consist of a cast of the whole of the esophagus and of the pharynx and nasopharynx. He cut sections and found it to consist of the epithelial lining of the esophagus. The patient gave a history of having had two similar attacks previously—one a year ago and the other six years ago. He said that he had not been able to swallow properly for six years, something always seemed to catch him in the throat. When eating meat he had to chew it thoroughly and never hurry. Each attack commenced during a meal, and felt as though something sharp was cutting his throat, then he vomited up blood, and after that the skin. The throat was very sore for a fortnight, then got right again. Ten days later his throat was nearly recovered. He had had no previous illness except eczema as a baby. The Wassermann reaction was completely negative.

Dr. Jacob appends notes of some previous cases. 1. In the *Lancet* for January 5, 1901, p. 26, Dr. Nathan Raw recorded a case of membranous esophagitis with expulsion of a complete cast of the esophagus. In this case the esophagitis was ascribed to drinking neat brandy, whisky, and rum. Raw mentions in his paper that exfoliative or desquamative inflammation of the esophagus, or œsophagitis dissecans superficialis was first described by Birch-Hirschfeld in Ziemssen, VIII, p. 140. 2. At the Royal Society of Medicine, section in laryngology, meeting on April 4, 1913, Mr. G. N. Biggs showed an almost complete cast of the epithelial lining of the esophagus, which was vomited three days after the patient had swallowed one ounce of chloroform. Rectal feeding was employed. Esophagoscopy, three months later, gave no indication of contraction. 3. Osler and McCrae, second edition, 1915, p. 80. John McCrae describes various causes of phlegmonous esophagitis; records a case reported by Neisser and a case of Stern's, where a cast thirteen cm. long was expelled; alluding also to Birch-Hirschfeld's original case in which a twenty cm. cast was expelled three days after the onset of the first esophageal symptoms; the patient promptly recovered. 4. There is a short allusion in the *Twentieth Century Practice of Medicine,* by Fitz, of Boston.

New Publications Received

Diseases of the Skin. By Richard L. Sutton, M. D., Professor of Diseases of the Skin, University of Kansas School of Medicine; Former Chairman of the Dermatological Section of the American Medical Association; etc. With 693 Illustrations and 8 Colored Plates. St. Louis: C. V. Mosby Co., 1916. Pp. 916.

The International Medical Annual. A Year Book of Treatment and Practitioner's Index. Twenty-seven Contributors. 1916, Thirty-fourth Year. New York: William Wood & Co., 1916. Pp. xii-735. (Price, $4.)

Operative Midwifery. A Guide to the Difficulties and Complications of Midwifery Practice. By J. M. Munro Kerr, M. D., C. M., Glasgow, Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow; Hon. Fellow, American Gynecological Society; Professor of Obstetrics and Gynecology, Glasgow University (Muirhead Chair); etc. Third Edition. With 308 Illustrations in the Text. New York: William Wood & Co., 1916. Pp. xv-725. (Price, $6.)

General Surgery. Volume II. Edited by John B. Murphy, A. M., M. D., L. L. D., F. R. C. S., England (Hon), F. A. C. S., Professor of Surgery in the Northwestern University; etc. The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Series 1916. Chicago: The Year Book Publishers. Pp. 620.

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Collectanea

The Austro-German Medical Congress at Warsaw, May 1st and 2d (summarized in the *Lancet* for July 1st from a report in the *Deutsche Medizinische Wochenschrift,* 21-23).—After a few words of welcome by H. E. General von Beseler, Governor of Warsaw, the head of the German Army Medical Service, Professor von Schjerning, gave an interesting survey of its organization. There were, he said, more than 24,000 doctors in the service of the army, of whom 16,000 were actively employed at the front. Beside these, the Army Medical Service included 3,000 doctors employed in Red Cross work, 400 surgeon dentists, 1,800 pharmacists, and 92,000 men in the sanitary and ambulance departments. These were assisted by 72,000 voluntary nurses, male and female, at the base hospitals, and 22,000 in the war zone. Thousands of motor cars and vans were engaged in transporting the sick and wounded to the war hospitals, of which there were 238 in the whole country. There were also thousands of installations for the sterilization of water, for disinfection, and x ray examinations; twenty-six large mobile steam laundries were kept busy day and night for the military hospitals alone; and there were eighteen large disinfecting stations through which 100,000 men could be passed daily and their clothes dealt with. The central medical depot forwarded to the front daily wagon loads of medical preparations and surgical appliances. Surgeon General His, president of the congress, spoke of the successes hitherto attained in combating epidemics, asserting that "in spite of typhus and dysentery, spotted fever and cholera, the efficiency of the troops has never been impaired." Several scientific investigators had lost their lives during the war in combating these and other invisible enemies, among them Cornet, Prowazek, Lüthje, Jochmann, Römer, and Tilp. New diseases had been discovered, to one of which the name of "five day fever" had been given. Well known diseases, such as typhoid and dysentery, owing to previous inoculation, appeared only in modified form.

Army Hospital Trains.—Negotiations have about been completed by which the army medical corps is to have two hospital trains for service on the border. The trains are to be operated between the field hospitals and a base or general hospital at Grand Canyon, Colo., or some other desirable location. The trains will virtually be two field hospitals on wheels. They will have a capacity of seventy-five bed patients and seventy-five convalescents who are able to sit up. There will be ten cars in each train, consisting of kitchen car, dining car, operating room, four ward cars, two Pullman cars for convalescents, and one car for the personnel of the hospital corps. All the cars will be Pullmans and the ward cars will be stripped of their furnishings and equipped with hospital beds. Hospital equipment will be installed in the kitchen, dining, and operating room cars. With these two trains it is believed that all the sick on the border can be taken from the field hospital to the base hospital, where they can be treated under the most favorable conditions.

An extraordinary effort, according to the *Army and Navy Journal* for July 15, 1916, is being made by the Medical Corps of the Army to take care of the sanitary conditions under which the troops will be required to serve on the border. It is recognized that many of the National Guardsmen who are taken from comfortable homes in the north are not acclimated, and as a result will require special care. All of the regular army medical officers who can be spared have been ordered to the border. It is possible that some may be ordered from Honolulu and Panama to the border to assist in the extraordinary work that the corps will be called upon to do. In that event medical reserve corps officers will be sent to Honolulu and Panama.

Steps have been taken to furnish motor transportation for the field hospitals and ambulance companies on the border. One hundred and fifty motor cars have been purchased for this purpose and some of them have already been delivered. Seven motor trucks which will transport baggage will be issued to each field hospital, two for the personnel of the hospital and one for commanding officers. Ambulance companies will each be furnished with five ambulance motor cars, two for convalescents, two for quartermaster's supplies, and one for commanding officers. The automobiles for convalescents will be large cars of the type of the sightseeing cars used in large cities. They will be fitted out so as to provide every comfort for the patients. The organizations of the hospital trains and the motor transportation is in the hands of Captain Jones, who has recently reported for duty at the War Department.

New Publications Received

Infections of the Hand. A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand, and Forearm. By Allen B. Kanavel, M. D., Assistant Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Wesley and Cook County Hospitals, Chicago. Third Edition, Thoroughly Revised. With 161 Illustrations. Philadelphia and New York: Lea & Febiger, 1916. Pp. 498. (Price, $3.75.)

The Dream Problem. By Dr. A. E. Maeder, of Zurick. Nervous and Mental Disease Monograph Series No. 22. New York: Nervous and Mental Disease Publishing Company, 1916. Authorized Translation by Dr. Frank Mead Hallock and Dr. Smith Ely Jelliffe, of New York. Pp. 43.

Burdett's Hospitals and Charities, 1916. The Year Book of Philanthropy and Hospital Annual. Containing a Review of the Position and Requirements on the Management, Revenue, and Cost of the Charities. An Exhaustive Record of Hospital Work for the Year. It will also be Found to be the most Useful and Reliable Guide to British, American, and Colonial Hospitals and Asylums, Medical Schools and Colleges, Nursing and Convalescent Institutions, Consumption Sanatoria, Religious and Benevolent Institutions and Dispensaries. By Sir Henry Burdett, K. C. B., K. C. V. O., Author of Hospitals and Asylums of the World; Hospitals and the State, etc. Twenty-seventh Year. London: The Scientific Press, Ltd., 1916. Pp. xvi-1071.

United States Life Tables, 1910. Prepared under the Supervision of Professor James W. Glover, of the University of Michigan. Department of Commerce, Bureau of the Census. Sam. L. Rogers, Director. Washington, 1916. Pp. 65.

A Little Calendar. For the Use of Physicians and Surgeons. New York: McKesson & Robbins, 1916.

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Collectanea

Panic Makers.—Because its origin is mysterious and there is no known cure for it, and because the victims whom it destroys or maims usually are young children, the appearance of an epidemic of the disease called "infantile paralysis" in New York and the surrounding neighborhoods has excited great dread among parents throughout the country. It is unfortunate that health officers and newspapers, says *Collier's* for July 24th, have seen fit to issue exaggerated statements about the extent and progress of the disease. Their purpose is a valuable one, namely, to encourage vigilance on the part of the public, and it has spurred the authorities to a "clean-up campaign" which would be good at any time and would be better if carried on all the time and with system. But much of the usefulness of the publications has been offset by their frenzied manner which has literally scared people out of their wits. Trains going out of the cities are crowded with children whose frightened parents are carrying them away from comparatively healthful surroundings where there are thousands of good physicians, scores of great hospitals, and an abundance of medical supplies into small villages where there are few doctors, no trained nurses, and no hospitals, and only the scantiest provision for taking care of the sick. It would not be surprising if the herding of thousands of children in dirty day coaches at this time of year, without proper clothing or nourishment, brought about as many deaths as the disease from which their parents are fleeing. Health officers, above all others, should keep their heads and soberly spread the truth about the epidemic. There may be occasion for alarm, but there is no reason for panic. Infantile paralysis is not strictly a disease of larger cities. Some severe epidemics in the past have occurred in small suburban communities when the neighboring cities have hardly been touched. It would be disgraceful if the scare should result in the establishment of senseless quarantines which are the first resort of numskull local authorities when confronted by an epidemic. Some of us are old enough to remember the quarantine against yellow fever. They probably caused as many deaths, through exposure and hunger and consequent maladies, and they certainly caused as much suffering as the disease itself.

Precautions in Handling Cases of Poliomyelitis.—Dr. Beverley Robinson, of New York, recently sent the following suggestions to the *Evening Post:*

Too stringent rules at this time cause unnecessary alarm and great inconvenience. Moreover, they will not be obeyed and people will try to escape their restrictions. Imperative observances, which are personal, should be insisted upon:

1. Every nurse, or physician, caring for a case of infantile paralysis, should wear another garment in the sick room, which should be laid aside upon leaving it. If at all soiled by discharges from the patient, it should be put in boiling water for a while, with or without a disinfectant.

2. The hands of the physician should always be carefully washed the last thing before leaving the sick room. The same rule of washing the hands applies to the nurse, after any direct contact with the patient. All discharges from the patient should be burned, or disinfected. All utensils used by the patient should be washed and kept solely for the patient's use.

All covering and clothes, when soiled, should be put in boiling water.

There are some healthy carriers of infantile paralysis, even with these simple precautions, but they are very few and practically are negligible.

Infantile paralysis does not necessarily follow routes of travel and is not carried except in rare instances by a third person.

Therefore, if a child, or adult, is not actually ill with the disease and has not been with an affected patient, it is questionable, with the precautions insisted upon by me being adhered to, whether he should be interdicted from leaving home and securing good air, exercise, and health. Infantile paralysis may strike anywhere, even in isolated regions and children in perfect health.

Why then continue to spread wrong, foolish alarm, when by so doing one adds a great deal to human suffering and benefits no one?

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New Publications Received

The Primary Lung Focus of Tuberculosis in Children. By Dr. Anthony Ghon, O. ö. Professor of Pathological Anatomy at the German University in Prague. English Edition. Authorized Translation by D. Barty King, M. A., M. D. (Edin.), M. R. C. P. (Lond. and Edin.), Assistant Physician to the Royal Hospital for Diseases of the Chest, London; Physician to the Department for Diseases of the Chest, St. Pancras Dispensary, London, etc. With Seventy-two Text Illustrations, One Black and One Colored Plate. New York: Paul B. Hoeber, 1916. Pp. xxiv-172. (Price, $3.75.)

Localization by X Rays and Stereoscopy. By Sir James Mackenzie Davidson, M. B., C. M. (Aberdeen), Consulting Medical Officer, Röntgen Ray Department, Royal London Ophthalmic Hospital, and X Ray Department, Charing Cross Hospital, etc. With Thirty-five Stereoscopic Illustrations on Special Plates, and Other Figures in the Text. New York: Paul B. Hoeber, 1916. Pp. xi-70. (Price, $3.)

The Pathology of Tumors. By E. H. Kettle, M. D., B. S., (Lond.), Assistant Pathologist, St. Mary's Hospital; Assistant Lecturer on Pathology, St. Mary's Hospital Medical School, etc. With 126 Illustrations. New York: Paul B. Hoeber, 1916. Pp. viii-224. (Price, $3.)

Foreign Commerce and Navigation of the United States for the Year Ending June 30, 1915. Department of Commerce. Bureau of Foreign and Domestic Commerce. E. E. Pratt, Chief of Bureau. Washington, 1916. Pp. xlv-928.

A Manual of Practical Laboratory Diagnosis. By Lewis Webb Hill, M. D., Graduate Assistant, Children's Hospital, Boston. With 11 Figures and 8 Plates—4 in Colors. Boston: W. M. Leonard, 1916. Pp. vii-179.

Thirty-fifth Annual Report of the State Department of Health of New York. For the Year Ending December 31, 1914. In Two Volumes. Albany: J. B. Lyon Company, 1916.

Le Système Taylor et la physiologie du travail professionnel. Par J. M. Lahy, Chef des travaux au laboratoire de psychologie expérimentale de l'Ecole pratique des Hautes Etudes. Paris: Masson & Cie, 1916. Pp. x 198.

Clinical Disorders of the Heart Beat. A Handbook for Practitioners and Students. By Thomas Lewis, M. D., D. Sc., F. R. C. P., Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital, Physician to Out Patients, City of London Hospital for Diseases of the Chest. Third Edition. New York: Paul B. Hoeber, 1916. Pp. xii-116. (Price, $2.)

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Collectanea

Mobile Red Cross Base Hospitals.—The full list of twenty-five Red Cross mobile base hospitals under the charge of as skilled surgeons and nurses as our country affords has been made public by Colonel Jefferson R. Kean, Medical Corps, U. S. A., director general of the Military Relief of the American Red Cross. This list not only names the "mother" hospitals and their locations, but in most instances the directors and assistants of the base hospitals, each of which is organized or is being organized at an initial cost of $25,000. Colonel Kean also mentions two field columns or ambulance companies. The organizing of these hospitals, which, in war time, would pass under the immediate authority of the War Department and be transported to the base of military operations as they were needed, is considered a piece of war relief preparedness along scientific and constructive lines, and is based in part on the lessons of the European war. The nucleus for the directing personnel of each base hospital is selected from the staff of a big existing civil hospital and when that personnel is transported, on the outbreak of war, to the base of military operations, they continue at their respective posts, working in the same teamlike fashion they employed in civil capacities. Connecting the evacuation or transfer hospitals of the army with the base hospitals of the Red Cross are the field columns, two of which are being perfected at an expense of $15,555 each.

The director general made this statement concerning the base hospitals and field columns:

> The medical officers attached to regiments, together with those manning the field hospitals and evacuation hospitals, constitute the medical service of the front. These field and evacuation hospitals would, in the opinion of our readers, scarcely deserve the name of hospitals, since they are marching units and have to be provided with only the simplest and most Spartan equipment. Their furniture is bed sacks, filled with hay and laid on the ground, or camp cots. There are shelter places where the wounded are received, fed, and protected from the weather on their way to the rear. The service of the front is therefore the special obligation of the medical officers of the army and of the National Guard, and the Red Cross is not permitted to share it.
>
> The next zone, however, which is called the zone of the line of communications and base, is one in which the Red Cross will provide the greater part of service, as the number of medical officers in the army medical corps and connected with the National Guard is quite inadequate to provide such a service. The hospitals provided by the Red Cross, because they are situated at the military base, are called base hospitals. They are of great importance, because they are the first real hospitals provided with beds, mattresses, sheets, and trained nurses which the wounded soldier finds on his journey to the rear.
>
> The base hospitals will receive regular, volunteer, and National Guardsman alike, and so every soldier whose duty brings him within range of hostile bullets has reason to take a keen, personal interest in the knowledge that in these hospitals is being now enrolled the most distinguished talent in the medical profession in this country.
>
> Each division of troops requires at least one base hospital. It is equipped to receive 500 patients. Its professional staff consists of twenty-three physicians and surgeons, two dental surgeons, a chaplain, and fifty trained nurses. To assist the latter are enrolled twenty-five volunteer nurses' aids. The enlisted personnel numbers 153, while authority is given for the employment of about fifteen civilians.
>
> The naval base hospitals, of which several are now in course of organization, are of about one half the size of the army hospitals. The medical equipment of one of the army base hospitals is estimated to cost about $25,000, and of a naval base hospital about $15,000.
>
> This equipment should be purchased in time of peace and kept in store by the government, as, if properly stored, very few of the articles suffer much deterioration, while if the purchase is put off until time of war it is only with great delay and difficulty that it can be secured. To avoid this delay and to render the units promptly fit for service, many of the Red Cross chapters in cities where base hospital units are being organized have raised money to purchase it.
>
> It was anticipated that arrangements could easily be made for the storage of this equipment service on government reservations, but in this expectation the Red Cross has been disappointed, and most of the chapters now find that they must make further appeal to individual patriotism and generosity to obtain a storage place.
>
> The great advantage of organizing those units in connection with large civil hospitals is that in this way is secured a personnel which know each other and which are accustomed to work together so that team work and good organization are possible at the outset.

◆

New Publications Received

The Diagnosis and Treatment of Heart Disease. Practical Points for Students and Practitioners. By E. M. Brockbank, M. D., F. R. C. P., Hon. Physician, Royal Infirmary, Manchester, Clinical Lecturer on Diseases of the Heart, Dean of Clinical Instruction, University of Manchester. Second Edition. With Illustrations. New York: Paul B. Hoeber, 1916. Pp. 120. (Price, $1.25.)

Modern Medicine and Some Modern Remedies. Practical Notes for the General Practitioner. By Thomas Bodley Scott, Author of *The Road to a Healthy Old Age.* With a Preface by Sir Lauder Brunton, Bart., F. R. S. New York: Paul B. Hoeber, 1916. Pp. xv-159. (Price, $1.50.)

A Manual of Surgical Anatomy. By Lewis Beesly, F. R. C. S., Edin., Assistant Surgeon, Chalmers's Hospital, Edinburgh, Lecturer on Surgery and Operative Surgery, Edinburgh School of Medicine for Women, etc., and T. B. Johnston, M. B., Ch. B., Lecturer and Demonstrator of Anatomy, University College, London, Lately Lecturer and Demonstrator of Anatomy, Edinburgh University, etc. New York: William Wood & Co., 1916. Pp. xiv-557. (Price, $3.75.)

Aids to Bacteriology. By C. G. Moor, M. A. (Cantab), F. I. C., Captain, First London Sanitary Company, Public Analyst for the County of Dorset and the Boroughs of Poole and Penzance, and William Partridge, F. I. C., Joint Public Analyst for the County of Dorset. Third Edition. New York: William Wood & Co., 1916. Pp. viii-278. (Price, $1.25.)

Sex Problems of Man in Health and Disease. A Popular Study in Sex Knowledge. By Moses Scholtz, M. D., Chief of Clinic and Clinical Instructor in Dermatology and Syphilology, Medical Department of the University of Cincinnati, etc. Cincinnati: Stewart & Kidd Company, 1916. Pp. 168. (Price, $1.)

Ultraviolet Light. By Means of the Alpine Sun Lamp. Treatment and Indications. By Hugo Bach, M. D., Bad Elster, Saxony, Germany. Authorized Translation from the German. New York: Paul B. Hoeber, 1916. Pp. 114. (Price, $1.)

Mentally Deficient Children: Their Treatment and Training. By G. E. Shuttleworth, B. A., M. D., etc., Fellow of King's College, London; and W. A. Potts, M. A., M. D., Medical Officer to the Birmingham Committee for the Care of the Mentally Deficient, etc. Fourth Edition. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xix-284. (Price, $2.50.)

Practical Massage and Corrective Exercises. By Hartvig Nissen, President of Posse Normal School of Gymnastics; Superintendent of Hospital Clinics in Massage and Medical Gymnastics, etc. Revised and Enlarged Edition of the Author's Practical Massage in Twenty Lessons, with many additions. With 68 Original Illustrations, Including Several Full Page Halftone Plates. Philadelphia: F. A. Davis Company, 1916. (Price, $1.50.)

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Two Cases of Eclampsia

Dr. Gordon G. Copeland of the Toronto Western Hospital reported these two cases of Eclampsia before the Ontario Medical Association.

He describes very minutely the method he followed in remedying the condition in both cases. Incidentally he mentions that he used LYSOL and with evident helpfulness.

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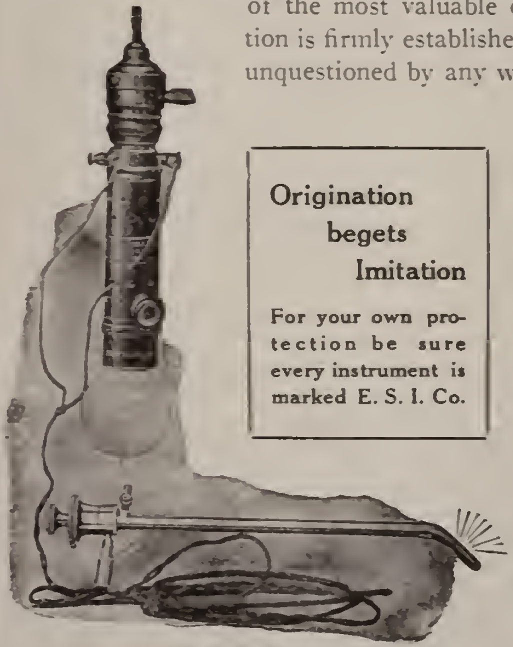
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Clean Hands.—Disease germs lead a hand to mouth existence. If the human race would learn to keep the unwashed hand away from the mouth, many human diseases would be greatly diminished. We handle infectious matter more or less constantly and we continually carry the hands to the mouth. If the hand has recently been in contact with infectious matter the germs of disease may in this way be introduced into the body. Many persons wet their fingers with saliva before counting money, turning the pages of a book, or performing similar acts. In this case the process is reversed, the infection being carried to the object handled, there to await carriage to the mouth of some other careless person. In view of these facts the United States Public Health Service has formulated the following simple rules of personal hygiene and recommends their adoption by every person in the United States:

Wash the hands immediately before eating, before handling, preparing, or serving food, after using the toilet, after attending the sick, and after handling anything dirty.

Fraudulent Infantile Paralysis "Cures."—Officials of the Department of Agriculture charged with the enforcement of the Food and Drugs Act expect that the outbreak of infantile paralysis will tempt unscrupulous persons to offer for sale so called cures or remedies. They have issued special instructions to the food and drug inspectors to be particularly alert for interstate shipments or importations of medicines, the makers of which allege that they will cure or alleviate the disease, for which, at the present time, no medicinal cure is known. The officials also warn the public that any preparation put on the market and offered for sale as being effective for the treatment of infantile paralysis should be looked upon with extreme suspicion. Inspectors, accordingly, have been instructed to regard as suspicious, and to collect samples of all medicines in interstate commerce for which such claims are made. Makers of such fraudulent remedies will be vigorously prosecuted whenever the evidence warrants action under the Sherley Amendment to the Food and Drugs Act. So called remedies for infantile paralysis which are offered for import into the country will be denied entry.

The food and drugs officials are particularly watchful in this instance, because it has been noted in the past that whenever a serious epidemic exists, unscrupulous dealers prey upon the fear or ignorance of the public by flooding the market with worthless, hastily prepared concoctions, for which they claim curative properties which have no foundation whatever in fact. In the present instance, inspectors already have discovered shipments of a few such mixtures.

The department will do everything it can under Federal law to protect that portion of the public which is extremely credulous in times of panic and which grasps at anything which promises protection or relief. The sale of such products at this time, the officials point out, is particularly threatening to the public health because many persons, relying on the false statements of impostors, neglect to secure competent medical advice. As a result, not only is the safety of the patient endangered, but in the absence of proper sanitary precautions the likelihood of contagion is greatly increased.

It must be understood, however, that the Federal Food and Drugs Act applies only to products which are shipped in interstate commerce, that is, from one State to another, or which are offered for import or export, or which are manufactured or sold within a Territory or the District of Columbia. Products which are made and consumed wholly within a single State are subject only to such State laws as may apply and are under the control only of State health officials. The Federal law does not apply, for instance, to patent medicines made within the State of New York and sold in New York city. Persons buying or using a "remedy" made in their own State, therefore, must rely on the protection accorded them by their local health authorities.

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New Publications Received

A Textbook of Practical Gynecology. For Practitioners and Students. By D. Tod Gilliam, M. D., Emeritus Professor of Gynecology in Ohio State University College of Medicine, etc., and Earl M. Gilliam, M. D., Professor of Diseases of Women in the Ohio State University College of Medicine, Columbus, Ohio, etc. Fifth Revised Edition. Illustrated with 352 Engravings, a Colored Frontispiece, and 13 Full Page Halftone Plates. Philadelphia: F. A. Davis Company, 1916. Pp. xvi-681. (Price, $5.00.)

Venesection. A Brief Summary of the Practical Value of Venesection in Disease. For Students and Practitioners of Medicine. By Walton Forest Dutton, M. D., Fellow American Medical Association; Member Medical Society of the State of Pennsylvania, etc. Illustrated with Several Text Engravings and Three Full Page Plates, One in Colors. Philadelphia: F. A. Davis Company, 1916. Pp. viii-220. (Price, $2.50.)

Christianity and Sex Problems. By Hugh Northcote, M. A. Second Edition, Revised and Enlarged. Philadelphia: F. A. Davis Company, 1916. Pp. xvi-478. (Price, $3.)

The Federal Registration Service of the United States: Its Development, Problems, and Defects. Prepared for the Second Pan American Scientific Congress, Washington, December 27, 1915, to January 8, 1916. By Cressy L. Wilbur, M. D., Chief Statistician for Vital Statistics of the United States Bureau of the Census, 1906-1914. Director of Vital Statistics, New York State Department of Health. Albany. Department of Commerce Bureau of the Census. Sam. L. Rogers, Director. Washington, 1916.

The Nonsurgical Treatment of Intestinal Stasis and Constipation. Compiled by Robert H. Ferguson, M. D., Sc. D. Also an *Important Announcement Regarding Liquid Petrolatum.* New York: E. R. Squibb & Sons, 1916. Pp. 109.

Hay Fever: Its Prevention and Cure. By W. C. Hollopeter, A. M., M. D., LL. D., Attending Physician St. St. Joseph's Hospital; Pediatrist to the Philadelphia General Hospital, etc. New York and London: Funk & Wagnalls Co., 1916. Pp. 347. (Price, $1.25.)

The Treatment of Infantile Paralysis. By Robert W. Lovett, M. D., Boston, John B. and Buckminister Brown Professor of Orthopedic Surgery, Harvard Medical School; Surgeon to the Children's Hospital, Boston, etc. With 113 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. ix-163.

Examination of the Urine and Other Clinical Side Room Methods. By Andrew Fergus Hewat, M. B., Ch. B., M. R. C. P., Ed., Tutor in Clinical Medicine, University of Edinburgh; Lecturer Edinburgh Post-Graduate Vacation Course. Fifth Edition. New York: Paul B. Hoeber. Pp. 212. (Price, $1.)

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Medical Corps Work on the Border.—Col. H. P. Birmingham, Acting Surgeon General, U. S. A., has sent the following memorandum to the Secretary of War: The Medical Department has supplied every need and request from the Southern Department. In addition to the various small hospitals at minor posts along the border we have established base hospitals at Fort Sam Houston and Fort Bliss, Texas. Base hospitals have also been authorized and are now being completed, supplied with personnel and equipment, at Brownsville, Eagle Pass, Laredo, Nogales, and Fort Crockett. The hospital at Fort Crockett is not in process of organization. Should it be necessary to establish this hospital, it will occupy the building of the post. In addition, there are hospitals at Forts Huachuca, Clark, McIntosh, Columbus, Camp Douglas, Marfa, Del Rio, and Deming. There are also seven field hospitals with the troops on the border, each with a capacity of 216 beds. This does not include the field hospitals of the organized militia now on the border. Field hospitals, while mobile hospitals, are always available to take care of the sick with troops until they can be evacuated to base hospitals. The Government has expended large sums of money constructing new hospitals and increasing the bed capacity of the hospitals already built. The Southern Department has at its disposal, in addition to the money already expended on hospitals, $300,000 to be used at the discretion of the department commander. In addition, the department has organized and is now having completed a hospital train for the transportation of the sick and wounded from the border stations to the base hospitals mentioned above.

The Army at this time has established general hospitals at the Presidio of San Francisco, Cal., with a maximum capacity of 953 beds; at the Army and Navy General Hospital, Hot Springs, Ark., 600 beds; and at Walter Reed General Hospital, Takoma Park, D. C., 320 beds. The department has completed plans for the establishment of general hospitals at Fort McPherson Ga.; Fort Sheridan, Ill.; Fort Douglas, Utah; Fort Oglethorpe, Ga.; and Fort Benjamin Harrison, Ind., should conditions warrant. These hospitals will have a capacity of from 500 to 1,000 beds. Plans have been completed for disinfecting trains in case it is necessary to enter Mexico, for the purpose of disinfecting clothing of the soldiers in order that they may be protected against typhus fever. All soldiers on the border have been vaccinated against smallpox and typhoid fever. Medical supplies are on hand sufficient for the needs of the army now in the field or under orders for the border. Attention is invited to the fact that for approximately five years the greater part of the regular army in the United States has been upon the Mexican border; the health conditions of the troops have at all times been excellent, and they have been and are now free from the usual camp diseases.

I believe the best interests of the Government can be served by announcing through the press bureau that the Government is not at this time in need of such committees as the American Committee for the Maintenance of the Border Hospital, Brownsville, Texas, and that appeals such as that filed by Mrs. Harriman convey a false impression and tend to create a feeling of insecurity and distrust in the minds of the people of the Government's ability to care for its soldiers. Contributions such as requested in the letter of Mrs. Harriman are absolutely unnecessary and the activities of such organizations should, especially at this time, be discouraged by the Government.

Progress of the American Red Cross Society.—Announcement is made that during the six months ending July 31, 1916, the membership of the American Red Cross Society increased from about 27,000 to about 210,000, an increase of nearly 800 per cent., and the number of Red Cross Chapters organized throughout the country increased from 110 to 199. During that time the personnel required for twenty-five base hospitals of 500 beds each for the United States Army has been selected and enrolled from among the staff of twenty-five of the largest hospitals of the country; several naval base hospitals, which are about half the size of the army base hospitals, are now being organized; funds for the purchase of equipment of sixteen of the twenty-five army base hospitals, costing $25,000 each, have been subscribed, and the purchase of the material for these base hospital units has been begun and the equipment as purchased is being stored, so as to be ready for immediate use in case of need. In addition to this organization of base hospital units, the personnel required for two field columns for transferring the sick and wounded from the transfer hospitals of the regular army medical service to the Red Cross base hospitals, has been selected and enrolled from among the staff of two important hospitals of the country, and $10,000 toward the purchase of the equipment for one of these field columns has been subscribed.

New Publications Received

Chirurgie des Maladies de L'Oreille, Du Nez, du Pharynx, du Larynx. (Œsophagoscopie-Bronchoscopie) Techniques et Indications. Par R. Claoue, Chef du Service d'oto-laryngologie à la Clinique Pasteur de Bordeaux, et A. Vandenbossche, Médecin-major de 1re classe, Répétiteur de Chirurgie à l'Ecole de Lyon. 171 Figures. Préface du Dr. Mignon, Médecin-Inspecteur général du Service de Santé de l'Armée. Paris: A. Maloine et Fils, 1916. Pp. 412.

The Eye, Ear, Nose, and Throat. Edited by Casey A. Wood, C. M., M. D., D. C. L.; Albert H. Andrews, M. D.; George E. Shambaugh, M. D. Volume III of The Practical Medicine Series, comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Series 1916. Chicago: The Year Book Publishers, 1916. Pp. 376.

Tariff Systems of South American Countries. Tariff Series No. 34. By Frank R. Rutter, Assistant Chief of Bureau. Department of Commerce. Bureau of Foreign and Domestic Commerce, E. E. Pratt, Chief. Washington, 1916. Pp. 308.

List of Publications of the Department of Commerce, Available for Distribution. Thirteenth Edition. February 1, 1916. Department of Commerce, Division of Publications. Washington, 1916. Pp. 78.

The Associated Out-Patient Clinics of the City of New York. Third Annual Report, 1915. Pp. 40.

Milk and Its Hygienic Relations. By Janet E. Lane-Claypon, M. D., D. Sc. (Lond.), Assistant Medical Inspector under the Local Government Board. Published under the Direction of the Medical Research Committee (National Health Insurance). With 8 Plates and Diagrams in the Text. Bombay, Calcutta, and Madras: Longmans, Green & Co., 1916. Pp. viii-348. (Price, $2.50.)

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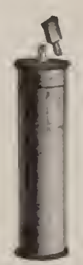

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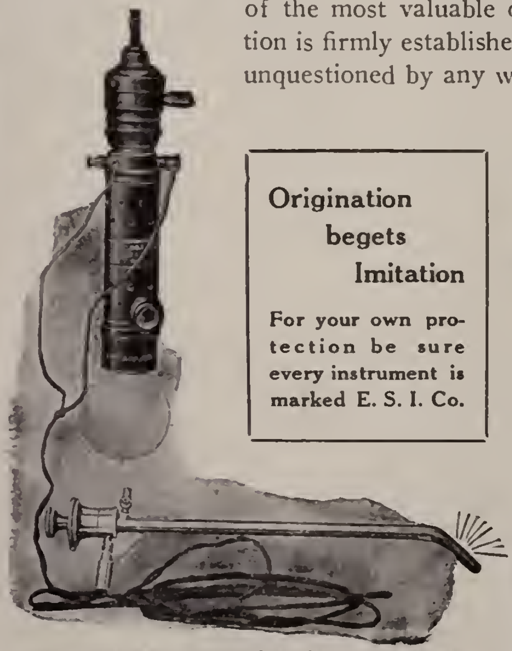

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Collectanea

Plague.—The bubonic plague of today is identical with the black death of the Middle Ages. Primarily a disease of rodents caused by a short dumbbell shaped microscopic vegetable, the pest bacillus, it occurs in man in three forms; the pneumonic, which has a death rate of almost 100 per cent.; the septicemic, which is nearly as fatal; and the bubonic, in which even with the most modern methods of treatment the mortality is about fifty per cent. It is a disease of commerce, spreading around the globe in the body of the shipborne rat. It is estimated that every case of human plague costs the municipality in which it occurs at least $7,500. This does not take into account the enormous loss due to disastrous quarantines and the commercial paralysis which the fear of the disease so frequently produces.

The disease is now treated by a serum discovered through the genius of Yersin. This is used in much the same way as is diphtheria antitoxin. Plague is transferred from the sick rodent to the well man by fleas. The sick rat has enormous numbers of plague bacilli in its blood. The blood is taken by the flea, which, leaving the sick rat, seeks refuge and sustenance on the body of a human being to whom it transfers the infection.

Since plague is a disease of rodents and since it is carried from sick rodents to well men by rodent fleas, safety from the disease lies in the exclusion of rodents not only from the habitation of man but also from the ports and cities of the world. Those who dwell in ratproof surroundings take no plague. Not only should man dwell in ratproof surroundings. but he should also live in ratfree sourroundings. The day is past when the rodent served a useful purpose as the unpaid city scavenger. Rats will not come where there is no food for them. Municipal cleanliness may be regarded as a partial insurance against plague. The prayer that no plague come nigh our dwelling is best answered, however, by ratproofing the habitations of man. Modern sanitary science has evolved a simple and efficient weapon against the pestilence which walketh in darkness and striketh at noonady, and the U. S. Public Health Service has put this knowledge into practical operation and thus speedily eradicated plague wherever it has appeared in the United States.

Experienced Nurses to Be Sent to the Mexican Border.—In response to a request from the surgeon general of the United States Army, dated August 14th, that the names of 100 Red Cross nurses willing to be assigned to active duty on the Mexican border be furnished the War Department, Miss Jane A. Delano, chairman of the National Committee on Red Cross Nursing Service, has sent fifty-five of her expert, enrolled Red Cross nurses hurrying to our southwestern States to assist the United States Army nursing corps in alleviating the suffering of our armed forces who are policing the southern frontier against raids by marauding Mexican bandits.

Included in this group of Red Cross nurses are a number who have already shown their ability and heroism in bygone Red Cross accomplishments.

Miss Nell Floss Steel, of Columbus, Ohio, was a member of one of our hospital units in Serbia. The results attained by those units will never be forgotten.

Miss Antoinette Alschier, of the Dallas, Tex., detachment, who, in 1915, was assigned, along with several other nurses, to Brownsville, Tex., to care for sick and wounded Mexicans from across the Rio Grande, gave invaluable service in ameliorating the misery of the injured peons.

Miss Margaret McGary, of the Washington group detailed to Douglas, Ariz., has seen extensive service with our American Red Cross unit in Kief, Russia, and this experience will be of great value in her work among our soldiers.

Included in the nurses now selected for duty by Miss Delano are Misses Lulu T. Lloyd and Nannie Hardy, both of Washington, D. C., who were at Vera Cruz with the Army Nurse Corps during the occupation by the United States forces in 1914.

Miss Margaret H. Patterson, of Birmingham, Ala., and Miss Harriet P. Hankins, of Washington, D. C., have also had valuable experience in European hospitals during the present war.

The following tabulation gives the points from which these nurses have been sent, the number sent from each city, and their destination:

From	To	No.
Columbus, O.	Eagle Pass, Tex.	10
Birmingham, Ala.	Fort Sam Houston, San Antonio, Tex.	8
Norfolk, Va.	Brownsville, Tex.	2
Omaha, Neb.	Brownsville, Tex.	1
Washington, D. C.	Fort Sam Houston, San Antonio, Tex.	12
Washington, D. C.	Douglas, Ariz.	6
New York City, N. Y.	Fort Sam Houston, San Antonio, Tex.	2
San Antonio, Tex.	Fort Sam Houston, San Antonio, Tex.	2
Dallas, Tex.	Fort Sam Houston, San Antonio, Tex.	6
Cleveland, O.	Fort Bliss, El Paso, Tex.	2
Atlanta, Ga.	Laredo, Tex.	4

Additional groups of nurses, organized and ready for immediate departure, are now awaiting orders from the War Department in Portland, Ore., Denver, Colo., New Orleans, La., New Jersey, and Springfield, Mo. The American Red Cross has at its command an unexcelled nursing corps of over 7,000 graduate nurses. who are pledged for service in the event of war. By special authorization of the surgeon general, each of the twenty-five Red Cross base hospital units, organized by Colonel Jefferson R. Kean, Medical Corps, U. S. A., director general of military relief, has been requested to designate from its Red Cross personnel two nurses for service on the border, believing that this will greatly increase the efficiency of these units should they be needed for active duty.

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New Publications Received

The Swiss Army System. By Captain Remy Faesch. New York: G. E. Stechert & Co., 1916. Pp. 24. (Price, $0.25.)

The Institutional Care of the Insane in the United States and Canada. By Henry M. Hurd, William F. Drewry, Richard Dewey, Charles W. Pilgrim, G. Alder Blumer, and T. J. W. Burgess. Edited by Henry M. Hurd, M. D., LL.D., Emeritus Professor of Psychiatry, the Johns Hopkins University; formerly Medical Superintendent of the Pontiac State Hospital, etc. Volume I. Illustrated. Baltimore, Md.: The Johns Hopkins Press, 1916. Pp. x-497.

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Mortality from Heart Disease.—The causes of the large number of deaths resulting from chronic heart diseases have heretofore been but little considered as the subject of administrative control by health authorities. In this city, at the present time, according to the *Weekly Bulletin* of the Department of Health of the City of New York for September 2, 1916, over 10,000 deaths are reported annually to be due to organic heart diseases. It is probable that the apparent indifference of health administrators to the problem presented by this large number of deaths is owing largely to the fact that the deaths are in the higher age groups; thus in over 86,000 deaths occurring in the United States registration area in 1912 the age grouping was as follows:

DEATHS ARRANGED BY AGE GROUPS (1912).

Under 10 years	1,826
10 to 19 years	2,071
20 to 29 years	2,948
30 to 39 years	4,922
40 to 49 years	7,991
50 to 59 years	12,484
60 to 69 years	20,553
70 to 79 years	2,218
80 to 89 years	9,951
90 to 99 years	1,086
100 years	48
Unknown	101
Total	86,179

This age grouping, however, is misleading, for it gives no true picture of the age distribution of heart diseases in the community. A much better picture can be gained by noting age incidence of cases of heart diseases observed in hospitals. Such a study shows a large proportion of cases in all the age groups beginning with ten years of age. The following table may be cited. It relates to over 1,300 cases treated in a large hospital in Glasgow:

HOSPITAL CASES (GLASGOW) ARRANGED BY AGE.

	Organic Heart.
Under 10 years	20
10 to 20 years	221
20 to 30 years	264
30 to 40 years	274
40 to 50 years	257
50 to 60 years	186
Over 60 years	124
Total,	1,346

The physical examination conducted by the Bureau of Child Hygiene indicate that approximately 15,000 school children suffered from organic diseases of the heart. It is clear, therefore, that the enormous prevalence of heart diseases in the community constitutes a public health problem of the first magnitude. A review of these facts led to the organization of an association for the prevention and relief of heart disease. In a report just made by the executive committee the opinion is expressed that the prevention of heart diseases depends largely upon a study of the causes of the condition. These causes may be grouped under the headings, Infectious Diseases, Intoxication, and Improper Methods of Living. Of these the infectious diseases seem to offer the most immediate point of attack; and of the group of infectious diseases thus resulting from the so called rheumatics seem to be the most numerous.

The program of the Association for the Prevention and Relief of Heart Diseases embraces the following:

1. *To gather pertinent data* from many sources and to arrange it for general use and practical application to the purposes set forth.
2. The office of the association is to serve as a central cardiac *information bureau.*
3. To help in *coordinating* the various efforts in this field—as made by health department, school examiners, cardiac classes, dispensaries, special investigators, trade school for cardiacs, etc.
4. To organize cardiac *convalescence,* to provide larger opportunities in existing institutions, through assurance of better selections of patients, better treatment, etc. (especially for youth). Specialized cardiac convalescence is also a problem.
5. To help to establish more cardiac classes in appropriate districts, and to extend and correlate their efforts.
6. To study and develop *occupations* for cardiacs, in standard trades and situations, as well as in special lines as already begun. To take constructive interest in workman's compensation and like problems affecting cardiacs.
7. To work constantly for the *prevention* of heart disease, through the power of accumulated information effectively presented, and the increasing application of recognized means (such as adequate facilities for throat and dental treatment, particularly in youths, etc.)
8. To encourage the setting up of branch (or like) associations elsewhere.

Eight special cardiac classes having a uniform working plan for the division and classification of cases have already been established. Seven of these are in Manhattan and one is in Brooklyn.

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New Publications Received

Nine Family Histories of Epileptics in One Rural County. State Board of Charities, Department of State and Alien Poor, State of New York. The Bureau of Analysis and Investigation. Eugenics and Social Welfare Bulletin No. VII. Albany, N. Y., 1916. Pp. 55.

Macmillan and Another versus Nursing Press, Limited, and Others. Royal Courts of Justice, London. Tuesday, March 14, 1916. Before Mr. Justice Ridley and a Special Jury. In the High Court of Justice, King's Bench Division. London, England: The Proprietors of The Hospital, 1916. Pp. 85.

Studies in Immunization against Tuberculosis. By KARL VON RUCK, M. D., and SILVIO VON RUCK, M. D. New York: Paul B. Hoeber, 1916. Pp. xvi-439. (Price, $4.)

Annual Report of the Department of Health of Minneapolis, Minnesota, 1916. Pp. 71.

Physics and Chemistry for Nurses. By AMY ELIZABETH POPE, Graduate of the School of Nursing of the Presbyterian Hospital, in the City of New York; Special Diploma in Education from Teachers' College, Columbia University, etc. Illustrated. New York and London: G. P. Putnam's Sons (The Knickerbocker Press), 1916. Pp. x-444. (Price, $1.75.)

Bacteriology, General, Pathological, and Intestinal. By ARTHUR ISAAC KENDALL, B. S., Ph. D., Dr. P. H., Professor of Bacteriology in the Northwestern University Medical School, Chicago, Ill. Illustrated with 98 Engravings and 9 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. x-651. (Price, $4.50.)

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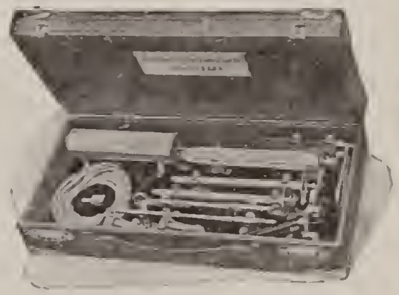

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Collectanea

The Health of Our Troops.—Judging from the reports issued by the War Department up to the present as to the health of the U. S. troops in the field, it may be safely said that sanitary conditions have been vastly improved in our army since the Spanish-American war, proudly remarks the *Army and Navy Journal* for September 2, 1916. And it may also be said that the Medical Corps has kept abreast of the advance of medical knowledge in the last eighteen years to the betterment of the condition of the officers and men of the U. S. Army and of the National Guard.

While it is true that absolute comparisons cannot be made as yet between the health statistics of the present mobilization and those of the campaign of 1898, it is possible to make relative comparisons; and these are all to the advantage of this year's work in the field. According to Surgeon General Sternberg's report for the months of May-September, 1898, the tabulation represented a strength of 167,168 men, while this year we have a total of 139,222 men in the field, according to the statistics issued by the War Department on August 5th. That is not so great a difference in the gross numbers of men in the two mobilizations as seriously to affect the percentages; while in the present mobilization there is almost a total absence of the mention of such diseases as yellow fever, typhoid, malarial fever, with the consequent "weakness, prostrations, anemia, and emaciation of the troops," resulting from these fevers, which brought about the scandalous and untruthful newspaper stories of "starvation" at Camp Wyckoff.

In the months of the Spanish war covered by General Sternberg's report there were 1,715 deaths among the troops, of which 640 were from typhoid fever alone. Complete statistics of the deaths in the National Guard since the troops were mobilized have not been issued as yet, but the partial reports show an extremely low death and sickness rate among the men of the guard, the week of August 5th giving only two deaths in the guard organizations with a sick rate of 1.14 per cent. This was for 98,500 men. In the same report the regulars had six deaths for the week and a sickness percentage of 2.45, these figures being for the 40,722 men on the border and in Mexico. The weekly health report from the southern department for the week ending August 19th shows the same general proportion, the proportion of sick in the National Guard being 1.17 per cent. with three deaths and of the regulars 2.02, with two deaths. The fact that the sick rate among the regulars is higher than among the men of the National Guard is only a repetition of the experience of 1898, as indicated by General Sternberg's tables, which show a death rate of 3.62 among the volunteers in August of that year, while among the regulars the death rate was 5.83, the whole experience of the Santiago campaign giving the regulars a higher rate than that of the National Guard.

In view of the fact that there has not been a single case of typhoid fever and only six deaths from disease among the regulars who entered Mexico five months ago, General Pershing said on August 22d, commenting on the health report: "This is a remarkable record for an expedition serving in this sort of a country with nothing but field equipment. It probably is as low a record as any similar expedition ever has set and shows the wonderful strides made along sanitary lines within the last few years and the high efficiency of the sanitary department. It also shows the high appreciation of sanitary regulation by line officers, who have been held to a strict account for violations of these commands. Only once during the life of the expedition has there been what threatened to become an epidemic. This occurred recently at a camp south of headquarters, where the water caused a number of cases of amebic dysentery. When the sick rate climbed to five per cent. the chief surgeon and his entire corps were sent from headquarters. A quick and exhaustive study of camp conditions was made and measures taken which soon reduced the rate to 1.7 per cent. The chief means used in curing this epidemic was the chlorination bag. This destroyed the organisms in the water which caused the disease. At one time there were 125 cases at the camp mentioned. There are now thirteen. From available data it appears that the sick rate in the expedition is less than half that in the United States."

General Sternberg made the criticism in his Spanish war report that the prevalence of sickness in the camps was caused by the "manner of occupation" rather than by the sites. It would seem that there had been as much improvement in this respect as in all others under the direction of the army, an excellent illustration of which is to be found at the Tobyhanna, Pa., camp, at which there never have been more than five patients at once in the hospital.

New Publications Received

The Treatment of Diabetes Mellitus. With Observations Upon the Disease Based Upon One Thousand Cases. By Elliott P. Joslin, M. D., Assistant Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital, etc. Illustrated. Philadelphia and New York: Lea & Febiger, 1916. Pp. 440. (Price, $4.50.)

Röntgenographic Diagnosis of Dental Infection in Systemic Diseases. By Sinclair Tousey, A. M., M. D., Consulting Surgeon, St. Bartholomew's Clinic, New York. New York: Paul B. Hoeber, 1916. Pp. 75. (Price, $1.25.)

A Manual of Otology for Students and Practitioners. By Charles Edwin Perkins, M. D., F. A. C. S., Professor of Clinical Otology in New York University and Bellevue Hospital Medical College; Associate Aural Surgeon to St. Luke's Hospital, etc. Illustrated with 120 Engravings. Philadelphia and New York: Lea & Febiger, 1916. Pp. vi-445. (Price, $3.)

A Manual of Fire Prevention and Fire Protection for Hospitals. By Otto R. Eichel, M. D., Director, Division of Sanitary Supervisors, New York State Department of Health. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd., 1916. Pp. v-69. (Price, $1.)

Yellow Fever Commission (West Africa). Volume III. Reports on Questions Connected with the Investigation of Nonmalarial Fevers in West Africa, and Fourth and Final Report. London: J. A. Churchill, 1916.

Studies in Medicine. University of Iowa Monographs. Iowa: Published by the University.

Hospital Returns. Ceylon Administration Report for 1915.

Eleventh Annual Report of the Board of Managers of the Manhattan State Hospital to the State Hospital Commission. For the Year Ending September 30, 1915. Albany: J. B. Lyon Company, 1916. Pp. 84.

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Interstate and Intrastate Control of Poliomyelitis (*Public Health Reports,* for September 1, 1916).—The Conference of State and Territorial health authorities with the United States Public Health Service convened for the consideration of the prevention of the spread of poliomyelitis, at Washington, D. C., August 17 and 18, 1916, adopted the following committee report:

I. It is the sense of this committee that the first step proper to be taken by a State health authority, believing its territory to be in danger of an invasion by poliomyelitis from another State or part of a State, is to call attention to the situation and to request the United States Public Health Service to take whatever steps are necessary to prevent interstate spread.

II. The steps to be taken by the United States Public Health Service are believed to be:

1. Investigation of the infected area.

2. Notification concerning the removal of persons sixteen years of age or under from an infected area to a named point of destination in another State, said notification to be addressed to the State health authority of the State of destination.

3. The forms of notification and of health certification and of permits to travel should include the following information and specifications with such additional information and specifications as the United States Public Health Service deems necessary: Identification of each traveler, the exact location of present or usual residence, and record of premises as to freedom from poliomyelitis during the preceding three months; or as to latest date of infection if less than three months; or as to renovation or cleansing of premises after infection.

4. Permits to travel shall be void unless the journey shall begin within twenty-four hours after issue of the permit.

5. Single permits shall not be issued for several persons, except for family or household groups coming from the same domicile.

6. The collection of fees, by health officials, from applicants for permits, whether resident or nonresident, should not be permitted.

7. The certificates of private physicians will not alone be a sufficient basis for the issue of a permit to travel. Permits for interstate travel will be based on medical inspection.

8. Permits for interstate travel should be signed by an officer of the United States Public Health Service, or by the State health officer, or by an officer authorized by the State health authority.

III. The committee disapproves quarantine by one State against another State or quarantine by one community against another community in the same State. It is believed that the Federal Government, through the United States Public Health Service, can perform all the duties of notification and certification required in interstate relations in case of unusual prevalence of poliomyelitis, and that State health authorities can and should perform like services as between communities in the same State during unusual prevalence of poliomyelitis.

IV. It is recommended that all cases should be reported immediately to the local health authorities and to the State health authorities, and that State health authorities make weekly reports to the United States Public Health Service. The United States Public Health Service is asked to furnish general reports weekly.

V. It is recommended that all persons sixteen years old or under, with a clean bill of health, and removing from an infected area or district to another locality, should be kept under medical observation daily for two weeks.

VI. It is believed that the period of isolation should be not less than six weeks from onset.

VII. The isolation should be stringent of the sick person with attendant or attendants, in a properly screened room or rooms, with disinfection at the bedside of all bodily excretions. Removal of patients to a hospital is greatly to be preferred to isolation in a private house.

VIII. In case of death from poliomyelitis the funeral should be strictly private.

IX. Wherever poliomyelitis is unusually prevalent, assemblages of children in public places should be prohibited.

X. During the unusual prevalence of poliomyelitis, schools should not be opened without thorough medical supervision. When schools are opened, beginning should be made with high schools, and proceed to lower age groups no more rapidly than complete medical examinations can be made.

XI. Because of the existence of unknown carriers, and because the infectious virus is present in the body discharges of such persons, therefore all measures to prevent contamination by human excreta or other bodily discharges, the suppression of the fly nuisance, prohibition of the common drinking cup, and a general educational compaign, are strongly urged.

XII. Common carriers should instruct their agents and ticket sellers that travelers with children of sixteen years or under must be provided with a health certificate. Common carriers are to be notified of the area and prevalence of the infection and at what points certificates must be displayed before permitting the travel of children of sixteen years of age or under.

XIII. The epidemic prevalence of poliomyelitis in certain States at this time indicates a probability of epidemic prevalence next year in States not gravely affected at the present time.

New Publications Received

A Manual of Fire Prevention and Fire Protection for Hospitals. By Otto R. Eichel, M. D., Director, Division of Sanitary Supervisors, New York State Department of Health. New York: John Wiley & Sons, Inc; London: Chapman & Hall, Ltd., 1916. Pp. v-69. (Price, $1.)

The Expectant Mother and Her Child. Containing the Essential Things That Every Mother and Woman Should Know. By Margaret J. Modeland, R. N., Formerly Head Nurse of the Gynecological Department and Supervisor of the Maternity Department of the Allegheny General Hospital. Introduction by Harold A. Miller, M. D., Obstetrician at the Allegheny General Hospital, Pittsburgh, Pa.; Fellow of the American College of Surgeons. Philadelphia: The John C. Winston Company, 1915. Pp. 120. (Price, $1.)

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Collectanea

Value of the Lyster Field Water Bag.—The field water bag designed by Major William J. L. Lyster, Medical Corps, U. S. A., now serving as an observer in the European war, is proving of inestimable value to the forces on the Mexican border, says the *Army and Navy Journal* for August 26, 1916. With it all of the water consumed by the forces in the field is sterilized and the officers are able to supervise the filling of a soldier's canteen. The appliance consists of a canvas bag of special woven flax, which can be suspended on any convenient support, and has a capacity of 330 pounds of water. The bag is not intended for transporting water, but to provide a stationary water tank which can be carried by the troops. The empty bag weighs from seven to seven and a half pounds and folds into a convenient package, which can be carried by the soldier in the infantry pack when other transportation is wanting. Two of these field water bags are issued to each company, and it has been found that they have sufficient capacity to supply drinking water for such a force. After the bag is suspended and filled with water it is sterilized by the addition of a small amount of hydrochloride of lime. This is carried in measured doses sealed in glass tubes. A package of sixty of these tubes weighs ten ounces and forms a package about as large as a pound of roasted coffee. With these tubes all typhoid fever and other bacteria can be killed in the bag of water. The army is now being served with the purest water owing to the simple device of Major Lyster.

Condition of Camp Whitman, N. Y.—In the opinion of Lieutenant Colonel Henry Harlow Brooks, chief surgeon on the staff of Brevet Major General Daniel Appleton, commanding the 2d Division, N. G. N. Y., the isolated location of Camp Whitman, Green Haven, N. Y., from a sanitary standpoint gives the camp very great advantage. It is not likely to be littered up with various refuse and the remains of eatables left by visitors. It has very desirable climatic conditions, remarks the *Army and Navy Journal* for September 16, 1916, and contagious diseases have been few. Doctor Brooks, who is known as an officer of sound practical views and a keen observer, notes these points and many others in a report to General Appleton. He was ordered to duty at Camp Whitman after the main body of troops had departed for Texas. Doctor Brooks states that the water problem, which at first was a serious one, was finally overcome, and there is now an ample supply of good water. He also states that the site of the camp verifies the judgment of those who selected it.

Perhaps the most important feature of the report is that relating to bacteriology, of which Doctor Brooks says:

> Experience, notably in this camp, has shown the imperative necessity in every large camp of an expert bacteriologist to conduct examinations of water, make cultures from suspicious disease conditions, and especially to make such tests as may be necessary to determine specific infection, such as dysentery, typhoid, diphtheria, malaria, and the like. This work during the encampment has been efficiently performed by Doctor Van Winkle, generously detailed for that purpose by Dr. Augustus Wadsworth, of the State Research Laboratories. For thorough cooperation in these matters it is, however, necessary that familiarity with military methods and procedure as well as objects should exist, and this is very difficult when such work is performed by civilian physicians.
>
> There are several men now serving as medical officers in the N. G. N. Y. who are perfectly competent to do such work. A suitable equipment is obtainable from the U. S. Army supply lists, and there is no reason whatever why this work should not be added to that of our corps, thereby greatly increasing its efficiency and at the same time adding to the attractiveness of the service for a very desirable class of physicians, who would be thus greatly increased in numbers. In the armies abroad this work is entirely in charge of the medical corps, and there is no reason why this should not also pertain in our Service.

Doctor Brooks praises Major A. V. Wadhams, Medical Corps, U. S. A., for his hygienic work at Camp Whitman; and Major Daniel R. Lucas, Medical Corps, N. G. N. Y., camp surgeon, and Lieutenant Col. A. F. Townsend, Q. M. C., are also praised for their work. The fact that Major General Appleton and Adjutant General Stotesbury granted 100 per cent. of requests made to them by the medical department for supplies, etc., is given by Doctor Brooks as the reason why Camp Whitman has been remarkable for its small percentage of sick men.

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New Publications Received

Pye's Surgical Handicraft. A Manual of Surgical Manipulations, Minor Surgery, and Other Matters Connected with the Work of House Surgeons and Surgical Dressers. Edited and Largely Rewritten by W. H. Clayton-Greene, B. A., M. B., B. C. (Camb.), F. R. C. S. (Eng.), Surgeon to St. Mary's Hospital; Lecturer on Surgery in the Medical School, etc. Seventh Edition: Fully Revised, with Some Additional Matter and Illustrations. New York: William Wood & Co., 1916. Pp. xvi-614. (Price, $4.50.)

La Fièvre typhoïde et les Fièvres paratyphoïdes. (Symptomatologie Etiologie, Prophylaxie.) Par H. Vincent, Médecin-Inspecteur de l'Armée, Membre de l'Académie de Médecine, et L. Muratet, Chef des Travaux à la Faculte de Médecine de Bordeaux. (Collection Horizon, Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie, 1916. Pp. 11-278.

Les Formes anormales du Tétanos. Etude Clinique, Pathogénique, Prophylactique, et Thérapeutique. Par M. Courtois-Suffit, Médecin des Hôpitaux de Paris, et R. Giroux, Interne Pr. des Hôpitaux de Paris. Préface du Professeur Fernand Widal. Collection Horizon, Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie, 1916. Pp. iii-174.

Traitement des Fractures. Par R. Leriche, Professeur agrégé à la Faculté de Médecine de Lyon. I. Fractures articulaires. Avec 97 figures dans le texte. Collection Horizon, Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie, 1916.

I. K. Therapy (Immunkörper, Immune Substances) in Pulmonary Tuberculosis. With a Summary of Cases and Forty-two Illustrative Charts. By William Barr, M. D., D. Sc. (Glas.), D. P. H. (Camb.), District Tuberculosis Officer for the West Riding of Yorkshire. New York: William Wood & Co., 1916. Pp. 82. (Price, $1.25.)

The Institutional Care of the Insane in the United States and Canada. By Henry M. Hurd, William F. Drewry, Richard Dewey, Charles W. Pilgrim, G. Alder Blumer, and T. J. W. Burgess. Edited by Henry M. Hurd, M. D., LL. D., Emeritus Professor of Psychiatry, the Johns Hopkins University; formerly Medical Superintendent of the Pontiac State Hospital; Secretary, The Johns Hopkins Hospital. Volume II. Illustrated. Baltimore: The Johns Hopkins Press, 1916. Pp. vii-897.

Medical and Surgical Reports of the Episcopal Hospital. Hospital of the Protestant Episcopal Church in Philadelphia. Volume III. Philadelphia: William J. Dornan, 1915. Pp. 356.

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The Mayor of New York to Its Citizens.—The Committee on Arrangements for the Dinner of the Committee of One Hundred and Seven has issued a printed copy of Mayor Mitchel's report to them on what was accomplished by his administration during 1915. Concerning the department of health, the mayor reported as follows:

In spite of a slightly decreased appropriation for 1916, great improvements have been effected. We have begun to control the dangerous traffic in patent medicines. We are developing health centres which gather together under single supervision the different health activities, thus preventing conflict and overlapping. The entire borough of Queens has been put under this plan, and we shall gradually extend these health units until the entire city is served by them, carrying out the policies of the department, but guided by local officials who thoroughly understand the needs of the particular sections of the city which they serve. A special division of industrial hygiene has been organized, seeking first to ascertain and then by cooperation with employers and employees to diminish the special health risks involved in certain occupations. The supervision of overcrowding in subways and street cars has been continued with as good effect as present transportation facilities will permit. The attempt by the legislature of 1916 to take this power away from our health department was vigorously resisted and defeated.

We have reversed the traditional policy of waiting for complaints about unsanitary conditions. We are now making sanitary surveys on our own initiative and dealing vigorously with unsanitary conditions found. The improvement in public health is largely a question of public education. We have strengthened the educational division of the department, which is every day carrying on an expanding campaign of education in public and personal hygiene. The pasteurization of all milk has been required and there is a more complete inspection of all places where food is handled. Five new municipal milk stations have been established and seven more by private funds, to which latter the department supplies nurses and doctors.

The campaign against the mosquito nuisance has been extended.

Typhoid Carriers.—The Bureau of Preventable Diseases, says the *Weekly Bulletin* of the Department of Health of the City of New York for August 26, 1916, has now a list of thirty-five chronic typhoid carriers. The list is a growing one. Search for the carrier in the case has become a very important part of epidemiological investigation in typhoid fever. There are the more or less obvious contact infections in which one active case follows another, and also the secondary infections resulting from the precocious carrier, discharging the typhoid bacilli before he has himself shown the clinical symptoms, and others from cases of "walking typhoid," and from the so called convalescent or temporary carrier. The last mentioned is especially important and constitutes a common source of typhoid infection. In view of this, more care than ever before is being taken about the termination of typhoid fever cases. The patient recovers, strength returns, and, wholly innocent of the harm he may be doing, he mingles again with family and friends, observing no precautions, having no knowledge of the fact that he may be at least a temporary carrier of the infection. Physicians are urged to instruct their patients on this point—to warn them that "precautions" must be kept up for a long time.

Beside all this, the investigator must never forget the chronic form in which the carrier state is prolonged for months and years, with constant or intermittent excretion of the germs, and which appears to be dependent upon the bacillus having gained a secure foothold along the biliary tract, or elsewhere. This is the point we are stressing in our present method of investigation. Has any one in the family, or in the house, or among servants, or among friends with whom the patient was in contact during a month prior to the onset of his illness, ever had typhoid fever? When the answer is yes, we endeavor to ascertain if the individual in question is a carrier. Cultures are made from stools and urine. The Widal test is tried. Even where the laboratory reports are negative, a series of typhoid fever cases occurring at varying intervals in some family, institution, or smaller community is strongly presumptive of the presence of a carrier. In the thirty-five cases referred to, however, the carrier state has been proved to exist by repeated positive fecal examinations. Again, there are doubtless many persons who have had typhoid fever at some time in their lives without recognition of the nature of their illness. Any one of these may be a carrier. This indicates the value of routine Widal tests in search of carriers—though it is to be remembered that the Widal reaction is sometimes negative even in chronic carriers.

New Publications Received

Charity Inspector and Social Investigator Examination Instruction. A Course of Instruction for Candidates for Institutional Inspector, Social Investigator, Inspector State Board of Charities, Charity Application Investigator, etc. 1,500 Official Inspection Questions and 1,000 Questions and Answers, and Specimen Civil Service Examination Questions, etc. By Solomon Hecht, Associate Editor, Civil Service Chronicle, and Julius Hochfelder, LL. M. New York: Civil Service Chronicle, 1916. Pp. 148. (Price, $3.)

Biennial Report of the Board of Health for the Parish of Orleans and the City of New Orleans. 1914-1915. Pp. 124.

The American Year Book of Anesthesia and Analgesia. F. H. McMechan, A. M., M. D., Editor. 1915. New York: Surgery Publishing Company, 1916. Pp. ix-416. (Price, $4.)

A Textbook of Human Physiology. Including a Section on Physiologic Apparatus. By Albert P. Brubaker, A. M., M. D., Professor of Physiology and Medical Jurisprudence in the Jefferson Medical College; Formerly Professor of Physiology in the Pennsylvania College of Dental Surgery, etc. Fifth Edition. Revised and Enlarged. With One Colored Plate and 359 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xii-776. (Price, $3.)

Bussaco. Its Monastery, Battle, and Woods, and Its Uses as a Health Resort. By Dr. D. G. Dalgado, of the Academy of Sciences of Lisbon. With Two Plans and a Map. Lisbon: Torres & Co., 1916. Pp. ix-110.

Lehn & Fink New York

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Dr. Copeland Did Not Know

In a recent LYSOL announcement in this space we mentioned "Two Cases of Eclampsia" which Dr. Gordon G. Copeland had reported before the Ontario Medical Association.

Dr. Copeland's address before this Association was printed at length in the Canadian Journal of Medicine and Surgery and it was from this source that we derived the material we quoted.

In justice to Dr. Copeland we must say that he did not know we were about to use his name until the advertisement appeared. We used Dr. Copeland's name merely to give due credit to him as the source from which we had taken our quotation, just as we might use the name Metchnikoff or Pasteur or Osler or Shakespeare.

Dr. Copeland had absolutely no foreknowledge of this transaction.

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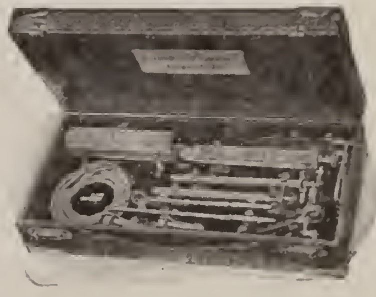

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Collectanea

Medical Care of the Native Alaskan.—The problem of caring for the natives of Alaska is among the most difficult matters which confront the government in its relations with the aboriginal tribes, says the October *Medical Sentinel.* There is no central point in Alaska, Seattle being the trading centre of the Territory. These people are scattered along a waterfront of more than 5,000 miles. They live in small villages. They are still influenced by the superstitions which have come down to them from the centuries. They hide, rather than seek relief for their ailments, believing that there is some divine retribution in misfortune.

Secretary Lane of the Interior Department, who personally knows every part of Alaska, has given tender consideration to the needs of the native Alaskan, and great improvement has taken place in the care of these people, especially during the past two years. Syphilis and tuberculosis, here as elsewhere, have wrought sad havoc with the primitive people. The editor of the *Medical Sentinel,* in a trip just completed in Alaska, was forcibly impressed by the special interest now being shown by the government in the medical side of care for the natives.

At Juneau, Dr. Douglas Brown, a recent arrival, is in charge of a splendid native hospital just completed by the Interior Department, which looks after fourteen near by villages. Doctor Brown serves under the Educational Division of the Interior Department, is a civil service employee and was for some years with Colonel Gorgas on the Panama Zone.

At Haines a special hospital is soon to be erected for tuberculosis cases, and soon a colony with every modern equipment will be in operation. In other portions of Alaska, seven or eight physicians have been put in charge of the medical Indian service, and three other small native hospitals are already maintained by the government in the territory. An attempt is now being made by Secretary Lane to employ teachers in the Educational Division, for stations where no doctors are situated, who are also trained nurses. These teachers have some special training for emergency medical work, receive a medical and surgical equipment of simple character and are provided with proper instructions for the service along medical lines. As fast as appropriations can be secured, district zones are being organized, comprising a neighborhood of native villages, for which a general hospital and a competent physician are supplied.

The insane native has the benefit of care outside of Alaska, where, in a milder climate, the percentage of recoveries is very large. The tuberculous insane live in a separate department, at Portland, Oregon, where they enjoy every qualification for modern treatment. The Educational Department in these more recent departures, seeks, among other things, to educate the natives as to the prevention of tuberculous infection; also as to the dangers of syphilis, its possible cure under appropriate treatment, thereby effecting the lowest possible evil to the living, as well as to the unborn progeny of the native races of Alaska.

Unloosing the Quacks.—According to the *Weekly Bulletin of the Health Department* for October 7, 1916, a newspaper dispatch from Albany has announced a decision by the Court of Appeals of grave concern to all who are interested in keeping the wolves from the lambs—in protecting unsophisticated laymen from unqualified pretenders to the healing art. The dispatch states:

> It (the Court) held that while the practice of healing by Christian scientists would come within the legal definition of medical practice, the statute specifically exempts those who in the treatment of bodily ills follow out the tenets of any religion. Christian science practitioners are protected by this exemption, according to the decision.
>
> The case was carried to the Court of Appeals by Willis Vernon Cole, a Christian scientist, who was convicted in New York in 1912 of practising medicine illegally and fined $100.
>
> The Court reversed the judgment of conviction and ordered a new trial.
>
> The action against Cole was instituted by the New York County Medical Society.

While the medical profession is engaged in increasing the requirements demanded of all who wish to begin the study of medicine, and in raising the standards of medical colleges and the exactions of qualifying examination, in order to secure better service to the public, there are some among the laity who are unwilling to see the practice of the healing art advance beyond the standards of superstition where the laying on of hands, the use of amulets, charms, signs, and magic phrases are relied upon to destroy the parasites of infectious disease in the sick and to frighten them from the well. Are such as who refuse to recognize that a typhoid infection, a smallpox eruption, or even a broken leg is anything more than a state of mind, to be allowed to pass in this State as qualified under the law to attend the sick?

May any scamp who wishes to turn healer for "easy money" claim immunity from the law by pretending that he has a divine mission to heal, that his practice is part of a religion, which he may easily invent to cloak his purpose?

Instead of four years at high school, a year or two at a general college, and a four year medical course, followed by an exacting State examination and perhaps by a year's service in a hospital, may one take thought overnight and hang out one's shingle in the morning, as a disciple of Christian science or as anything said to be a religion?

If this is to be so, and we are loath to believe it, it will be much harder upon the public, the lambs who will be exposed to the wolves, than upon the shepherd dogs (the qualified physicians) who endeavor faithfully to guard the flock!

New Publications Received

The Healthy Girl. By Mrs. Joseph Cunning, M. B. (London), Hon. Med. Director to the Open-Air School in the London Botanical Gardens, and A. Campbell, B. A., Lecturer in Biology and Hygiene, Technical Institution, Swindon. London: Henry Frowde (Oxford University Press); Hodder & Stoughton, 1916. Pp. x-191. (Price, $1.75.)

The Bacteriology of Dysentery in Malaya. By Henry Fraser, M. D. (Aberd.), Director, Institute for Medical Research. Studies from the Institute for Medical Research, Federated Malay States. Singapore: Kelly & Walsh, Ltd., 1916. Pp. 44.

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"From the earliest stages of Obstetrical practice the Physician or Surgeon has experienced the difficulties, too frequently resulting fatally, attending cases of children born with beating pulse, apparently normal and possessed of every faculty, yet unable to breathe, due to the failure of the lungs to assume their natural function. Vital statistics show a death rate of from four to five per cent. among "new born" infants, and approximately ninety per cent. of these deaths are due to suffocation or strangulation."

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Collectanea

Caring for Destitute Serbian Noncombatants.—An insight into gratifying civilian relief activities which are being directed in Serbia for the American Red Cross by Mr. Edward Stuart and Dr. Edward Ryan is given by two letters just received at Red Cross headquarters from Mr. Stuart in Belgrade, the captured former Serbian capital, dated August 28th and September 13th. Mr. Stuart first went to Europe for the American Red Cross early in 1915 as the head of a supplemental force of skilled American sanitarians, and participated in the suppression of the deadly typhus epidemic of that year, while Dr. Ryan piloted into Serbia by way of Greece some months prior to that the first detachment of American Red Cross surgeons and nurses which served in Belgrade, caring for both Serbian and Austrian wounded and typhus victims for over a year.

An Associated Press dispatch as late as October 9 said, owing to the inability of the American Red Cross relief commission to obtain further supplies from Rumania, the work directed by Mr. Stuart probably would be terminated with the exhaustion of the supplies on hand toward the end of November. The number of persons depending on the commission for relief of one kind or another was then given at 36,000. Approximately 3,180 tons of food, in addition to ten carloads of clothing, had been distributed. The American Red Cross, by means of relief materials, obtained in the United States and Rumania and contributed by the Swiss Government, and aided by Austrian military authorities, had succeeded in tiding the needy Serbians over the lean period of the year while the crops were growing. While starvation conditions had been relieved, there was still an urgent need for clothing, and Mr. Stuart hoped this want would be supplied from the United States.

The first of the two letters from Mr. Stuart above referred to was written just after Rumania had declared war upon Austria-Hungary. Rumania has been the source of large stores or relief supplies which Mr. Stuart has been purchasing for the American Red Cross not only for the relief work he is directing in Belgrade but for Doctor Ryan's party to the south. Prior to the declaration of war Mr. Stuart had procured across the Rumanian frontier 257.5 carloads of supplies, including eighty carloads of maize shipped from Bechet. He spoke of expecting also sixty carloads of maize which had been bought in Rumania by the Swiss Red Cross for the American Red Cross representatives to distribute. In his later letter he advises that these sixty carloads had arrived to augment the already large store and that forty-six carloads were being forwarded to Dr. Ryan in the interior. The addition of the Swiss shipment, Mr. Stuart reports, provides enough supplies to last until late in November.

Two distributing stations for food and a third for the distribution of clothing and shoes are being operated, but owing to the primitive milling facilities the ration per person per week for the destitute people of different nationalities was being limited to one kilo (about 2.20 pounds) per individual per week, and in the meantime every effort was being made to repair two large mills that were out of commission.

Mr. Stuart tells of having had a profitable conference with Mr. Otto T. Bannard, of New York, inspector general of foreign relief work for the American Red Cross in Vienna recently.

"The Public Welfare Department of the Government," advises Mr. Stuart, "has finally completed what is known as a People's Kitchen, but it will probably be some time before it is running to its full intended extent. The first object of this kitchen is to supply one meal a day to the inmates of the asylums in the city, the orphanage, the old people's home, the deaf and dumb institute and the nursery, in all about 200 persons. The funds to do this with must come from the profits of other operations of this department, such as a small moving picture show and the sale of illustrated postal cards, which amount to but very little. The Government gives no financial assistance, but the City Government supplies sufficient flour to make bread for the 200 at the present time, although when we first came to Belgrade the amount of flour was very inadequate. We have decided to assist this kitchen with supplies which are to be used exclusively for the asylums, records to be kept of the disposition of our supplies and the whole operation being always open to inspection by us. This has been agreed to by Oberlieutenant Lohar, the chief of this department, who is a very charitable minded man, and we have already given some supplies such as lard, salt pork, rice, beans and macaroni. Later it is intended by the lieutenant to supply soup once a day to all the school children in the city, in number about 1,500, but that has not yet been arranged. They expect to open the schools about the first of September."

"The distribution of clothing is progressing favorably and we have already given clothing to 10,000 people and have on hand sufficient for about 10,000 more," Mr. Stuart advises in the later letter.

◆

New Publications Received

Diseases of Children. By Edwin E. Graham, A. B., M. D., Professor of Diseases of Children in the Jefferson Medical College; Pediatrist to the Jefferson Medical College Hospital and to the Philadelphia General Hospital, Philadelphia, etc. Illustrated with 89 Engravings and 4 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. xx-902.

Volume IV. *Gynecology.* Edited by Emilius C. Dudley, A. M., M. D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, and Herbert M. Stowe, M. D., Assistant Professor of Obstetrics, Northwestern University Medical School; Attending Gynecologist to Cook County Hospital. Volume V. *Pediatrics.* Edited by Isaac A. Abt, M. D., Professor of Pediatrics, Northwestern University Medical School, Attending Physician Michael Reese Hospital. With the Collaboration of A. Levinson, M. D. *Orthopedic Surgery.* Edited by John Ridlon, A. M., M. D., Professor of Orthopedic Surgery, Northwestern University Medical School. With the Collaboration of Charles A. Parker, M. D. Series 1916. The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Chicago: The Year Book Publishers, 1916. (Price, $1.35 each volume.)

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Collectanea

The Need of Hospital Ships.—One of the many lessons learned by the Russian navy in the present war is the need of hospital ships, says the *Army and Navy Journal* for October 14, 1916. A writer in the London *Daily Mail* thus describes one of these vessels now with the Baltic fleet: "The operating room was especially ingenious. It would have been awkward to alter the vessel so completely (she is a requisitioned passenger steamer) as to make her the counterpart of a hospital on shore. In any case, it would be exceedingly difficult to keep an operating room on board ship as it should be kept, entirely free from dust and germs. This difficulty has been got over by enclosing a space sufficient for two surgeons to work at two operating tables with linen curtains which reach from ceiling to floor. The floor is of zinc, with a curb all around it. It can therefore be washed easily and quickly. I was shown how the severely wounded are hoisted on board out of smaller vessels in such a manner that the stretchers on which they lie do not lurch or sway about in mid air. The transference was carried out exceedingly well and quickly. Not more than a minute and a half was taken over each case. Then I saw also a most useful arrangement for saving badly wounded men from death by drowning. Great cages of rope and wire have been constructed (after a German design, the surgeon general told me) which can be lowered into the water and half submerged. In this there is room for many wounded to crawl and lie, while hundreds can cling to the outside."

Typhoid Carriers.—That intensive study of typhoid carriers is well worth while may be seen from the following data, observes the *Weekly Bulletin* of the Department of Health for August 26, 1916:

Prior to 1915 we knew of some half dozen chronic typhoid carriers in the city, including Typhoid Mary, who was "lost" for the time being. With her rediscovery in somewhat tragic circumstances, fresh impetus was given to the search for carriers. During 1915 five more were added to the list. Now, in the first half of 1916, twenty-two more have been discovered. In addition to search made incidental to the investigation of active cases, either sporadic or in outbreaks, the bureau is also conducting a systematic search for typhoid carriers in the routine examination of professional food handlers. It happens that none of our carriers was revealed by this method. Nevertheless, every food handler giving a positive Widal and a history of typhoid fever is subjected to bacteriological examination.

An analysis of the thirty-five cases shows some points of interest. Six patients are in one of the New York State hospitals for the insane in New York. Of those in ordinary life, the ages run as follows: Under ten years, one; ten to twenty years, one; twenty to thirty years, seven; thirty to forty years, two; forty to fifty years, seven; fifty to sixty years, seven; over sixty years, four. Nine are food handlers by occupation. This is a most serious consideration. They have been required to give up their accustomed means of livelihood. Of the nine, four were for a time confined in the health department hospitals. Three have since been released on finding other occupation. Another is an old man who has since retired from business. Another—comparatively young, with a wife and children to support—has been compelled to give up a lucrative position as a confectioner and accept employment at unskilled mechanical work, and requires charitable aid to supplement his income.

A woman keeping a little candy and ice cream store has, perforce, given up her occupation.

Another carrier kept a butcher store and has, for the time, given up work, at great financial sacrifice.

Another, apparently recovered, is engaged in a certain class of food handling, under close supervision.

A young man, who was a teacher in an institution, has been compelled to resign his position.

Others are married women, supported by their husbands; or, if single or widowed, support themselves by suitable work. Two are homeless and wandering about. One of the carriers is a little boy at school.

This presents the economic side of the typhoid carrier question, and is suggestive of the gravity of the situation.

The supervision of the chronic carrier has already become an important part of our work. In a recent number of the *Bulletin* we printed our Rules for Typhoid Carriers. Each carrier is visited from time to time. A journal is kept to record items of interest. From time to time stool specimens are examined.

In addition, a report is made to the United States Public Health Service and to the State Department of Health. This is looking toward the establishment of National and State registers of all chronic typhoid carriers.

A few of these chronic typhoid carriers are under treatment. This important matter is the subject of constant study, with at least theoretical promise and encouragement.

New Publications Received

A Practical Treatise on Disorders of the Sexual Function in the Male and Female. By Max Hühner, M.D., Chief of Clinic, Genitourinary Department, Mount Sinai Hospital Dispensary, New York City; Formerly Attending Genitourinary Surgeon, Bellevue Hospital, Out-Patient Department, and Assistant Gynecologist, Mount Sinai Hospital Dispensary, New York City, etc. Philadelphia: F. A. Davis Company, 1916. Pp. xv-318. (Price, $3.)

International Health Commission. The Rockefeller Foundation. Second Annual Report. January 1, 1915-December 31, 1915. New York, 1916. Pp. 185.

Principles of Diagnosis and Treatment in Heart Affections. By Sir James Mackenzie, M.D., F. R. C. P., LL. D., Ab. & Ed., F. R. C. P. I. (Hon.), Physician to London Hospital (in Charge of the Cardiac Department), Consulting Physician to the Victoria Hospital, Burnley. London: Henry Frowde (Oxford University Press); Hodder & Stoughton, 1916. Pp. viii-264.

The Mothercraft Manual. By Mary L. Read, B. S., Director, The School of Mothercraft, New York. Illustrated. Boston: Little, Brown & Co., 1916. Pp. xviii-440.

Seventeenth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the Year Ending November 30, 1915. Boston: Wright & Potter, 1916. Pp. 383.

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Collectanea

The Accuracy of Certified Causes of Death.—At the annual meeting of the American Public Health Association, held in Cincinnati on October 24th, says the *Weekly Bulletin* of the health department, the accuracy of certified causes of death was one of the important subjects considered. To the meeting was submitted the report of a special committee, of which Dr. Haven Emerson is chairman, appointed to consider the causes in question and their relation to mortality statistics and the International List of Causes of Death. This was appointed following the presentation of a paper, by Doctor Emerson, to the Section in Vital Statistics at the Rochester meeting, September 10, 1915, in which it was brought out that:

> If the 189 titles of the international list are studied in the light of present day knowledge of clinical and pathological experience, it will appear that there is no plausible guarantee of accuracy in at least forty-one per cent. of the certificates as now presented to the registrar of records of the New York city health department.
>
> In this forty-one per cent. we find 2,875 deaths in 1914 attributed to causes that can be accepted as reliable only after autopsy and 27,995 which are capable of verification by exact observations, as by chemical, bacteriological, and biological tests before death; but failing such specific proof, represent no reliable statement of death without autopsy.

Among the conclusions of the committee, as presented in *Public Health Reports,* for September 22d, are: That the following causes of death are not acceptable unless confirmed by a laboratory diagnosis disclosing the etiological factor: 3. Relapsing fever: 4, malaria; 14, dysentery; 21, glanders; 22, anthrax; 38, gonococcus infection; 53, leucemia; 106, ankylostomiasis; 107, intestinal parasites.

That the following causes of death require autopsies: 10. Influenza; 11, miliary fever; 23, rabies—without proof of bite by a rabid animal; 26, pellagra; 29, acute miliary tuberculosis—unless tubercles have been found in an accessible portion of the body (e. g., retina) during life; 31, abdominal tuberculosis—unless proof by an abdominal operation or presence of the tubercle bacillus is presented; 36, rickets; 37, syphilis—unless diagnosis was based on visible lesions or confirmed by specific test: 40, 41, 42, 45, cancer of various internal organs—unless seen at operation or otherwise visible; 53, Hodgkin's disease—unless accompanied with confirmatory record of microscopical examination of specimens removed from tumor during life; 54, anemia, chlorosis, unless confirmed by laboratory diagnosis before death; 61, simple meningitis, unless infecting organism had been demonstrated—title to be changed to "acute infectious meningitis"; 68, other forms of mental alienation; 69, epilepsy, unless death occurred in a witnessed attack and there was a confirmatory history; 77, pericarditis—unless secondary, or exudate had been obtained by paracentesis and examined; 102, ulcer of stomach—unless verified by operation; 103, other diseases of the stomach—unless verified by operation; 108, appendicitis and syphilis—unless verified by operation; 109, subtitle intestinal destruction—unless accessible for examination through body orifices or confirmed by operation; 115, other diseases of the liver; 116, diseases of the spleen—unless verified by operation; 117, simple peritonitis (nonpuerperal); 119, acute nephritis; 122, other diseases of the kidneys and annexa—unless operation was performed or after inquiry; 131, cysts and other tumors of the ovary—unless verified by operation; 154, senility; 164, poisoning by food—unless confirmed by supporting data; 187, ill defined organic disease; 188, sudden death.

Various changes in different classifications were also recommended and the addition of the following titles to the official list: Acute poliomyelitis, epidemic cerebrospinal meningitis, septic sore throat, diseases of the thymus gland, diseases of the parathyroid, diseases of the pituitary body, Hodgkin's disease, caisson disease, and some others. The elimination of the titles cholera nostras, mycoses, white swellings, disseminated tuberculosis, etc., was recommended.

The subject of this report, after consideration by the Section in Vital Statistics of the American Medical Association, will be submitted to the International Commission, charged with revision of the International List of Causes of Death, when it meets in 1919.

Tuberculosis Week.—December 3d to December 10th inclusive has been set aside as Tuberculosis Week in the United States. During this week an effort will be made to enlist the cooperation of every church, school, antituberculosis and public health organization, lodge, and workingmen's organization in the United States in an active effort to bring tuberculosis to the attention of the people. Three special feature days will be held during the week. December 6th will be National Medical Examination Day. On that day an effort will be made to get everybody, men, women, and children, sick or well, to be examined in order to find out if they have any defects or impairments of their bodies that need attention. If examination is not possible on December 6th, appointments will be made then for later examination. December 8th will be Children's Health Crusade Day. It is hoped at that time to launch a national organization of Modern Health Crusaders, an association of the children of the United States in the public schools, to fight against tuberculosis and for better health.

December 3d to 10th will be observed, according to the convenience of the churches, as Tuberculosis Day. A special sermon and a series of talking points for ministers and others have been prepared and will be ready for distribution in the near future. Last year over 150,000 organizations and institutions took part in the Tuberculosis Week celebration. It is expected that this year the number will be greatly increased.

New Publications Received

Muscle Training in the Treatment of Infantile Paralysis. By WILHELMINE G. WRIGHT, Boston Normal School of Gymnastics, 1905; Chirurg.-orthopäd. Klinik of Prof. Dr. A. Hoffa, Berlin, 1908; Assistant to Robert W. Lovett, M. D., Boston. Boston: Ernest Gregory, 1916. Pp. 30. (Price, $0.25.)

The Panama Canal and Commerce. By EMORY R. JOHNSON, Ph. D., Sc. D., Professor of Transportation and Commerce, University of Pennsylvania; Members Isthmian Canal Commission, 1899-1904; Special Commissioner on Panama Canal Traffic and Tolls, 1911-1913. Illustrated. New York and London: D. Appleton & Co., 1916. Pp. 296. (Price, $2.)

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Medical opinion is sometimes divided as to the true nature of epidemics. Lack of sanitation and general uncleanness; low physical and vital resistance; impure food or infected milk or water; fear or imagination, have been blamed.

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Collectanea

Our Present Knowledge of Poliomyelitis.—The following authoritative statement, from the American Public Health Association, appears in the *Weekly Bulletin* of the Health Department for November 4, 1916:

At the recent annual convention of the American Public Health Association, held in Cincinnati during the week of October 23-28, a committee was appointed with instructions to prepare a report of "the present actual knowledge of the cause of poliomyelitis, the manner and agents by which it is spread, the best methods of treatment, and the best preventive methods." The report of this committee was presented at the closing session of the association and was unanimously adopted, with the recommendation that it be published as the authoritative statement of the association.

The specific cause of poliomyelitis is a microorganism, a so called virus, which may be positively identified at present only by its production of poliomyelitis in monkeys experimentally inoculated. Such experiments have shown this virus to be present not only in the nervous tissues and certain other organs of persons who have died of poliomyelitis, but also in the nose, mouth, and bowel discharges of patients suffering from the disease. It has been proved by similar experiments that healthy associates may harbor the virus in their noses and throats. These experiments, together with the fact that monkeys have been infected by direct application of the virus to the mucous membrane of the nose and by feeding of the virus, are strong evidence that in Nature infection may be directly spread from person to person.

Observations on the occurrence of the disease might seem at first thought to be inconsistent with this conception, since contact between recognized cases can seldom be traced. However, this may be adequately explained by the lack of means for detecting mild nonparalytic cases, and by the belief that healthy carriers of the virus and undetected cases are considerably more numerous than the frankly paralyzed.

Many facts, such as the seasonal incidence and rural prevalence of the disease, have seemed to indicate that some insect or animal host, as yet unrecognized, may be a necessary factor in the spread of poliomyelitis, but specific evidence to this effect is lacking, and the weight of present opinion inclines to the view that poliomyelitis is exclusively a human disease, and is spread by personal contact, whatever other causes may be found to contribute to its spread. By personal contact we mean to include all the usual opportunities, direct or indirect, immediate or intermediate, for the transference of body discharges from person to person, having in mind as a possibility that the infection may occur through contaminated food.

The incubation period has not been definitely established in human beings. The information at hand indicates that it is less than two weeks, and probably. in the great majority of cases, between three and eight days.

If the foregoing conception of the disease is correct, it is obvious that effective preventive measures, approaching complete control, are impracticable, because isolation of recognized cases of the disease and restraint upon their immediate associates must fail to prevent the spread of infection by unrecognized cases and carriers.

These difficulties would appear to be inherent in the nature of the disease. Nevertheless, we may hope for the development of more thorough knowledge which will permit of more effective control of the disease than is now practicable. Of first importance is the more general recognition by practitioners of nonparalytic cases through clinical observation and laboratory procedures.

Lumbar puncture has been shown to offer valuable aid in diagnosis, and a more general use of this test is to be encouraged, since it not only facilitates accurate and early diagnosis, but in many cases affords sympathetic relief as a therapeutic procedure. Without undertaking to predict the future progress of research, we may hope for certain possible developments which may afford far more effective control of the disease, with substantial relief from many inconveniences at present inevitable. Among these possibilities we would include: A practical test for the detection of all clinical types and carriers; a simple and reliable test for distinguishing between susceptible and insusceptible persons; and means of conferring artificial immunity against poliomyelitis.

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New Publications Received

A Textbook of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and Their Employment Upon a Rational Basis. By Hobart Amory Hare, M. D., B. Sc., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital; One Time Clinical Professor of Diseases of Children in the University of Pennsylvania. Sixteenth Edition, Enlarged, Thoroughly Revised, and Largely Rewritten. Illustrated with 149 Engravings and 7 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. vi-1009. (Price, $4.75 net.)

Studies in Blood Pressure. Physiological and Clinical. By George Oliver, M. D. (Lond.), F. R. C. P. Edited by W. D. Halliburton, M. D., F. R. S. Third Edition. New York: Paul B. Hoeber, 1916. Pp. xxiii-240. (Price $3.)

Physiological Chemistry. A Textbook and Manual for Students. By Albert P. Mathews, Ph. D., Professor of Physiological Chemistry, the University of Chicago. Second Edition. Illustrated. New York: William Wood & Co., 1916. Pp. xv-1040. (Price, $4.25.)

Saving the Sight of Babies. Synopsis of Popular Lecture with Lantern Slide Illustrations. By Carolyn Conant Van Blarcom, R. N., Secretary, National Committee for the Prevention of Blindness. Inventory of Lantern Slides Available for Illustrating Lectures on Babies' Sore Eyes (Ophthalmia Neonatorum). February, 1916. New York City. Pp. 16.

The Health Problem of the New Jersey Negro. By George E. Cannon, M. D., Bordentown Industrial School. Pp. 8.

The National Formulary. Fourth Edition. By Authority of the American Pharmaceutical Association. Prepared by the Committee on National Formulary of the American Pharmaceutical Association. Official from September 1, 1916. Published by the American Pharmaceutical Association, 1916. Pp. xl-394.

Transactions of the American Ophthalmological Society. Volume XIV, Part II. Philadelphia: American Ophthalmological Society. *Fifty-second Annual Meeting.* Washington, D. C., 1916. Pp. 419-807.

Is a Baby's Life Worth Saving?

"From the earliest stages of Obstetrical practice the Physician or Surgeon has experienced the difficulties, too frequently resulting fatally, attending cases of children born with beating pulse, apparently normal and possessed of every faculty, yet unable to breathe, due to the failure of the lungs to assume their natural function. Vital statistics show a death rate of from four to five per cent. among 'new born' infants, and approximately ninety per cent. of these deaths are due to suffocation or strangulation."

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Status of a Red Cross Base Hospital Unit.—The twenty-five Red Cross base hospitals which have been organized or are being organized under the Department of Military Relief of the American Red Cross have a strictly war time purpose and are not generally available for use for civilian relief after disasters other than war, according to a Red Cross circular just issued. It says:

> Attention has been invited by the director of a Red Cross Base Hospital Unit to a misconception of the purposes of this military unit, in that a statement has been made that it would be available for purposes of civilian relief in great disasters other than war.
>
> This is an error, as base hospitals are purely military units, organized at the request of the medical departments of the army and navy, and equipped with a view to the needs of the military service only. In both organization and equipment they are too massive and too immobile for civilian relief work. The muster-in pledge contemplates only national service when called into the military service of the United States, and it has been decided by the judge advocate general of the army that the law does not authorize the calling out of these units by the President except in time of war or when war is imminent.
>
> It can be well imagined that in time of great National disaster, such as an earthquake, which involved injuries to large numbers of people, the staff of a base hospital unit might volunteer *as individuals,* and the American Red Cross would not hesitate to use the blankets, surgical dressings, and such other parts of a base hospital equipment as might be suitable for first aid work to relieve an emergency. These supplies, however, would be regarded as a loan, and would be promptly replaced, if possible, from funds contributed to relieve the disaster. There would be no calling out of the unit *as a unit,* under these circumstances, and no compulsion on any member of it to volunteer.

"Vivisectionists' Operations."—After a period of innocuous and gratifying quiescence, the New York Antivivisection Society is making a new bid for public support by providing a series of thrilling exhibitions supposed to show "just how the vivisectionist operates," says the *New York Tribune* for November 1, 1916. Fifty schoolboys and schoolgirls were invited to the first of these entertainments, and as an additional attraction an English actor, who is apparently not indisposed to advertise himself, was engaged to give a little lecture on the subject of experiments on animals and to tell his audience what he thought of the physiologists.

"Vivisection laboratories represent nothing but waste to my mind," said the popular entertainer with impressive gravity. "To my knowledge there has never come any definite benefit as a result of experiments conducted on an animal." And much more to the same effect about his "mind" and his "knowledge," all in the familiar vein.

It is perhaps not surprising that this gifted performer should have accepted the invitation of the amiable ladies of the society. The footlights have an unhappy effect on the minds of solemn folk of limited learning. They are accustomed to the applause of the multitude, and are naturally apt to acquire an inflated idea of their importance, unless happily they chance to be checked by a portion of humor sufficient to enable them to recognize their limitations.

It appears, however, from a sympathetic report in the *Herald* that in order to illustrate his mock demonstration the actor with "several aids" strapped "a struggling dog" to something described as "the vivisectionists' rack of torture," on the pretence of showing "how operations on living animals are performed." There can be no excuse for exhibitions of this kind. It is indeed inconceivable how women who profess to be shocked at the use of "the vivisectionists' rack" in laboratories can countenance its abuse in the bungling hands of a vain player who has neither the education nor the understanding to discuss the matter at all, to say nothing of illustrating it.

In his own field he is clever enough. His business is to amuse idle Broadway, and if he were wise he would stick to it. If, however, the Antivivisection Society must employ actors to amuse their audiences, let the actors be confined to their own proper gifts of gesture and mimicry. Their vaporings can do little harm, but dogs should not be used to provide school children with new thrills.

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New Publications Received

Report of the Jefferson Hospital. For year ending May 31, 1916. Thirty-ninth year. Philadelphia, 1916. Pp. 103.

The Significance of Psychanalysis for the Mental Sciences. By Dr. Otto Rank and Dr. Hans Sachs, of Vienna. Authorized English Translation by Dr. Charles R. Payne. Nervous and Mental Disease Monograph Series No. 23. New York: Nervous and Mental Disease Publishing Company, 1916. Pp. 127.

Three Contributions to the Theory of Sex. By Professor Sigmund Freud, LL. D., Vienna. Nervous and Mental Disease Monograph Series No. 7. New York, 1916.

Outlines of Physiology. By Edward Groves Jones, A. B., M. D., F. A. C. S., Professor of Surgery, Emory University (Atlanta Medical College), and Allen H. Bunce, A. B., M. D., Associate in Medicine, Emory University (Atlanta Medical College). Fourth Edition, Revised. 111 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xvi-373. (Price, $1.50.)

Practical Bacteriology, Blood Work and Animal Parasitology. Including Bacteriological Keys, Zoological Tables, and Explanatory Clinical Notes. By E. R. Stitt, A. B., Ph. G., M. D., Medical Director, U. S. Navy; Graduate, London School of Tropical Medicine, etc. Fourth Edition, Revised and Enlarged. With 4 Plates and 115 Other Illustrations, Containing 505 Figures. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xvii-497. (Price, $2.)

Influence of Occupation on Health During Adolescence. Report of a Physical Examination of 679 Male Minors Under 18 in the Cotton Industries of Massachusetts. By M. Victor Safford, Assistant Surgeon, United States Public Health Service. Public Health Bulletin No. 78. August, 1916. Prepared by Direction of the Surgeon General. Washington, 1916. Pp. 52.

Mortality Statistics, 1914. Fifteenth Annual Report. Department of Commerce. Bureau of the Census. Sam. L. Rogers, Director. Washington: Government Printing Office, 1916. Pp. 714.

El Paludismo de los Aves en Venezuela. Doctor Juan Iturbe, Miembro de la Academia de Medicina. Doctor Eudoro González. Caracas, Venezuela, 1916.

Cultivo in Vitro del Plasmodium vivax. Laboratorio Del Doctor Juan Iturbe. Doctor Juan Iturbe, Miembro de la Academia de Medicina. Doctor Eudoro González. Caracas, Venezuela, 1916.

Studies on the Formation and Antigenic Properties of Certain Compound Proteins. By Carl L. A. Schmidt. An Investigation of the Ratio of Globulins to Albumins in the Blood Serum of Normal Rabbits and of Rabbits Immunized against Bacillus Typhosus. By Homer Righetti. University of California Publication in Pathology. Vol. 2, Nos. 18 and 19. Berkeley, Cal.: University of California Press, 1916. Pp. 157-214.

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Collectanea

Harvey as a Prescriber.—In his Harveian Oration, remarks the *Pharmaceutical Journal* for November 4, 1916, delivered at the Royal College of Physicians, on October 18th, Sir Thomas Barlow remarked that Harvey says very little about drugs in his memoirs, and added: "That is not exceptional in physicians who are distinguished as morbid anatomists. One would like to believe that when the apothecaries of the time disparaged his 'bills' (as prescriptions were then called) they may have been too short and too simple to please the apothecaries. There is a nice report on the case of Prince Maurice when Harvey was with the King at Oxford, in which it is stated about Harvey and his colleague, Edmund Smith, that the 'doctors doe resolve to give very little physic, only a regular diett and cordyall antidotes.' It is significantly added that Prince Maurice did well. But I think I have noticed occasionally that when a morbid anatomist ventures into the realm of therapeutics he may show an immense confidence in some particular preparation, and it is not altogether an exceptional incident that in a letter to his friend Hamey, which we possess, concerning the ailment of a poor woman in whom they were both interested, Harvey extolled the therapeutic virtue of the heel bone of the deer. Perhaps he found it a useful way of administering phosphate of lime." It would appear, however, whether he prescribed drugs much or little, that after the fashion of his time he was a sedulous practitioner of phlebotomy for the relief or removal of pain, and that he had a profound faith in it for the treatment of asthma.

Influence of Race Stock.—In an interesting and instructive paper recently presented before the American Association for the Advancement of Science, Louis I. Dublin, Ph. D., demonstrated that in New York city, with the notable exception of the Russian Jews, the death rate of foreigners and their first generation of offspring, was higher than the death rate of natives of native parents. According to the *Weekly Bulletin* of the Department of Health of the City of New York for November 4, 1916, Doctor Dublin also called attention to the fact that the death rate of Italian males from pulmonary tuberculosis is lower in New York State than the same rate for any other nationality, and much lower than that of the Italian females. Of this latter phenomenon no explanation is advanced.

This difference in the Italian male and female death rate from pulmonary tuberculosis, as well as the low combined rate, has been noticed by the health department in the past and was again encountered in studying the mortality of the city by sanitary areas. In Monograph 15, page 24, the department refers to the high mortality of Italians from the respiratory diseases and from all forms of tuberculosis other than pulmonary, and advances the explanation that many Italian males coming to this country are either single or, if married, leave their families at home until they are on their feet financially, therefore many of these unattached males who may succumb to tuberculosis return to Italy. Again, it has been found that many Italian men with families in this country who succumb to tuberculosis return to Italy, taking their families with them or leaving them here; whereas the female Italians coming to this country either have been married in Italy or marry shortly after their arrival in this country, and if taken ill seldom return. This has been verified in a general way by inquiry among Italian steamship agents, Italian physicians, Italian clergymen, etc.

In comparing the mortality of the foreign born and the native born of foreign parents with the native born of native parents, Doctor Dublin omits to mention a very important factor, which no doubt was apparent to him; to wit, that the economic status of the foreign born and of the native born of foreign parents is lower than that of native born of native parents, since the tendency is for each generation to advance socially, intellectually, and financially; the natives, being the third, fourth, fifth, or other generation, have advanced beyond the status of their forebears. Again, the tendency is for foreigners upon their arrival in this country to settle in the cities, consequently the health board feels safe in saying that the majority of foreigners in New York State reside in the cities, and of necessity in the crowded tenement sections, whereas a large percentage of the "native natives" live in rural districts, and those who live in New York city are for the most part more healthfully housed. Again, the occupations of the foreigners and of their first generation of offspring are apt to be less conducive to a low death rate than the occupations of the "native natives."

These facts obviously do not change what Doctor Dublin has pointed out, to wit, that the death rate of many foreign stocks is higher than that of the natives of native parents, but it is not fair to assume that their higher death rate is due entirely to any inherent defects in the stocks.

New Publications Received

The Essentials of Chemical Physiology. For the use of students. By W. D. Halliburton, M. D., LL. D., F. R. S., Fellow of the Royal College of Physicians, Professor of Physiology in King's College, London; Author of Textbook of Chemical Physiology and Pathology. Ninth Edition. With Colored Plate. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1916. Pp. 234.

Contribución al estudio de los gérmenes patógenos del agua. Dr. Juan Iturbe, Miembro de la Academia de Medicina. Dr. Eudoro González. Caracas, Venezuela, 1916.

Manual of Chemistry. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Textbook Specially Adapted for Students of Medicine, Pharmacy, and Dentistry. By W. Simon, Ph. D., M. D., Late Professor of Chemistry in the College of Physicians and Surgeons of Baltimore and in the Baltimore College of Dental Surgery, and Daniel Base, Ph. D., Professor of Chemistry in the Maryland College of Pharmacy, Department of the University of Maryland, Baltimore. Eleventh Edition, Thoroughly Revised. With 55 Illustrations, One Colored Spectra Plate and Six Colored Plates Representing Forty-eight Chemical Reactions. Philadelphia and New York: Lea & Febiger, 1916. Pp. xvi-648.

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Collectanea

A Statistical Study of Diphtheria.—The following are some of the main conclusions in a paper by Frederick S. Crum, Ph. D., presented, on October 27th, before the Section in Vital Statistics of the American Public Health Association, in Cincinnati:

1. Comparing the preantitoxin with the antitoxin period it is conservatively estimated that there is at present an annual saving of at least 250,000 lives throughout the world as a result of antitoxin and other improved treatment of diphtheria. This estimate is based upon the official mortality returns of twenty countries for a quarter century period.

2. Notwithstanding the great reduction in the diphtheria death rate, this disease is still responsible for about four per cent. of the total mortality at ages under fifteen years in the combined countries of the world which have reliable death registration.

3. Diphtheria still causes more deaths in the United States than scarlet fever, measles, or whooping cough. Diphtheria therefore remains a distinct menace to childhood, notwithstanding antitoxin, its specific curative agent. The average annual number of deaths from diphtheria and croup in the United States is approximately 17,000, against 10,000 from whooping cough, 9,000 from measles, and 8,000 from scarlet fever.

4. There is positive and overwhelming evidence that the earlier the use of antitoxin, the better are the results and the greater is the chance of recovery. There is almost equally positive evidence that the medical world has as yet taken only partial advantage of one of the greatest discoveries (antitoxin) of modern times in the field of preventive medicine.

5. All races are susceptible to diphtheria, but there is some evidence that the negro and the American Indian are less susceptible than Caucasians, Chinese, Japanese, Hawaiians, Filipinos, or Mexicans.

6. The diphtheria attack and mortality rates are highest in the second, third, and fourth years of life. After the age of five years the death rate falls rapidly, and at the adult ages the death rate is only about one per cent. of the average rate for ages under five years.

7. In the registration area of the United States during the five years, 1910 to 1914, 62.2 per cent. of the deaths from diphtheria and croup occurred at ages under five years; 25.8 per cent. occurred at ages five to nine years; six per cent. occurred at ages ten to fourteen years; and only six per cent. occurred at ages fifteen years and over.

8. Both sexes are about equally affected by diphtheria when all ages are combined. The death rate of males is higher than the death rate of females at ages under five years; the rates are about equal at ages five to nineteen years; and the rate is higher for adult females than for adult males. The higher adult female mortality is probably due mainly to the fact that professional female nurses and mothers perform most of the diphtheria nursing service and are therefore more exposed to diphtheria contagion than are adult males.

9. In the mortality experience of a large insurance company for a two year period, including 3,920 deaths from diphtheria and croup, 2,834, or 72.3 per cent., were complicated with other secondary diseases. The secondary complications most frequently met with were heart diseases, respiratory diseases, scarlet fever, urinary diseases, and measles.

10. Density of population, either directly or indirectly, seems to be an important factor in diphtheria morbidity and mortality in the United States and elsewhere. The diphtheria death rate in the United States is higher in the urban than in the rural areas. The rate is higher in the New England, Middle Atlantic, and east central cities and States than in the far western and southern cities and States.

11. Climatological factors, especially rainfall and temperature, apparently influence the relative epidemicity and virulence of diphtheria, but much more extended investigations are necessary before these factors can be properly appraised.

12. Diphtheria is now probably endemic in every country in the world and pandemic in most. Diphtheria is also epidemic in its spread in practically every locality, but at irregular intervals. In 100 cities of the United States during a period of fifteen years there were one or more deaths every year in all of the cities, with one exception. During this period of fifteen years the annual diphtheria death rates of the 100 cities (1,500 rates) ranged from zero to 173 per 100,000 of population.

13. In the various countries of the world the average annual death rate from diphtheria during the most recent five year period for which the data are available has ranged from 6.8 per 100,000 of population in Chile, and seven in New Zealand and The Netherlands to nineteen in the registration area of the United States, 22.6 in Prussia, 25.9 in Austria, and 40.1 in Serbia.

14. There is no conclusive evidence that diphtheria, as a disease, is decreasing. On the contrary, the weight of evidence is favorable to the view that it is increasing.

15. The underlying conditions which determine the relative degrees of susceptibility to the Klebs-Löffler bacillus and its varying degrees of virulence are still elusive and more or less doubtful, and for this reason the control of diphtheria will probably continue for many years to be one of the serious and difficult problems of sanitary administration.

Human Diseases Carried by Animals.—The Department of Health of the City of New York has compiled the following list of diseases which are carried by animals:

By the dog: Rabies, foot and mouth disease, helminthiasis (flukes and tapeworms), infantile splenomegaly (from dogs through fleas), trypanosomiasis, mange, fleas and ticks, ringworm, and favus.

By the cow: Tuberculosis, actinomycosis, anthrax, cowpox, tetanus (through vaccine), foot and mouth disease, septic sore throat, rabies, pus infections, Tænia saginata, milk sickness, and paratyphoid fever.

By the horse: Glanders, rabies, tetanus, sporotrichosis, and anaphylaxis (serum disease and odor of horses).

By swine: Trichiniasis, tuberculosis, anthrax, cestodes, and trematodes.

By sheep: Anthrax and tuberculosis.

By goats: Malta fever and tuberculosis.

By the antelope: Sleeping sickness.

By the cat: Rabies, cestodes, trematodes, favus, and ringworm.

By rats: Rat bite fever, bubonic plague (through fleas), and trichinosis (through hog to man).

By ground squirrels: Bubonic plague.

By birds: Psittacosis (from parrot).

By fish: Tapeworms.

By arthropods, chiefly insects. Mosquitoes: Yellow fever, malarial fever, dengue fever, and filariasis. Fleas: Bubonic plague and infantile splenomegaly. Ticks and mites: Rocky Mountain fever, relapsing fever (African), tick fever of Miana, and Japanese blood fever. Lice: Typhus fever and relapsing fever (Spirochæta obermeieri). Bedbugs: Kala azar. Flies: Sandfly fever, sleeping sickness (tsetse fly), typhoid fever, and other infections carried mechanically. Crustaceans (water flea): Guinea worm infection (dracunculosis). Oysters, clams, etc.: Typhoid fever. Snails: Trematode infections (especially bilharziosis).

◆

New Publications Received

General Medicine. Edited by Frank Billings, M. S., M. D., Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago, assisted by Burrell O. Raulston, A. B., M. D., Resident Pathologist, Presbyterian Hospital. The Practical Medicine Series, Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Series 1916. Volume VI. Chicago: The Year Book Publishers, 1916, pp 342.

Lehn & Fink New York

The Starting Point of Epidemic Control

Medical opinion is sometimes divided as to the true nature of epidemics. Lack of sanitation and general uncleanness; low physical and vital resistance; impure food or infected milk or water; fear or imagination, have been blamed.

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The Kind of Social Service That Is Not a Mere Fad.—It is now nearly a year since a special kind of social service work was begun at the Occupational Clinic of the Division of Industrial Hygiene of the Health Department of the City of New York. This work was largely modeled to conform to the plan of social service followed at the Massachusetts General Hospital, where every patient who is under treatment in the wards or in the outdoor service is assigned to the care of a social service nurse. The latter not only visits the home of the patient in order to ascertain his ability to pay for treatment, but she becomes, if possible, a friend and adviser to the patient and his family on matters of hygiene and sanitation, and helps to secure financial or other aid that may be urgently needed.

There is a growing recognition among physicians and surgeons that domestic conditions in the homes of patients may cause worry or otherwise militate against the success of therapeutic measures, says the *Weekly Bulletin* of the department for October 7, 1916. Likewise, it is of value to know of occupational influences that may directly or indirectly be connected with the patient's illness and which when discovered may form the basis for correct diagnosis and treatment. In many other ways both patient and physician are benefited by this scheme of cooperation with the social service nurses.

At the occupational clinic there are three types of cases in the main which are assigned to the social service nurse for care or investigation:

First: Those who upon examination at the clinic are found to be suffering from a pathological condition which demands treatment in order that grave consequences may be forestalled. In all such cases the nurse makes an effort to induce the patient to consult his private physician, or if means for the purpose are lacking she refers him to a hospital or dispensary. Subsequently she makes one visit to secure the patient's compliance with instructions.

Second: The unemployed are referred to the social service nurse and she makes efforts to secure employment for them.

Third: Those who are engaged at work which is seriously affecting their health are referred to her. Printers, for instance, who are found to be suffering from the effects of exposure to lead and turpentine, are urged to seek a new trade. The city employment bureau and certain private corporations have greatly aided us in this respect.

It is needless to say that no medical treatment is given at the occupational clinic, where work is confined to the discovery of pathological conditions and to giving advice on hygiene and in the prevention of disease.

All who recognize that the scope of preventive medicine has quite properly been greatly enlarged, so far as health officers and physicians as a class are concerned, will readily see that the Division of Industrial Hygiene, which examined a total of 38,959 patients during the first year of its existence, has large opportunities in this field. Of the total number examined by the medical staff of the occupational clinic, 11,487, or slightly more than twenty-nine per cent., were found to present some pathological condition.

Health Conditions in the Philippines.—The report of the Philippine Health Service for the first quarter of 1916, made by Dr. John D. Long, director of health to the Secretary of the Interior, is exceptionally satisfactory. The number of deaths were seven less than occurred during a similar period of last year. In the city of Manila, which has a population of approximately 280,000, the death rate among Americans was 5.86, Filipinos, 28.98; Spaniards, 7.28; other Europeans, 3.33; Chinese, 13.25; all others, 4.19; the average annual death rate being 26.85. This is scarcely more than the average mortality among the colored population of the registration area of the United States, and the mortality among whites is about one half that of the whites of the same registration area. Only one case of smallpox occurred, the first case in the city of Manila since 1908. There were twenty-four cases of varioloid with no death, and fifteen cases of varicella with no death, twenty-four cases of cholera with eleven deaths, and no case of bubonic plague. A total of 25,337 rats was caught in the city of Manila, all of which were found negative for plague. There were seventy cases of measles with two deaths, forty-four cases of diphtheria with six deaths, two cases of cerebrospinal meningitis in which one death occurred, and twenty-four cases and eleven deaths from cholera. In occidental negroes there were twenty-one cases of cholera with eight deaths, and in Batangas there were eighteen cases with ten deaths. During the quarter 38,881 persons were vaccinated against smallpox in Manila, and 151,566 in the Provinces. Of the total number of deaths in the quarter over one half were among children under two years of age. The chief causes of death were tuberculosis, 329, beriberi 193, bronchitis 212, pneumonia 88, and diarrhea and enteritis 112. Additional measures have been taken to promote public health through conferences of district health officers with physicians and pharmacists by appointing a committee to study quarantinable diseases and the duration of quarantine for each disease. Preparation of programs for examination for entrance to and promotion in the Philippine Health Service, hospitalization of cases of measles and smallpox, appointments to sanitary districts, appointing a committee to devise a systematic plan for the extension of the work of the Gota de Leche (milk supply) institution to the provinces, extension of requirements regarding registration of infant mortality and appointment of two committees for the investigation of factory hygiene and school hygiene.

New Publications Received

La Tuberculose Pleuro-Pulmonaire. Par MAURICE LETULLE, Professeur à la Faculté de Médecine de Paris; Membre de l'Académie de Médecine. Avec 107 Planches Autochromes hors texte. Paris: A. Maloine et Fils, 1916. (Prix, 55 francs.)

The Physician's Visiting List (Lindsay & Blakiston's) for 1917. Sixty-sixth year of its publication. Philadelphia: P. Blakiston's Son & Co. (Successors to Lindsay & Blakiston.) (Price, $1.25.)

The Practitioner's Visiting List, 1917. Thirty patients per week. Philadelphia and New York: Lea & Febiger, 1916. Pp. 101. (Price, $1.25.)

A Laboratory Manual of Organic Chemistry for Medical Students. By MATTHEW STEEL, Ph. D., Professor of Organic and Biological Chemistry, The Long Island College Hospital, Brooklyn, New York. First Edition. First Thousand. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Ltd., 1916. Pp. viii-193.

Transactions of the American Otological Society. Forty-ninth Annual Meeting. Hotel Raleigh, Washington, D. C., May 9 and 10, 1916. Volume XIV. Part 1. New Bedford, Mass.: Mercury Publishing Company, 1916. Pp. 201.

Radiodiagnostic des Affections Pleuropulmonaires. Par F. BARJON, Médecin des Hôpitaux de Lyon. Avec figures dans le texte et 26 planches hors texte. Paris: Masson et Cie, 1916. Pp. 186.

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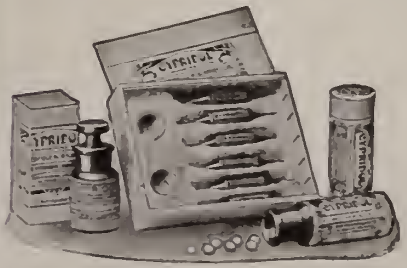

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Collectanea

Periodical Examination of Health Department Employees.—There is no phase of public health work, remarks the *Weekly Bulletin* for December 9, 1916, which transcends in value the periodical medical examination. With the great and rapidly growing interest in public health questions this medical attention and medical supervision of employees is becoming an accepted procedure—a matter of course. For the past two years every employee of the department of health has been obliged to meet this requirement of an annual medical examination, in addition to the one received on entrance to the department service.

With the older employees this periodical test is optional, but as the antagonism first manifested toward this innovation has largely disappeared, the majority of both sexes have been examined and some, more enlightened than the others, have requested an examination at short intervals, where the findings have disclosed conditions not entirely satisfactory to the individual.

Up to June 29, 1916, 2,104 employees had been examined, but in order to retain a convenient starting point for future investigations, only the first 2,000 were included in the statistical records. Of the number mentioned. 1,325 were women and 779 were men.

During the past year nearly 1,000 reexaminations have been made, and of these 194 are men and 737 are women. Each case record receives a number, for no names are allowed to appear on the card, and the records, when completed at the end of the day's work, are placed in a special cabinet and kept under lock and key in the office of the deputy commissioner. Male employees are examined by a male physician and female employees by a female physician. The physical record is not allowed to influence in any way the efficiency rating of the employee.

On reexamination about 10 per cent. of the persons examined showed very decided improvement over their former physical condition; some had gained in weight; some, after much effort, had lost weight; certain impairments had received treatment with resulting gain to the patient. Many, when originally examined, had shown no abnormality so that but little change was to be expected.

Every employee, when absent from duty on account of illness, should be reexamined on return to duty. If absences are frequent a reexamination should be made every three months, with a view to determining the cause of disability. Those who are below normal when first examined should be examined in six months' time.

Any employee desiring special medical advice should be made to feel that this is gladly given—that the object of the welfare division is to help keep the employees well and that these medical attentions are not in any sense a philanthropy but a very decided economy to the health department as well as to the taxpayer.

When any particular kind of work is found to have an injurious effect upon the health of the employee, a change to some other kind of employment should be made.

Trinitrotoluene Poisoning.—According to the *Pharmaceutical Journal* (London), for October 18, 1916, in the House of Commons recently, W. C. Anderson asked the Home Secretary whether he was aware that of the 472 cases of industrial poisoning reported during the nine months ended September, 1916, 120 occurred from toxic jaundice, and that of sixty-two deaths thirty-three were attributable to this cause, and how many of these cases were due to poisoning from trinitrotoluene? Mr. Brace replied that the figures were correctly given. The number of these cases due to such poisoning was ninety-five, and the number of deaths twenty-eight. Every possible step is being taken by the department, in concert with the Ministry of Munitions, to investigate and deal with this disease.

New Publications Received

A Practical Medical Dictionary of Words Used in Medicine; with Their Derivation and Pronunciation, Including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance, and Other Special Terms; Anatomical Tables of the Titles in General Use, and Those Sanctioned by the Basle Anatomical Convention; Pharmaceutical Preparations, Official in the U. S. and British Pharmacopœias and Contained in the National Formulary; Chemical and Therapeutic Information as to Mineral Springs of America and Europe, and Comprehensive Lists of Synonyms. By THOMAS LATHROP STEDMAN, A. M., M. D. Editor of the Twentieth Century Practice of Medicine, of the Reference Handbook of the Medical Sciences, and of the Medical Record. Fourth Revised Edition. Illustrated. New York: William Wood & Co., 1916. Pp. 1102. (Price, $5.00 net.)

Formes Cliniques des Lésions des Nerfs. Par Mme. ATHANASSIO-BENISTY, Interne des Hôpitaux de Paris (Salpêtrière). Préface du Professeur PIERRE MARIE, Membre de l'Académie de Médecine. Avec 81 figures dans le texte et 7 planches hors texte en noir et en couleurs. Paris: Masson et Cie, 1916. Pp. 234.

Bref och Skrifvelser. Af och till Carl von Linné. Andra Afdelningen Utländska Brefväxlingen. Del 1. Andanson-Brünnich. Utgifven och med upplysande Noter Försedd af J. M. HULTH. Upsula: Akademiska Bokhandeln; Berlin: R. Friedländer & Son, 1916. Pp. 429.

La Dermatologie en Clientèle. "L'indispensable en Dermatologie Comment Guérir?" Bibliothèque des Praticiens. Par. H. GOUGEROT, Professeur agrégé à la Faculté de Médecine de Paris; 114 figures en noir en 32 planches; 40 figures en couleurs en 16 planches. Paris: A. Maloine et Fils, 1917. Pp. 764.

The Institutional Care of the Insane in the United States and Canada. By HENRY M. HURD, WILLIAM F. DREWRY, RICHARD DEWEY, CHARLES W. PILGRIM, G. ALDER BLUMER, and T. J. W. BURGESS. Edited by HENRY M. HURD, M. D., LL. D., Emeritus Professor of Psychiatry, the John Hopkins University: formerly Medical Superintendent of the Pontiac State Hospital; Secretary, The John Hopkins Hospital. Volume III, illustrated. Baltimore, Md.: The Johns Hopkins Press, 1916 Pp. 872.

La Clinica Obstétrica y Ginecológical del Hospital Alvear, en el ano 1916. Par URALDO FERNANDEZ y TORIBIO J. PICCARDO. Pp. 168.

Report of the Philippine Health Service. For the fiscal year from January 1 to December 31, 1915. J. D. LONG, M. D., Director of Health. Manila Bureau of Printing, 1916. Pp. 163.

Geschichte der Augenheilkunde. Von DR. J. HIRSCHBERG, Professor in Berlin. Drittes Buch, Dreizehnter Abschnitt. Die Augenärtzte der Schweiz, 1800 bis 1875. Mit 5 Figuren im Text. (Handbuch der gesamten Augenheilkunde, 2. Aufl. XVI. Band, VII.) Leipzig: Wilhelm Engelmann, 1916. Pp. 273.

Proceedings of the American Medico-Psychological Association; at the Seventy-first annual meeting held at Old Point Comfort, Va., May 11-14, 1915. Pp. 387.

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Shell Shock is one of the baffling maladies resulting from the terrific nervous strain of the present war. Revolting sights and deeds, the continued noise and strain, the combating of fear, and the additional effect of physical injury and suffering are some of the exciting factors. The underlying cause for this condition is thought to be nervous instability resulting in psychic traumas, and not physical factors. In connection herewith the role of the internal secretions may throw some interesting light on the origin and treatment of the symptoms.

It is stated that the excessive strain causes adrenal insufficiency, which aggravates the nervous depression and thus is a contributing factor to war neurasthenia. Henry R. Harrower (*Prescriber,* October, 1916) calls attention to this relationship of the internal secretions to shell shock, and states that this subject was recently referred to by Rénon in a paper read before the Société de thérapeutique, Paris, and the symptom complex which he describes as due to *l'angoisse de guerre* is almost typical of dyshormonism, and especially that form in which hypadrenia is well marked. Rénon finds that a neuropathic or arthropathic physical substratum is common in patients subject to the more marked effects of "war shock," and that the use of alcohol is a pronounced predisposing factor.

Among the usual symptoms enumerated by Rénon as being due to this "war neurasthenia" are several which can be quickly connected with the endocrinous organs. A progressive loss of weight is the rule—the glands of internal secretion control both nutrition and growth; the temperament is changed and the disposition becomes uncertain—mental instability and activity are commonly connected with ductless gland dyscrasias; arterial tension is reduced—common both in pluriglandular insufficiency and in hypadrenia; dermography is reported to be nearly always present—one of the typical manifestations of severe adrenal depletion is the dermographic sign first mentioned by Sergent, and called by him *la ligne blanche surrénale.* I cannot but believe that the most constant single factor, and one that is quite susceptible to treatment, in "shell shock" or "war neurasthenia," is pluriglandular insufficiency. From what has preceded it will appear that the adrenal medication may be helpful in cases of shell shock or neurasthenia; and doubtless it is, especially if used in the manner suggested by Williams, i. e., desiccated adrenal gland by mouth. Sergent has been using this form of treatment in France, and finds it of exceptional value in the severe cases where the signs of acute adrenal exhaustion are elicited. Here hypodermic injections of adrenaline solution, from 15 to as high as 30 minims at suitable intervals, have undoubtedly saved life.

In the course of the discussion on Corbett's paper, one physician asked why, if these symptoms are due to adrenal insufficiency, cannot they be relieved by the administration of adrenaline. In his reply Corbett said he did not think that adrenaline, administered artificially, was the antidote for shock, because the amounts of adrenaline normally in the blood are exceedingly small, and if an attempt were made to maintain the blood pressure by forcing adrenaline, continued larger doses would have to be used to maintain the results. Such continued and increasing doses would have a deleterious effect upon the bloodvessels, and might increase the concentration of the blood, adding this factor to the shock. I am not sure about this effect of adrenaline on the vessels, but I do know that pituitary preparations are much more effective than adrenaline in the immediate treatment of shock and collapse, their influence is more prolonged, untoward by effects, as rigors, coldness, palpitation, etc., are less likely to follow, and the general influence upon other functions, as diuresis, intestinal peristalsis, etc., are both salutary and desirable Hence recourse to pituitary preparations is now almost the rule in the immediate treatment of shock, though there are undoubtedly cases of severe hypadrenia, such as those mentioned by Sergent, in which adrenaline might be used to better advantage.

New Publications Received

The Sexual Disabilities of Man and Their Treatment and Prevention. By Arthur Cooper, consulting surgeon to the Westminster General Dispensary, formerly House Surgeon to the Male Lock Hospital, London. Third Edition, revised and enlarged. New York: Paul B. Hoeber, 1916. Pp. 227. (Price, $2.50.)

The Healthy Marriage. A Medical and Psychological Guide for Wives. By G. T. Wrench, M. D. B. S. (London). Past assistant-Master of the Rotunda Hospital, Dublin. Second Edition. New York: Paul B. Hoeber, 1916. Pp. 299. (Price, $1.50.)

The Mentally Defective Child. Written specially for school teachers and others interested in the educational treatment and aftercare of mentally defective school children By Meredith Young, M. D., D. P. H., D. S. Sc. of Lincoln's Inn, Barrister-at-law. Chief school medical officer, Cheshire Education Committee; Lecturer on School Hygiene, Victoria University of Manchester; Certifying Medical Officer to the Local Authority (Mental Deficiency act) for the County of Cheshire etc. With illustrations. New York: Paul B. Hoeber, 1916. Pp. 140. (Price, $1.50.)

Water Supply, Considered Principally from a Sanitary Standpoint. By William P. Mason, Professor of Chemistry, Rensselaer Polytechnic Institute. Member of the American Philosophical Society, the American Chemical Society, the American Society of Civil Engineers, etc. Fourth Edition, rewritten. First thousand. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1916. Pp. 528. (Price, $3.75 net.)

A Test Book of Histology. By Frederick R. Bailey, A. M., M. D. Fifth Revised Edition. Profusely illustrated. New York: William Wood & Co., 1916. Pp. 652. (Price, $3.75 net.)

Recollections of an Alienist. Personal and Professional. By Allan McLane Hamilton, M. D., LL. D., F. R. S. (Edinburgh). With original illustrations, photographs and facsimiles. New York: George H. Doran Company. Pp. 416. (Price, $3.50.)

The Practice of Urology. A Surgical Treatise on Genito-Urinary Diseases, Including Syphilis. By Charles H. Chetwood, M. C., LL. D., F. A. C. S. Professor of Genito-Urinary Surgery, New York Polyclinic; Visiting Surgeon to Bellevue Hospital; Special Consulting Surgeon to Knickerbocker Hospital. Profusely illustrated. Second Edition. New York: William Wood & Co., 1916. Pp. 825. (Price, $5.50 net.)

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Dr. Joseph C. Taylor, of New York, Vaginal Hysterectomy.

How to Prevent Laceration of the Perineum in Childbirth. Continuation of a Prize Discussion.

DIETETICS

Professor Leroy D. Swingle, of the University of Utah, The Relation of Food, Drugs, and Longevity.

Dr. G. W. McCaskey, of Fort Wayne, Ind., Syphilitic Aortic Disease. (Illustrated.)

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In **Diarrhoea, Dysentery** and **Cholera Infantum,** in the **Wasting** and **Febrile Diseases of Children,** and in the treatment of **Weak Babies,** the **Ease** of **Assimilation** and **Power** of **Valentine's Meat-Juice** to **Restore** and **Strengthen** has been demonstrated in Hospitals for Children.

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W. T. Watt, M. D., *Director Imperial Medical College, Tientsin, China:* "In cases of Infantile Diarrhœa, which weakens and debilitates a child rapidly, I have found VALENTINE'S MEAT-JUICE a great stimulant and quick restorative of vitality. Three years ago when an epidemic broke out in Tientsin, I ordered my staff to try your MEAT-JUICE, which justified all expectations, having been satisfactory to patients and physicians alike."

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NUTRIO PERME
MEAT JUICE.
The result of an original Process of Preparing Meat, and extracting its Juice by which the elements of nutrition are obtained in a state, ready for immediate absorption.
DIRECTIONS-Dissolve one teaspoonful of the Preparation in two or three tablespoonfuls of cold or warm water. The use of boiling water changes the character of the preparation.

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On account of this fact, the Federal Anti-Narcotic Law FORBIDS REFILLING of prescriptions containing PRUNUS HEROIN Compound without the doctor's order.

Fortunately it is rarely necessary to use more than six ounces to effect a complete RELIEF in an ordinary case of BRONCHITIS.

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in combination with other active ingredients, about

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Dose: One teaspoonful every 2 or 3 hours

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Combines alkalinity with mild local sedative and astringent properties.

It is a superior preparation for use in all acute and sub-acute affections of the MUCOUS MEMBRANES.

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NEURALGIA SURFACE PAINS

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